



SERVICE MANUAL

DIGITAL PORTABLE RADIO



Preface

This manual describes the information related to the product repair. It is intended for use by qualified technicians only. To repair the product properly, please read this manual carefully before repairing.

This manual is applicable to the following product:

PD50X Digital Portable Radio (X may represent 2, 5, 6 or 8)

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U.S. Patent No: #6,912,495 B2, #6,199,037 B1, #5,870,405, #5,826,222, #5,754,974, #5,701,390, #5,715,365, #5,649,050, #5,630,011, #5,581,656, #5,517,511, #5,491,772, #5,247,579, #5,226,084 and #5,195,166.

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Documentation Information

Conventions

Instructional Conventions

Icon	Description
 Tip	Indicates information that can help you make better use of your product.
 Note	Indicates references that can further describe the related topics.
 Caution	Indicates situations that could cause data loss or equipment damage.
 Warning	Indicates situations that could cause minor personal injury.
 Danger	Indicates situations that could cause major personal injury or even death.

Notational Conventions

Convention	Description
“ ”	The quotation marks enclose the name of a software interface element. For example, click “OK”.
Bold	The text in boldface denotes the name of a hardware button. For example, press the PTT key.
->	The symbol directs you to access a multi-level menu. For example, to select “New” from the “File” menu, we will describe it as follows: “File -> New”.

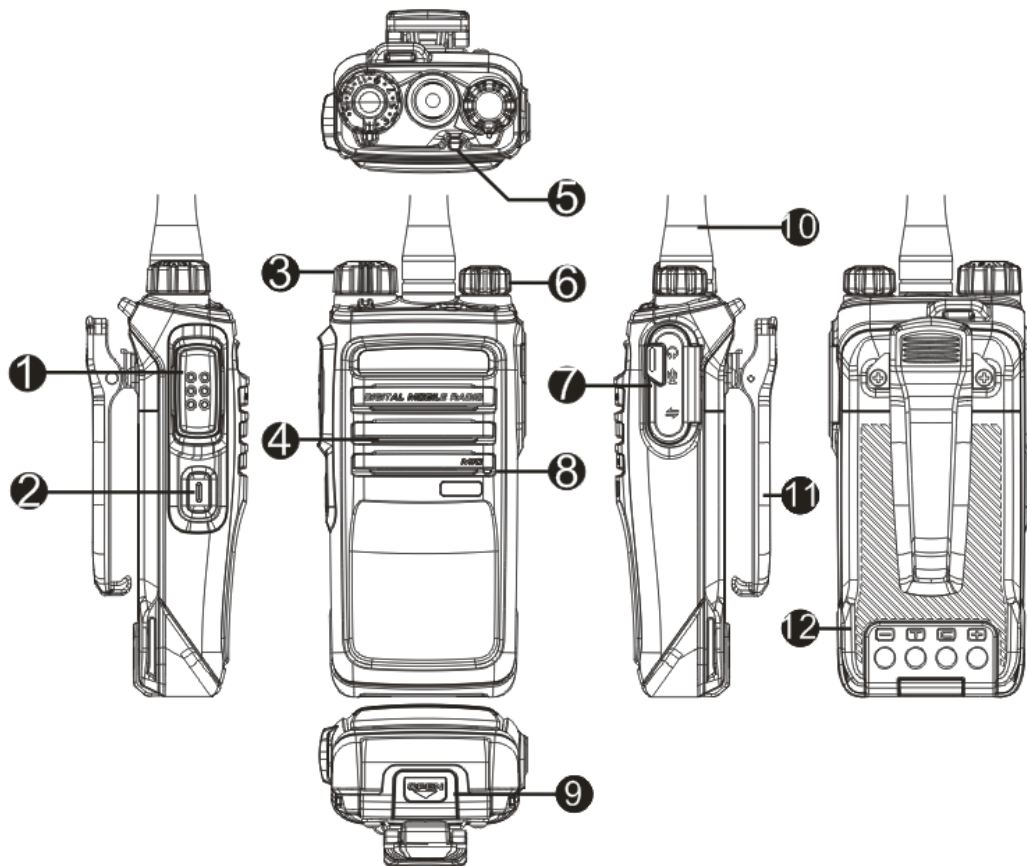
Revision History

Version	Release Date	Description
R5.6	Feb 20, 2014	Initial Release. This manual includes the information of these frequency bands: VHF UHF1

VHF (136–174 MHz)

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1. Product Controls



No.	Part Name	No.	Part Name
1	PTT (Push-to-Talk) Key	7	Accessory connector
2	SK1 (Side Key 1)	8	Microphone
3	Channel Selector Knob	9	Battery Latch
4	Speaker	10	Antenna
5	LED Indicator	11	Belt Clip
6	Power On-Off/Volume Control Knob	12	Battery

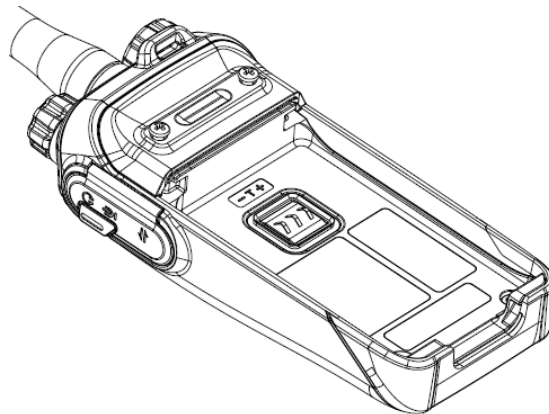
2. Disassembly and Assembly

This section is designed to introduce the way to disassemble the radio. To assemble the radio, do vice versa.

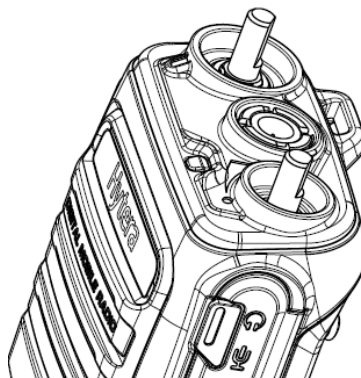
Caution

- Please position the waterproof ring properly during reassembly.
- After reassembly, please check the waterproof performance of the radio using the waterproof test instrument specified by the Company.

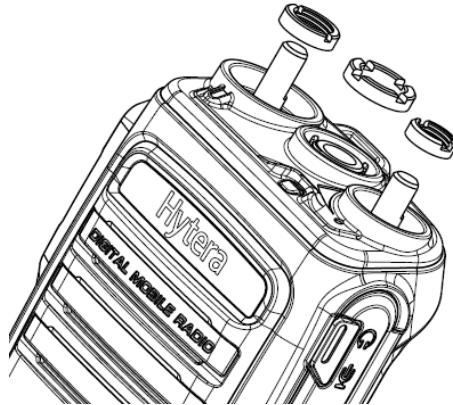
Step 1 Remove the battery.



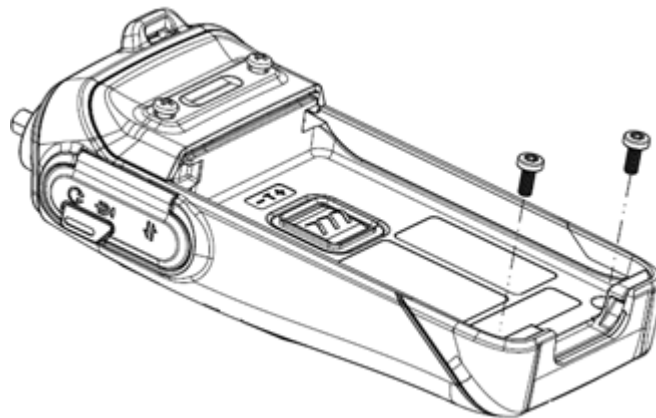
Step 2 Detach the antenna, and disassemble the **Channel Selector Knob** and **Power On-Off/Volume Control Knob**.



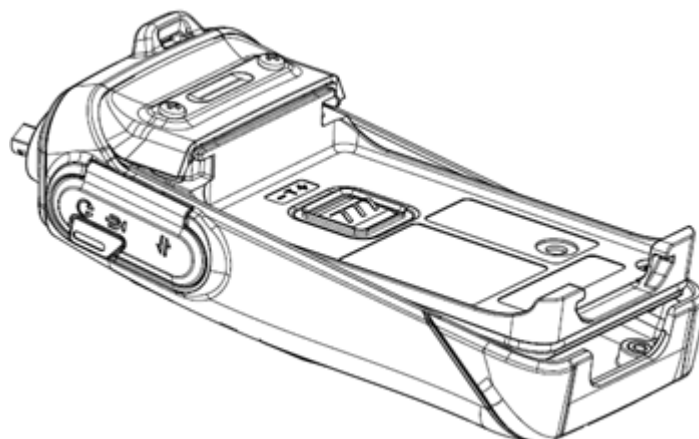
Step 3 Disassemble the nuts for securing the antenna, **Channel Selector Knob** and **Power On-Off/Volume Control Knob**.



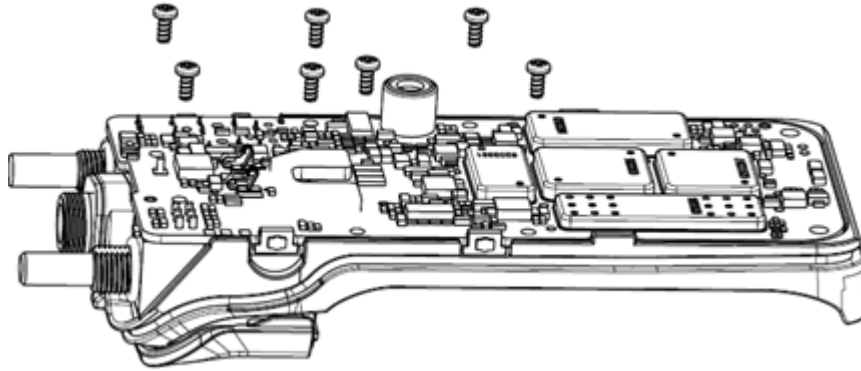
Step 4 Loosen the two screws on the bottom of the aluminum chassis.



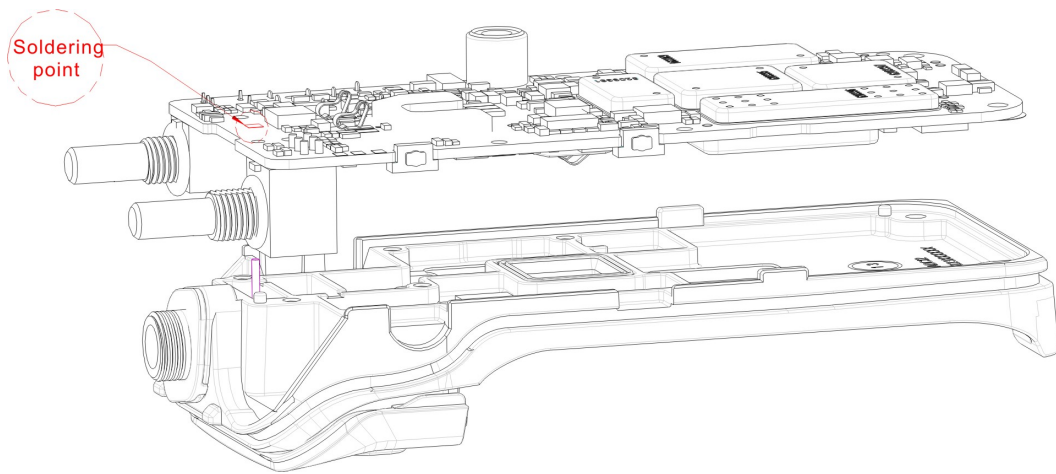
Step 5 Remove the aluminum chassis along with the main board.



Step 6 Loosen the seven screws on the main board.

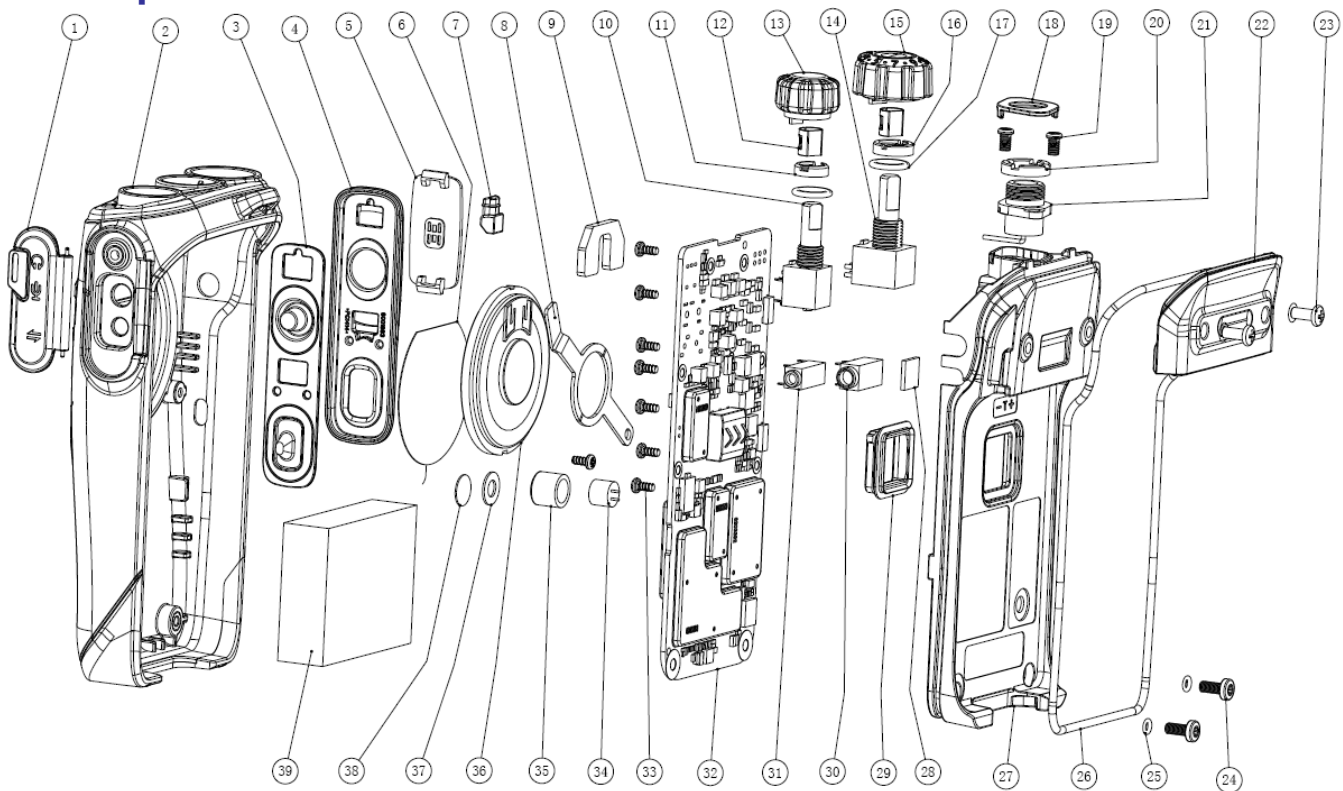


Step 7 Desolder the soldering joint of the antenna and remove the main board.



3. Exploded View and Packaging Guide

3.1 Exploded View



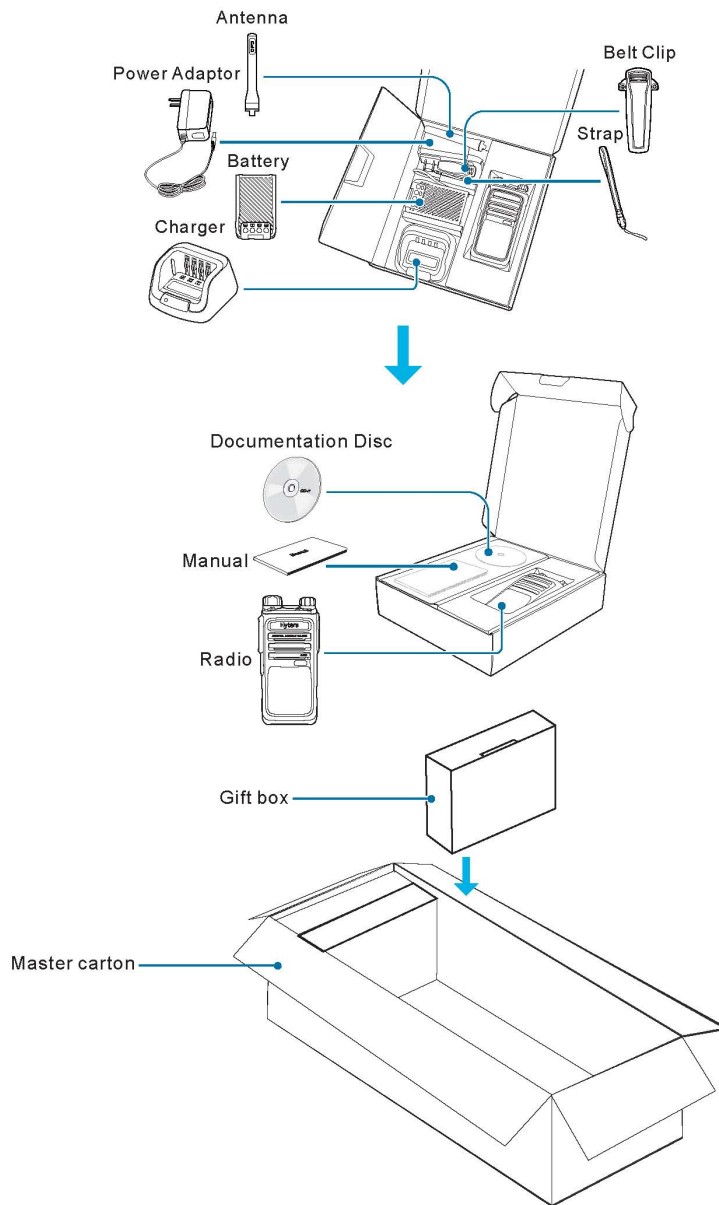
Parts list:

No.	Part No.	Description	Qty.	No.	Part No.	Description	Qty.
1	600197800000	Accessory connector cover	1	21	4400100036000	SMA RF connector	1
2	6001881100000	Front case	1	22	6001882000000	Rear cover	1
3	6100892100000	PTT and programmable key silicone rubber cushion	1	23	7103006004000	Machine screw	2
4	6001883000000	PTT key plastic cover	1	24	7102506002100	Machine screw	2
5	6000787000000	PTT key cover	1	25	6100527100000	Waterproof ring for screw	1
6	7400601000000	Speaker felt	1	26	6100890100000	Main waterproof ring	1
7	6100891100000	Transparent light guide high tensile silicone rubber	1	27	6300223000000	Aluminum chassis	1
8	6201905000000	Speaker fixing sheet	1	28	7500272000000	Heat sink pad	1
9	7400633000000	Speaker supporting PC sheet	1	29	6100505000010	Waterproof ring for battery connector	1
10	4323020000020	Volume switch	1	30	5205005000040	Earpiece Connector	1
11	7206002500210	Nut for volume switch	1	31	5205004000030	Earpiece Connector	1
12	6201739000000	Inner lining of knob	2	32	/	Main board	1
13	6001069000010	Volume control knob	1	33	7101904020200	Self-tapping Screw	8
14	4304030000010	Gray code rotary switch	1	34	5002220000070	Microphone	1
15	6001068000010	Channel selector knob	1	35	6100345000000	MIC cover	1
16	7207002201000	Switch nut for hannel selector knob	1	36	5001210000170	Speaker	1
17	6100334000000	O-RING for switch	2	37	7400329000000	MIC pad	1
18	6100957100000	Waterproof ring for antenna connector	1	38	7400141000000	MIC felt	1
19	7102504000300	Machine screw	2	39	7500447000000	Sound-absorption sponge	1
20	7209002501000	Antenna nut	1	/	/	/	/

 **Note**

Parts that are not marked with Part Number may vary with the frequency band.

3.2 Packaging Guide



4. Specifications

4.1 Specifications

General	
Frequency Range	136 MHz-174 MHz
Channel Capacity	32
Channel Spacing	25 KHz/20 KHz/12.5 KHz
Operating Voltage	<ul style="list-style-type: none"> ● Rated voltage: 7.4 V ● Extreme voltage: 6.2–8.4 V
Battery	1500 mAh Li-Ion battery
Battery Life (5-5-90 Duty Cycle, High TX Power) High-capacity 2000 mAh Li-Ion Battery	Analog: 11 hours Digital: 15 hours
Operating Temperature	-30°C to +60°C
Dimension (H×W×D) (with standard battey, without antenna)	117×55×28 mm
Weight (with antenna & standard battey)	About 280 g
Frequency Stability	±1.5 ppm
Receiver	
Sensitivity	<ul style="list-style-type: none"> ● Analog <ul style="list-style-type: none"> ➢ 0.3 μV (12 dB SINAD) ➢ 0.22 μV (Typical) (12 dB SINAD) ➢ 0.4 μV (20 dB SINAD) ● Digital: 0.3 μV/BER5%
Adjacent Channel Selectivity	<ul style="list-style-type: none"> ● TIA-603: 60 dB@12.5 kHz/70 dB@20&25 kHz ● ETSI: 60 dB@12.5 kHz/70 dB@20&25 kHz
Intermodulation	<ul style="list-style-type: none"> ● TIA-603: 70 dB@12.5/20/25 kHz ● ETSI: 65 dB@12.5/20/25 kHz
Spurious Response Rejection	<ul style="list-style-type: none"> ● TIA-603: 70 dB@12.5/20/25 kHz ● ETSI: 70 dB@12.5/20/25 kHz

Blocking	84 dB
Rated Audio Power Output	0.5 W (16 Ω load)
Rated Audio Distortion	$\leq 3\%$
Transmitter	
Power Output	5 W/1 W
Conducted/Radiated Emission	<ul style="list-style-type: none"> ● -36 dBm < 1 GHz ● -30 dBm > 1 GHz
Modulation Limiting	<ul style="list-style-type: none"> ● ± 2.5 kHz @ 12.5 kHz ● ± 4.0 kHz @ 20 kHz ● ± 5.0 kHz @ 25 kHz
FM Noise	<ul style="list-style-type: none"> ● 40 dB @ 12.5 kHz ● 43 dB @ 20 kHz ● 45 dB @ 25 kHz
Audio Distortion	$\leq 3\%$

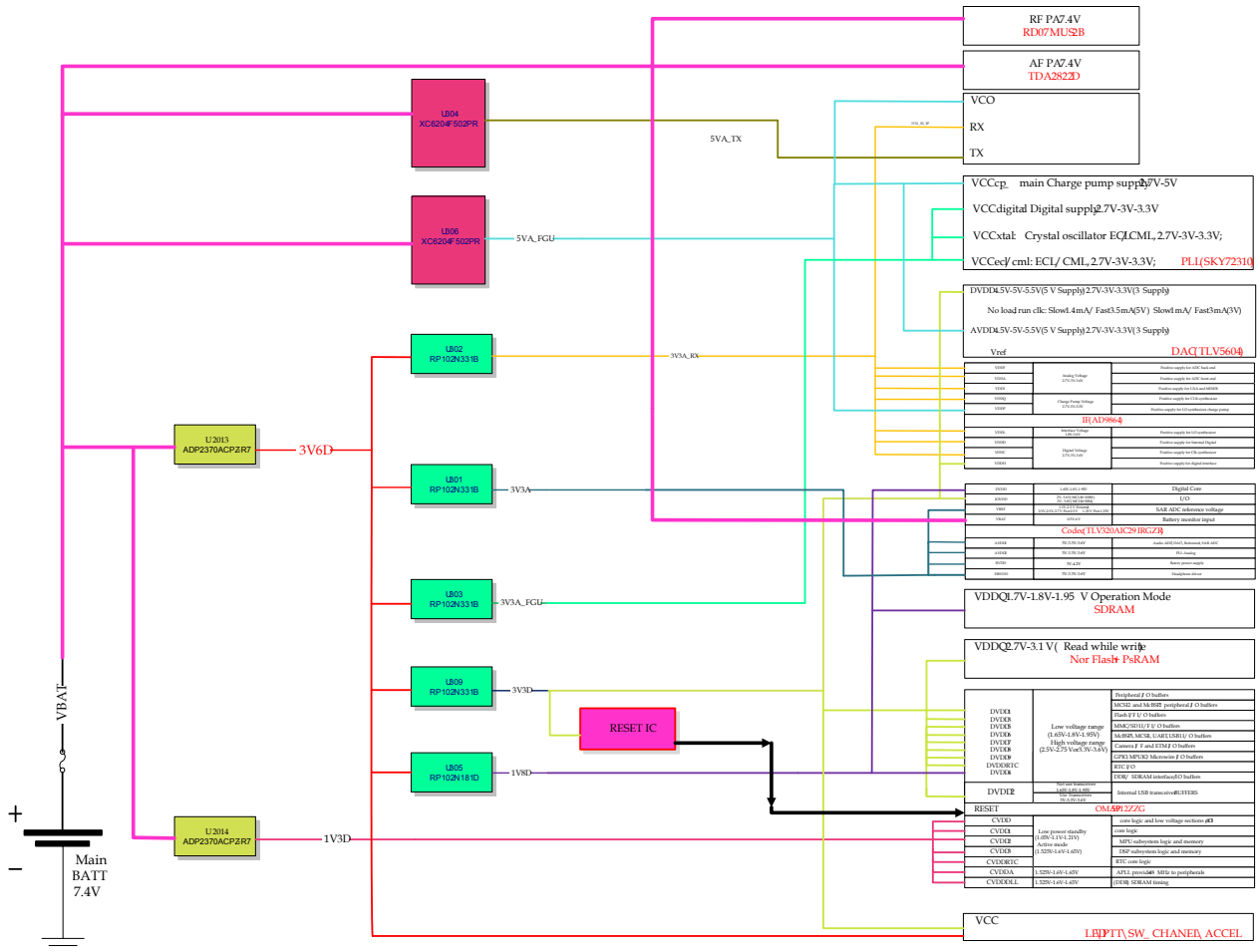
All Specifications are tested according to applicable standards, and subject to change without notice due to continuous development.

5. Circuit Description

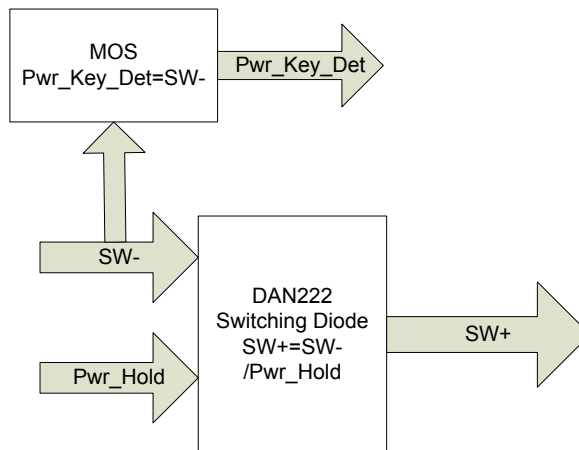
5.1 Baseband Section

5.1.1 Power Supply Module

Diagram of Power Control



Power On/Off



The radio-on signal (SW+) satisfies the equation: $SW+ = SW- | Pwr_Hold$. When the **Power**

On-Off/Volume Control knob is on, SW- and SW+ are at high level, and the radio powers up. After power-on, Pwr_Hold goes to high level, and Pwr_Key_Det goes to low level.

During power-off, SW- is at low level, while Pwr_Key_Det is at high level. The system detects power-off procedure via Pwr_Key_Det and implements the power-off procedure. Then Pwr_Hold and SW+ go to low level, and the power is cut off.

Power Protection

Power protection includes over-current, reverse-voltage and ESD protection.

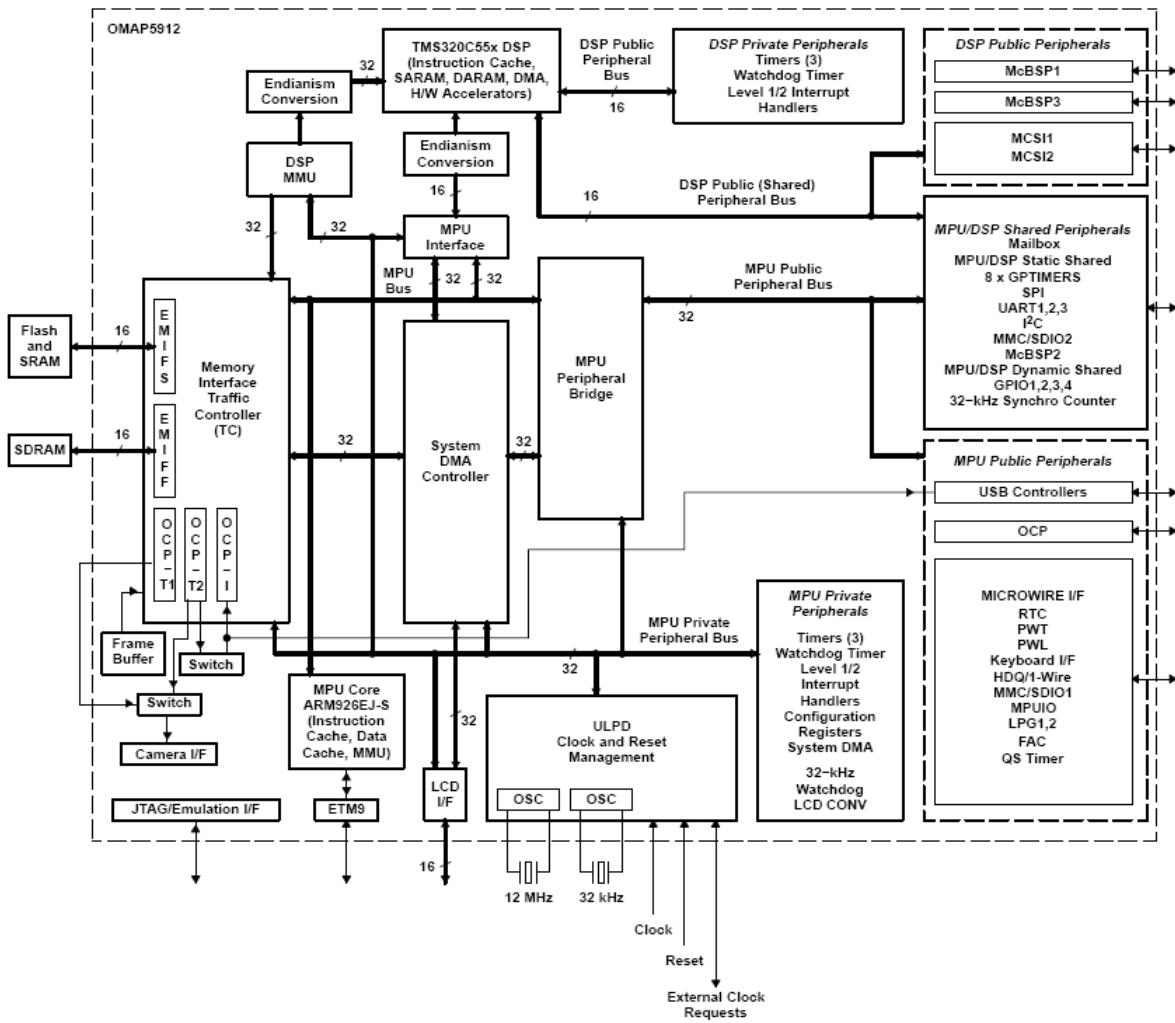
Power Consumption Control

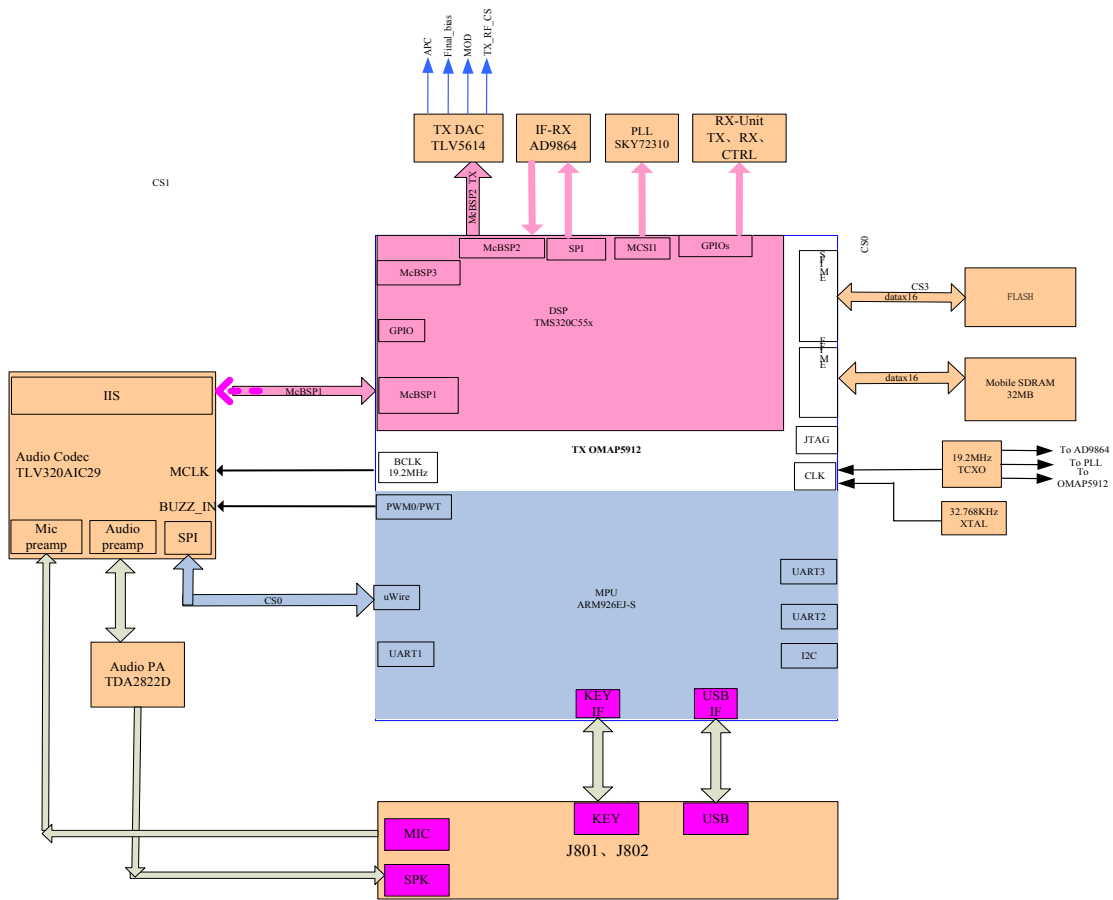
OMAP can control and configure the power supply and working mode of the peripheral modules (RF section and baseband section) via the I/O interface and serial bus, so as to reduce power consumption.

5.1.2 Control Module

OMAP5912 Dual-core Processor

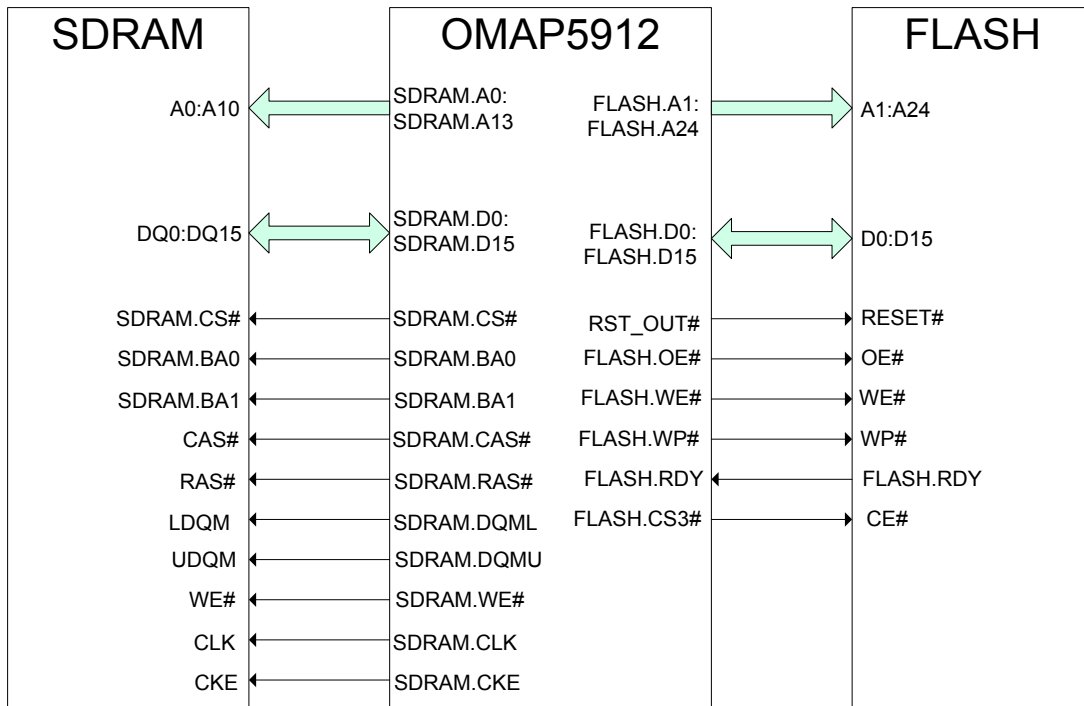
The radio uses the dual-core processor OMAP5912, which is mainly composed of ARM926EJ-S and TMS320C55xx. ARM926EJ-S is the main controller, while TMS320C55xx is used for modulation/demodulation and voice encoding/decoding.





External Memory

OMAP5912 provides two types of external memory interfaces: external memory interface slow (EMIFS) and external memory interface fast (EMIFF).



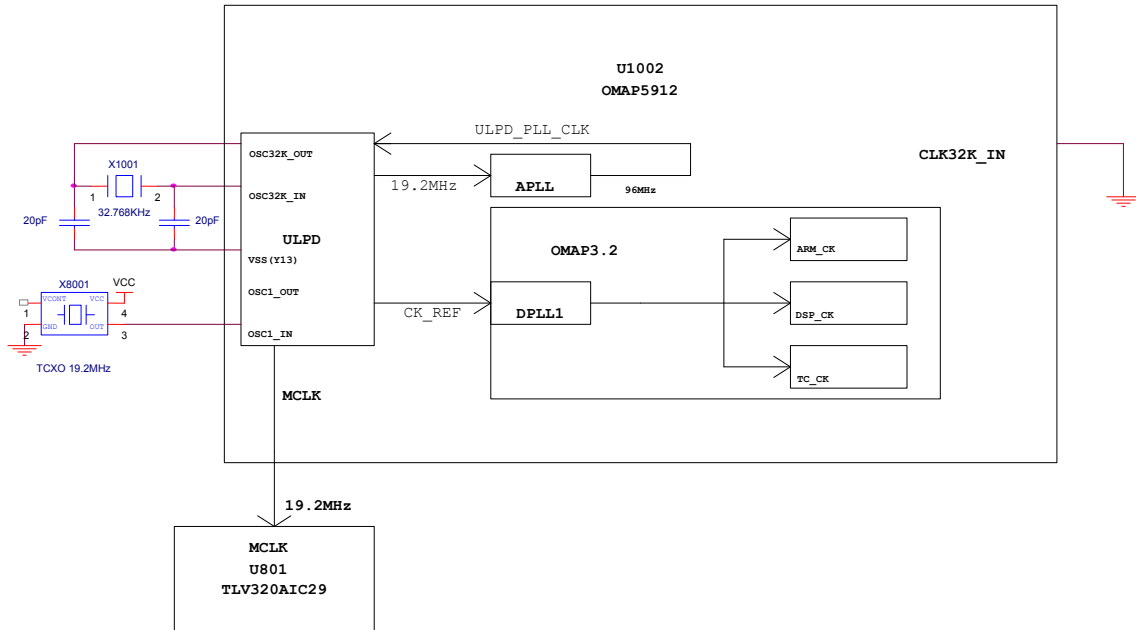
EMIFS

EMIFS can support 16-bit external device width, and provides four chip-selects CS0-CS3 each of which can support up to 64MB bytes of addressable memory. A number of different memory types can be connected to EMIFS, such as NAND Flash, NOR Flash, SRAM and so on.

EMIFF

EMIFF can support 16-bit external device width, and memories namely SDRAM, mobile SDRAM and mobile DDR can connect with it.

Clock



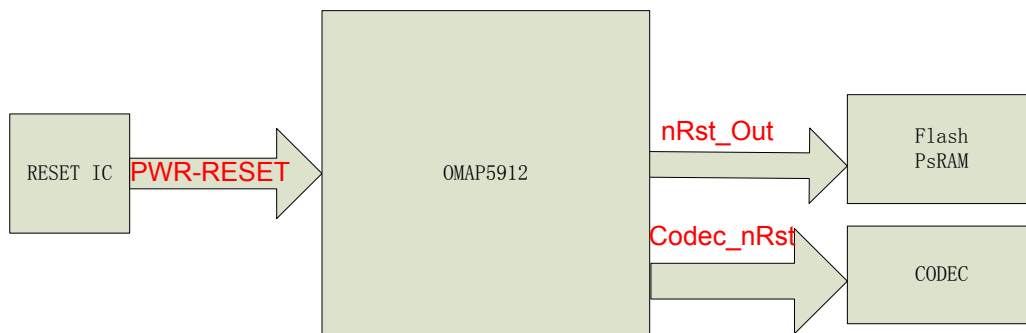
Input Clock

- 32K Clock: It is also called “sleep clock” and is mainly used for system timing and sleeping.
- 19.2 MHz Clock: It is the system clock and is mainly used for providing input clock for APLL and DPLL.

Output Clock

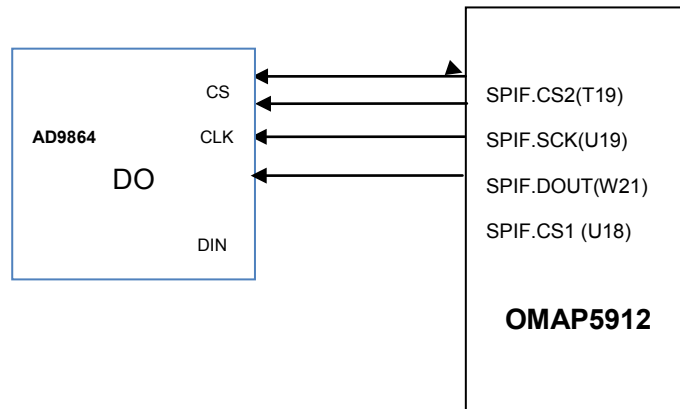
There is one output clock: MCLK. MCLK provides 16 MHz clock to audio codec.

Reset Signal



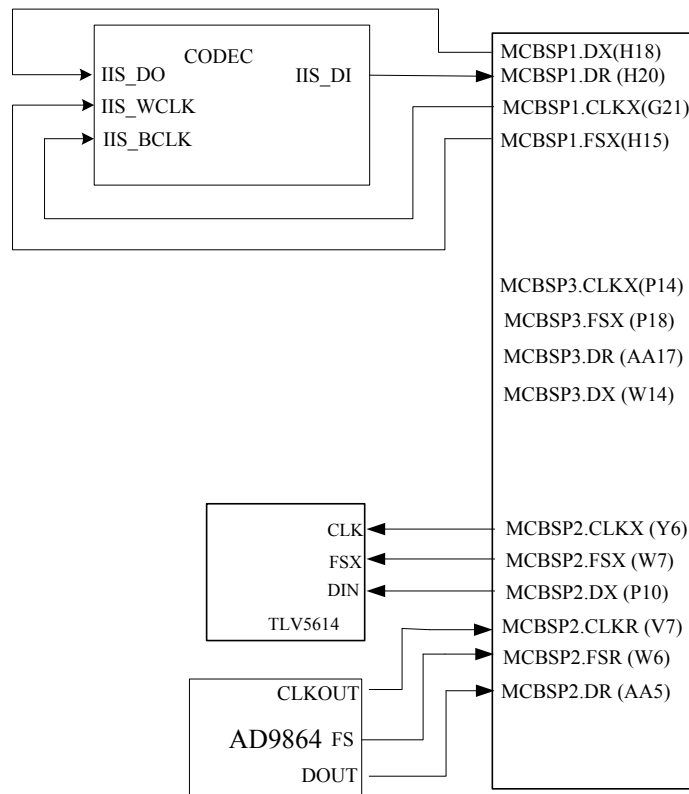
SPI

OMAP5912 has one SPI, which has four chip selects for connecting four external SPI components. Available SPI signals are SPI.DOUT, SPI.DIN, SPI.CLK and SPI.CS. The system uses SPI.CS2 to select the IF processor AD9864, to configure the register of AD9864. The connection of SPI is shown below.



MCBSP

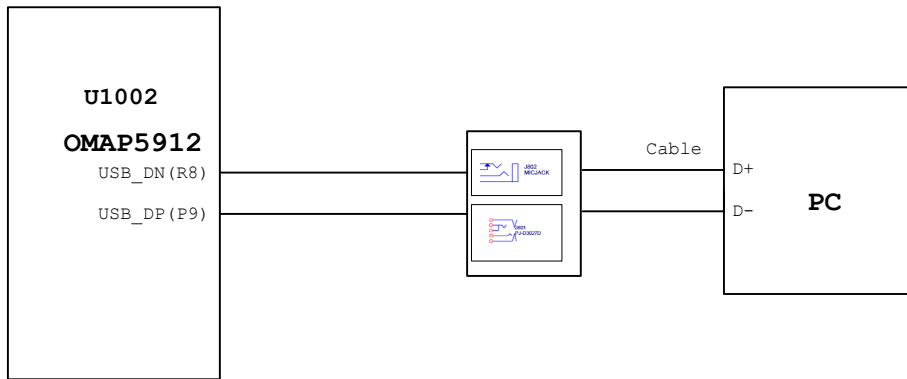
OMAP5912 provides 3 MCBSP interfaces: MCBSP1, MCBSP2 and MCBSP3. MCBSP1 is connected to the I²S interface of the audio codec, to realize two-way transmission of digital voice and data. MCBSP2 uses independent clock and frame synchronization for transmission and reception. AD9864 SSI is connected to the RX end of OMAP5912 MCBSP2. AD9864 works in master mode, while DSP works in slave mode. DAC is connected to the TX end of MCBSP2, and DSP works in master mode. MCBSP3 is connected to the interface for option board. The connection of MCBSP is shown below.



USB

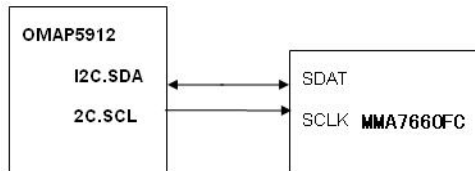
OMAP5912 provides three USB interfaces, one of which integrates USB transceiver. The integrated USB transceiver is connected to the accessory connector, and is used for programme downloading and

data applying.



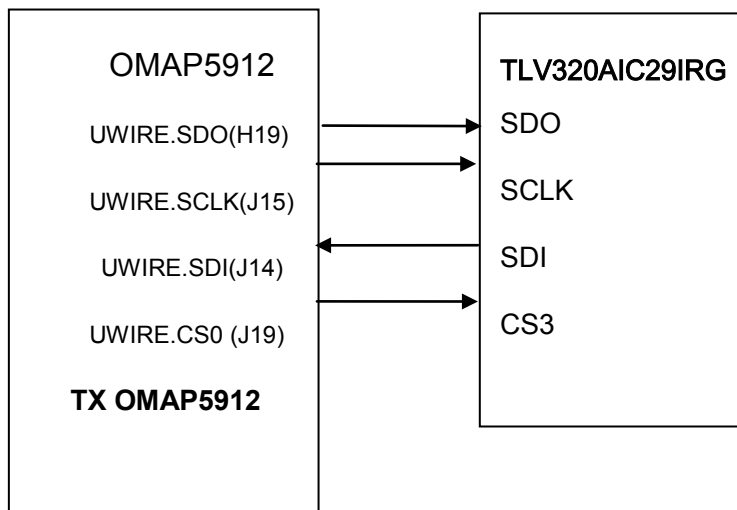
I²C

OMAP5912 provides one I²C interface, and supports a communication rate up to 400Kbps. OMAP5912 I²C is used for connecting to the acceleration sensor and works in the slave mode. The connection of I²C is shown below.



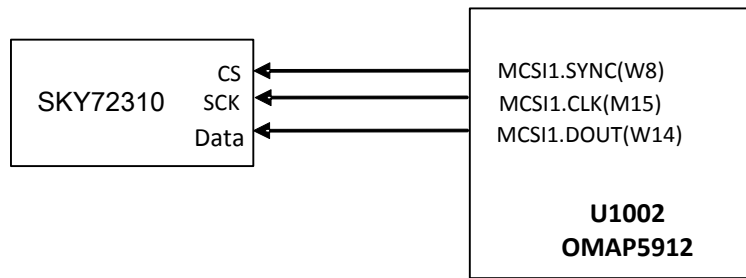
MICROWIRE

OMAP5912 provides a MICROWIRE. The four chip selects can drive four external components. MICROWIRE is used to configure the audio codec and read the value of its register. It uses the chip select 3. The connection is shown below.



MCSI1

OMAP5912 provides two MCSI interfaces. MCSI1 is used for PLL configuration and data transmission. The connection of MCSI1 is shown below.



5.1.3 Audio Module

Audio Diagram

The audio module is mainly for audio input and output. TLV320AIC29 is used as the audio codec to convert and process audio signal and digital signal. The audio amplifier TDA2822 is used to amplify the analog audio signal.

DSP processes digital signal (including audio signal encoding/decoding, digital signal decoding, and digital audio signal processing). AD9864 converts and processes the RF IF signal, and sends the undemodulated serial digital signal to the DSP for processing. Then TLV5614 converts the digital signal output by DSP to analog signal.

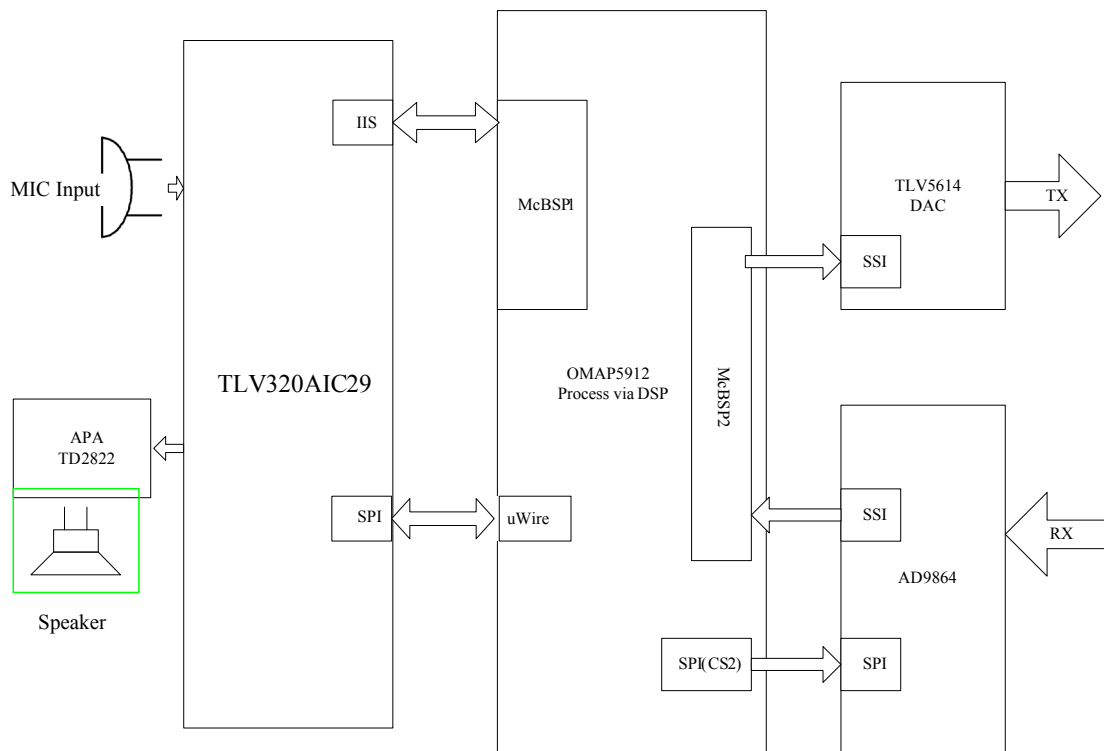
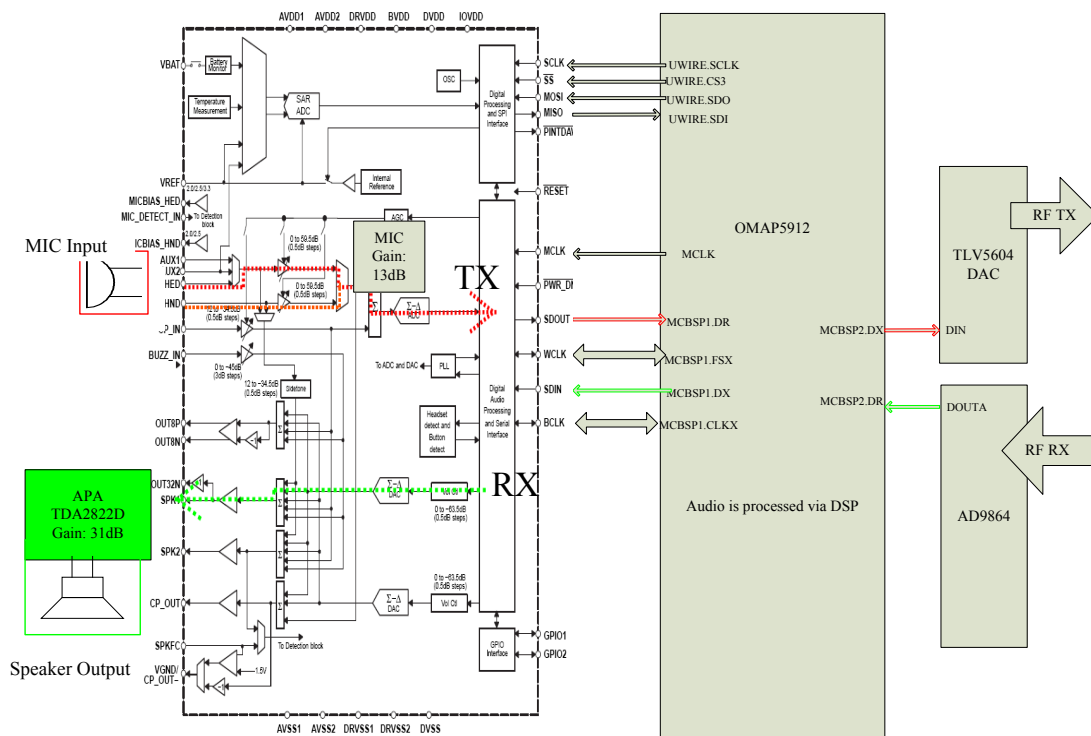


Diagram of Signal Flow

The microphone converts the audio signal into electrical signal, which is then amplified by PGA of the codec and sent to ADC of the codec for sampling. After digital audio processing, the signal is output to

DSP for processing. Then the signal is sent to DAC (TLV5614), which converts the signal to modulation signal. After modulated and amplified in the RF module, the signal is sent out from the antenna.

The RF signal received by the RF module is converted to digital signal by ADC (AD9864), and is then sent to DSP for demodulation and processing. Then the digital signal is sent to the digital audio processor of the codec for digital audio processing, and is then converted into analog audio signal by DAC of the codec. Finally the signal is amplified by the external audio amplifier (TDA2822) to drive the speaker, and the audio signal is output.



Audio Amplifier

Main parameters of TDA2822 are listed in the table below:

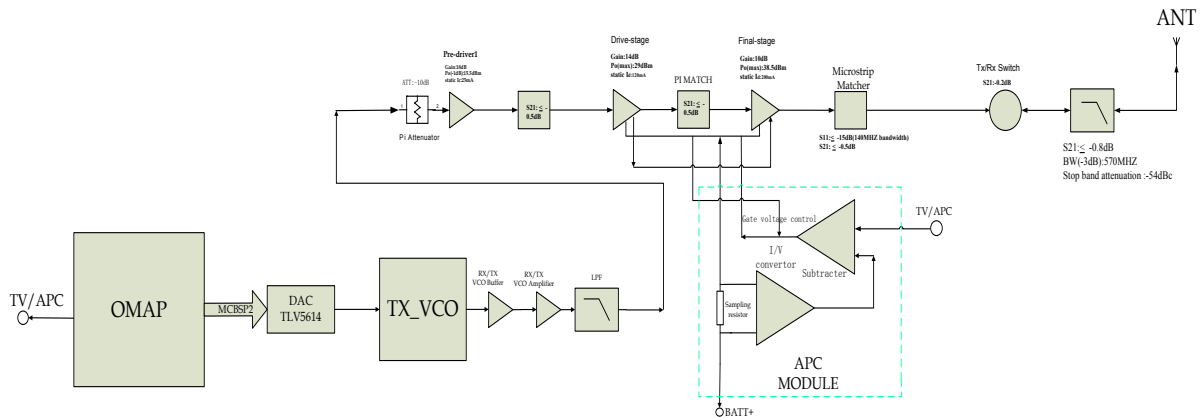
Rated Power (P_o)	0.5 W	$R_L = 16 \Omega$
Maximum Power (P_{max})	1.6 W	$R_L = 16 \Omega$

5.2 RF Section

5.2.1 Transmitter Circuit

The transmitter circuit is mainly composed of:

- RF Power Amplifier Circuit
- Low-pass Filter Circuit (for suppressing harmonics)
- Auto Power Control Circuit (APC)



RF Power Amplifier Circuit

The carrier signal generated by TX VCO is first to be modulated and amplified, and then feeds to the transmitter circuit. See the steps below.

- Step 1** In this circuit, the signal passes through a π -type attenuator first, allowing certain isolation between the RF power amplifier circuit and TX VCO.
- Step 2** After that, the signal goes to the driver amplifier (RD01) for further power amplification, to provide appropriate amplification signal to the final-stage amplifier (RD07) for final power amplification.
- Step 3** After amplified by multiple amplifiers, the signal will pass through a microstrip matcher to complete output impedance matching, so as to reduce output power loss due to impedance mismatch.
- Step 4** Finally, the signal passes through the TX/RX switch and goes to the low-pass filter.

Low-pass Filter Circuit (for suppressing harmonics)

The low-pass filter for suppressing harmonics is a high-order Elliptic filter composed of lumped-parameter inductors and capacitors. Via this filter, the spurious signal within the stop band can be attenuated as much as possible while the in-band ripple is within the required range.

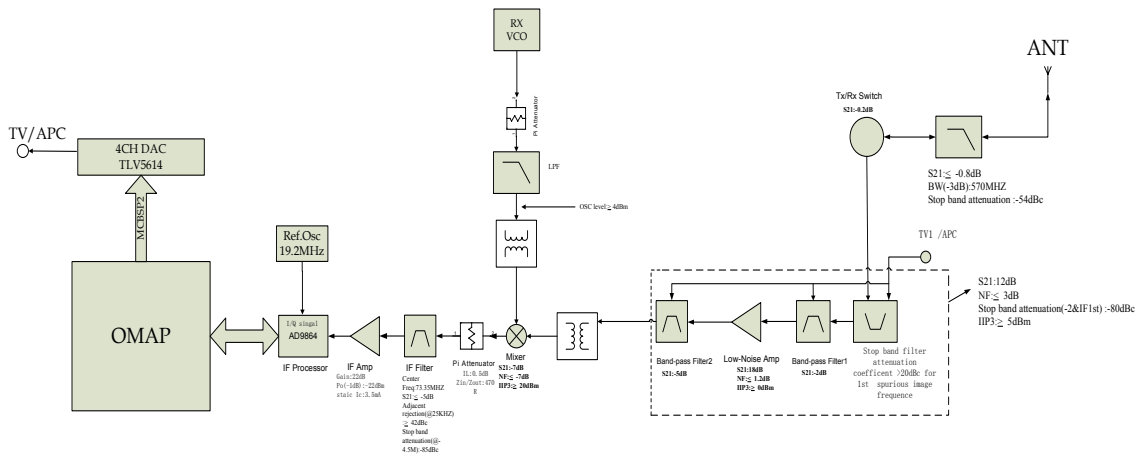
Auto Power Control Circuit

In the auto power control and temperature detection circuit, the drain current from the driver amplifier and final-stage amplifier is converted to voltage via the sampling resistor and subtraction circuit (composed of the first operational amplifier).

This voltage is compared with the APC control voltage (output by DAC) at the second operational amplifier. Then the output error voltage controls TX power by controlling the compensated gate bias voltage of the amplifiers (including the driver amplifier and the final-stage amplifier).

5.2.2 Receiver Circuit

The receiver circuit mainly comprises the RF band-pass filter, low-noise amplifier, mixer, IF filter, IF amplifier and IF processor.

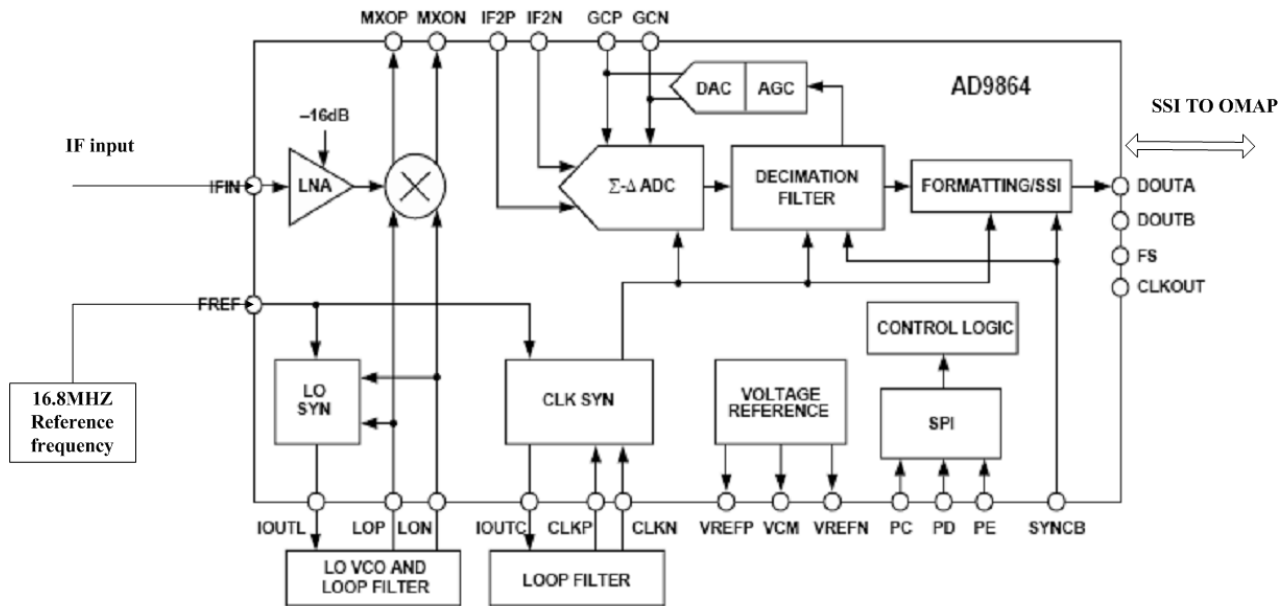


Receiver Front-end

The HF signal from the low-pass filter passes through the electrically tunable band-pass filter controlled via APC/TV1 level, to remove out-of-band interference signal and to send wanted band-pass signal to the low-noise amplifier (Q6005). The amplified signal goes to a band-pass filter controlled via APC/TV1 level, to remove out-of-band interference signal generated during amplification, and to send wanted HF signal to the mixer.

The wanted signal passes through the RF band-pass filter and low-noise amplifier and goes to the mixer (D6009). Meanwhile, the first local oscillator (LO) signal generated by VCO passes through the low-pass filter and also goes to the mixer (D6009). In the mixer, the wanted signal and the first LO signal are mixed to generate the first IF signal (44.85MHz). Then the signal passes through the frequency selection network composed of LC, to suppress carriers other than the first IF signal, and to increase the isolation between the mixer and the IF filter. After that, the first IF signal is processed by the crystal filter (Z6001), and is sent to the two-stage IF amplifier circuit (composed of PBR941) for amplification. Then the amplified signal goes to the IF processor AD9864 (U6001) for processing.

Receiver Back-end

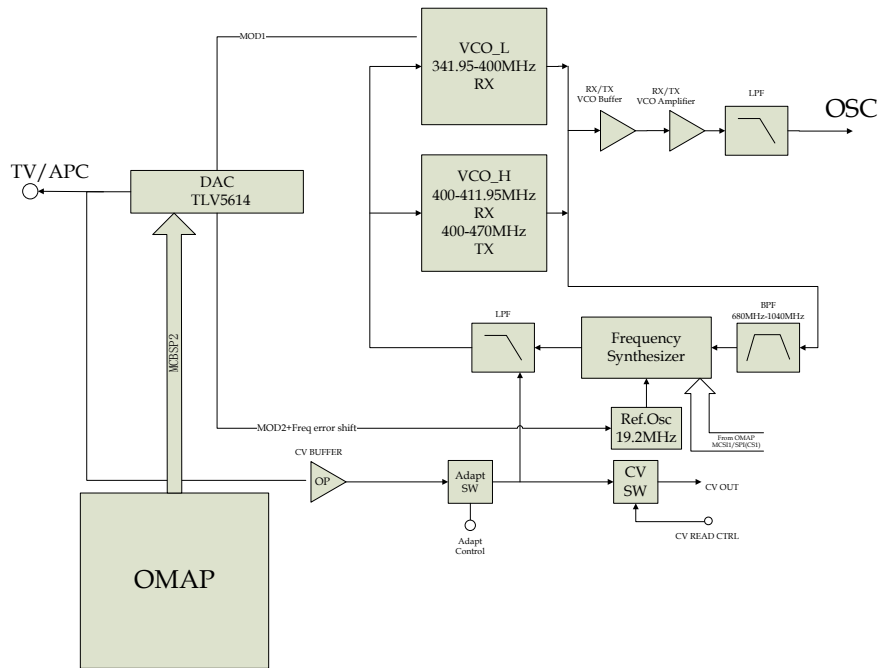


The first IF signal (44.85 MHz) output by the IF amplifier goes into AD9864 (U6001) via Pin 47, where the signal is converted to the second IF signal (2.25 MHz). Then the signal is converted to digital signal via ADC sampling, and output via the SSI interface. Finally, the digital signal is sent to the DSP (OMAP5912) for demodulation.

AD9864 employs reference LO frequency of 19.2 MHz and shares the crystal with OMAP. The second LO VCO comprises an oscillator, a varactor and some other components, to provide the LO signal (47.1/42.6 MHz). The 18 MHz clock frequency is generated by the LC resonance loop.

5.2.3 FGU

The FGU is composed of VCO and PLL. It is the core module of the whole TX-RX system. This circuit provides accurate carrier frequency during transmission, and stable LO signal during reception. It plays a pivotal role and determines the performance of the system.



Operation Principle of PLL

The 19.2MHz frequency generated by the reference crystal oscillator goes to PLL for division, generating the reference frequency (i.e. step frequency f_1). Meanwhile, the frequency generated by VCO goes into the PLL, where frequency f_2 is generated through frequency division. Then frequencies f_1 and f_2 are compared in the phase detector (PD), to generate continuous pulse current. The current goes to the loop filter for RC integration, and is then converted to CV voltage. Then the CV voltage is sent to the varactor of VCO. It adjusts the output frequency of VCO directly until the CV voltage becomes constant. Then PLL is locked, and the stable frequency output by VCO goes to the TX-RX channel after passing through two buffer amplifiers.

Operation Principle of VCO

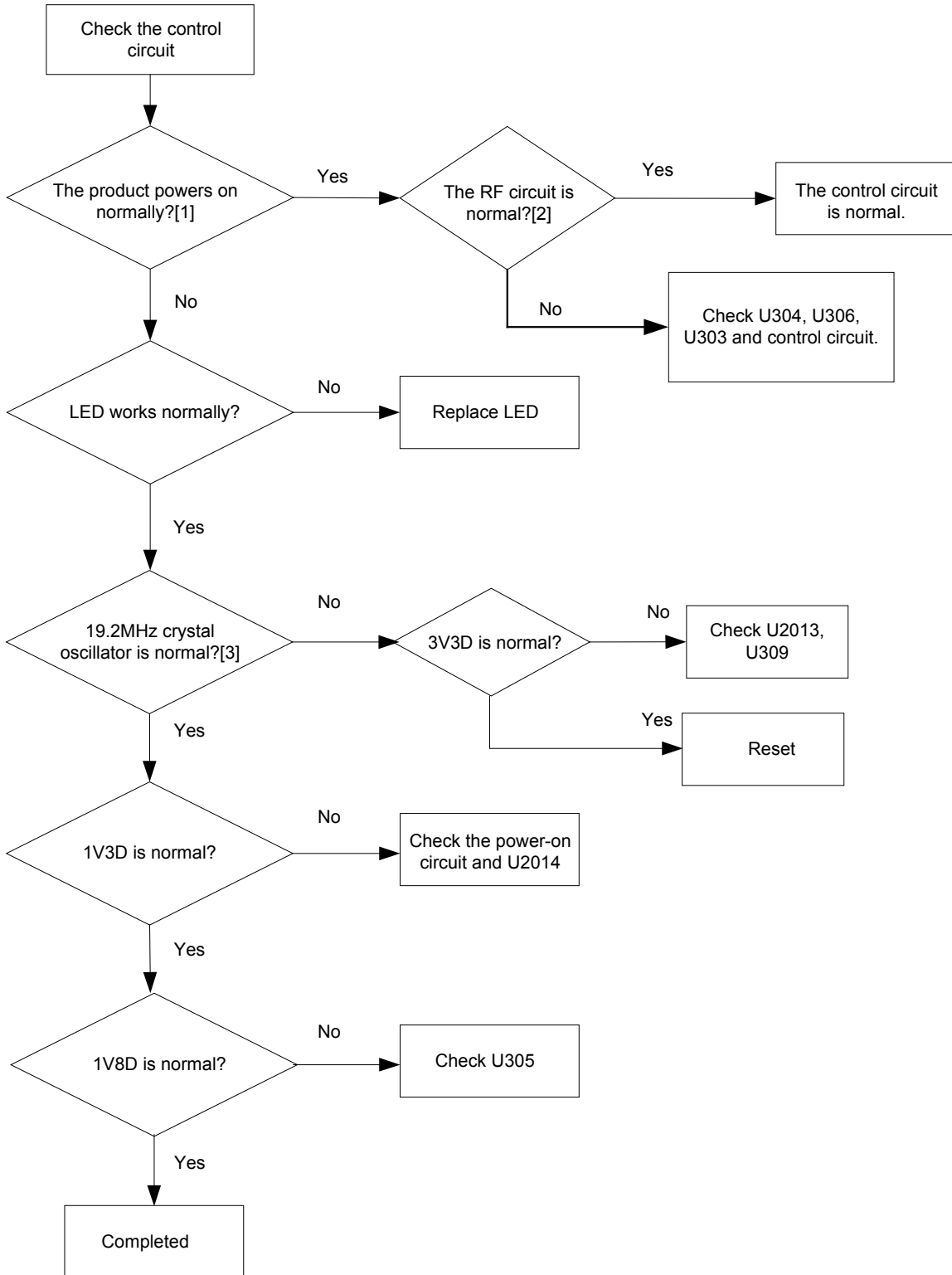
VCO employs Colpitts oscillator circuit. There are two types of VCO: RX VCO and TX VCO. RX VCO provides LO signal while TX VCO provides carrier for TX signal. When the oscillator is operating, it obtains different output frequencies by changing the varactor's control voltage (i.e. CV voltage) and then uses the control signals VCO_L_En and VCO_H_En to switch operating status. VCO_H is used for receiving while VCO_L is used for transmitting.

Two-point Modulation

In TX mode, the two-point modulation technology is employed, to obtain higher modulation accuracy and lower 4FSK bit error rate. MOD_H and Freq_TV send the modulation signal to the modulation end of VCO and the reference crystal oscillator of PLL respectively to modulate TX VCO and the reference crystal oscillator.

6. Troubleshooting Flow Chart

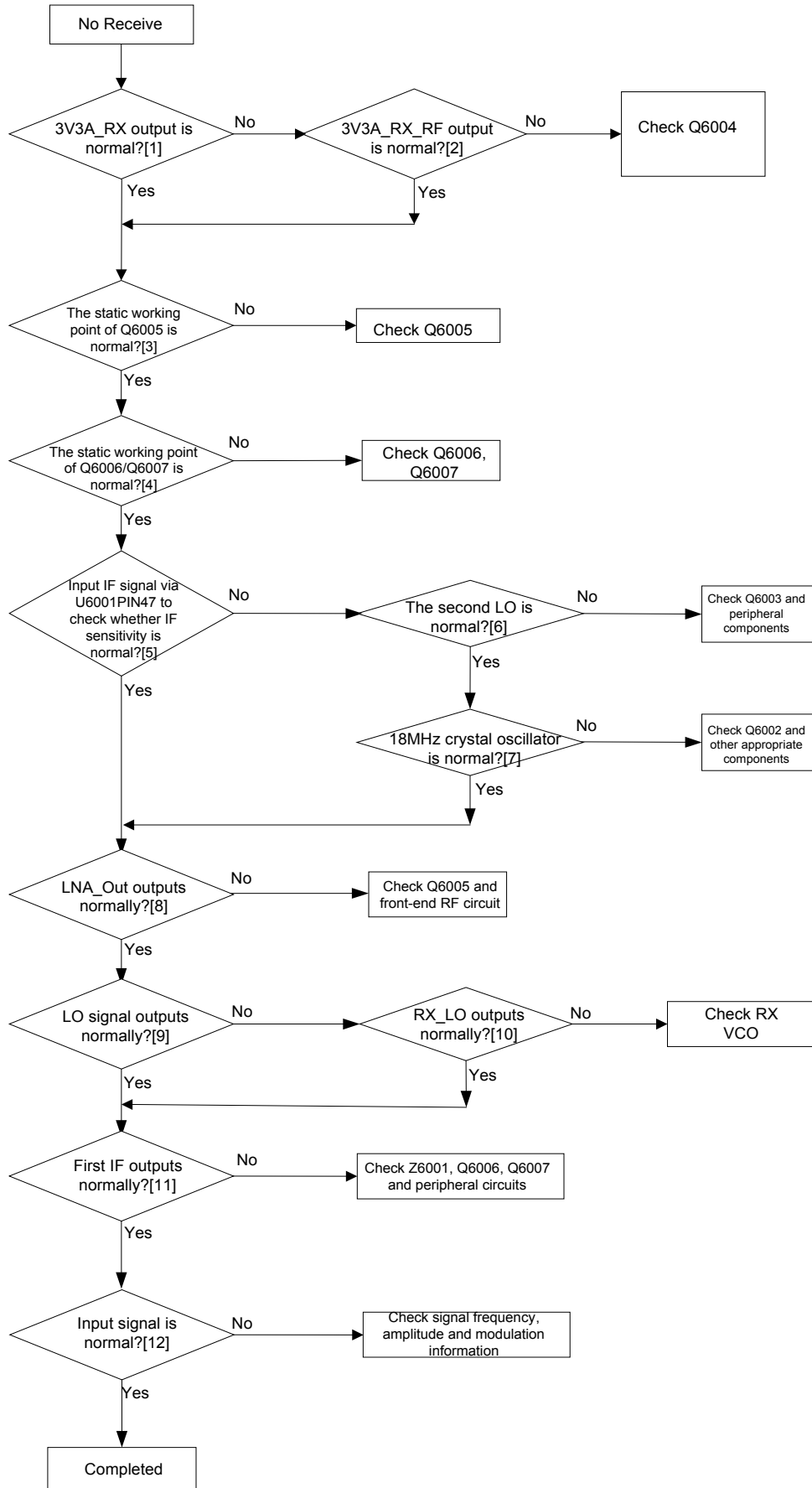
6.1 Control Circuit



Description of Normal Situations:

- [1] After the radio powers on, the LED indicator and alert tone works properly.
- [2] The RF power supply outputs normally, and the RX channel is on.
- [3] Output by the crystal oscillator: $V_{pp}=700-800$ mV, $F=19.2$ MHz.

6.2 Receiver Circuit



Description of Normal Situations:

[1] Output voltage by Q6004 PIN3 is about 3.3 V.

[2] Output voltage by U302 PIN5 or input voltage by Q6004 PIN4 is about 3.3 V.

[3] Vgs: about 0.1 V; Vsd: about 3.3 V (in the case of no signal reception).

[4] For Q6006, Vbe: about 0.76 V; Vce: about 0.95 V; for Q6007, Vbe: about 0.7 V; Vce: 0.85 V (in the case of no signal reception).

[5] Cut off the front-end circuit, and input a 44.85 MHz IF signal at C6009 to test IF sensitivity. Normally, the IF sensitivity is -109 dBm.

[6] Frequency of Q6003: 44.85 MHz.

[7] Frequency of L6013: 18 MHz.

[8] Input a -30 dBm RF signal and test at RP1. Normally, gain>10 dB, output signal>-20 dBm.

[9] Input a -30 dBm RF signal in the antenna port and test at C6092 (do not cut off the back-end circuit). Normally, gain>1 dB, output signal>-29 dBm.

[10] C6093 output signal frequency: RF-IF, signal amplitude>2 dBm.

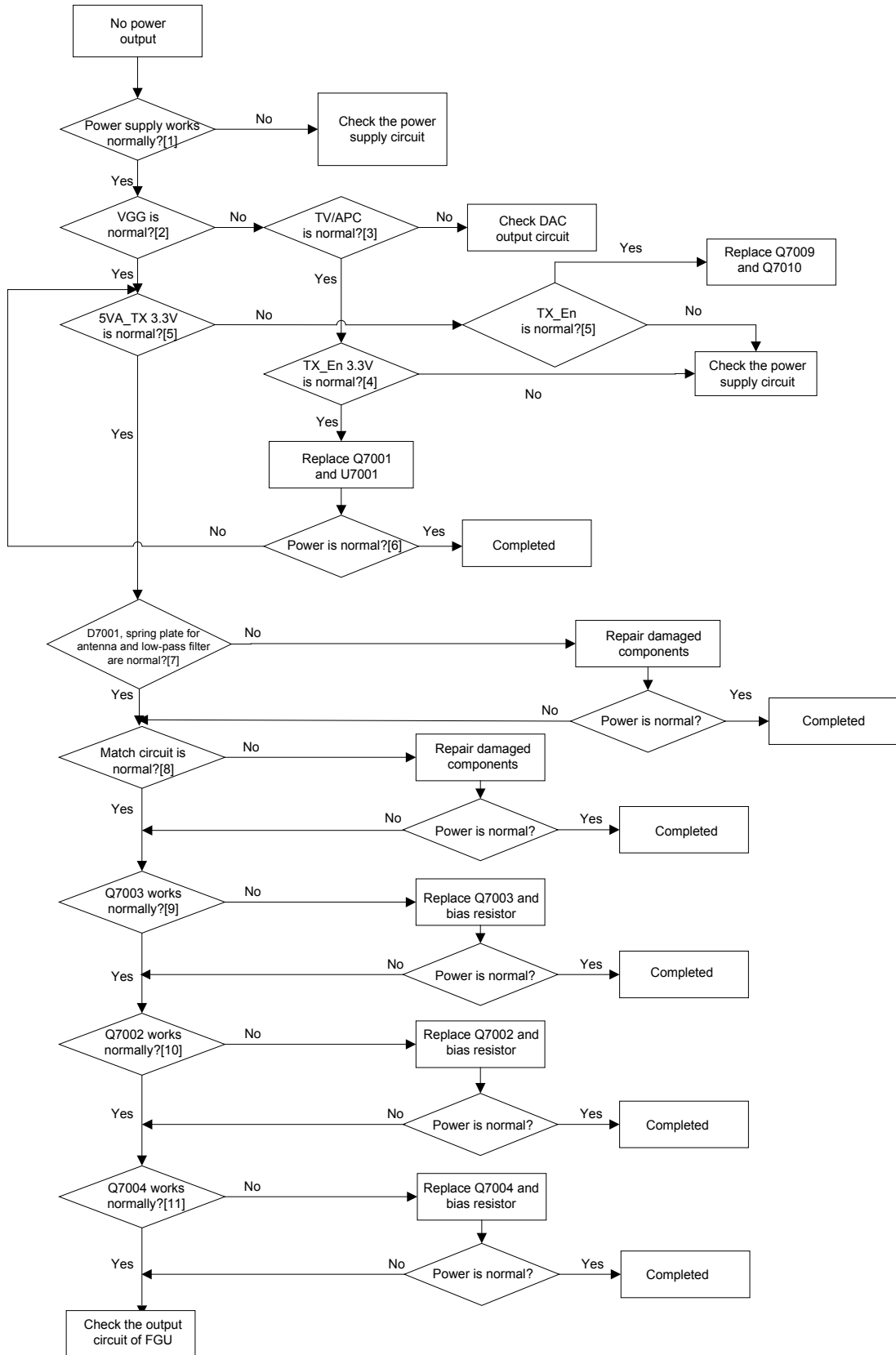
[11] For input of -80dBm signal from L6028, gain>25 dB, output signal>-55dBm; for input of -30 dBm signal, output signal>-20 dBm.

[12] The input signal in the antenna port, with standard tuning information (AF=1 KHz, FM=3 KHz), is -47 dBm.

6.3 Transmitter Circuit

Caution

The following checks must be operated with a power supply of 7.4 V.

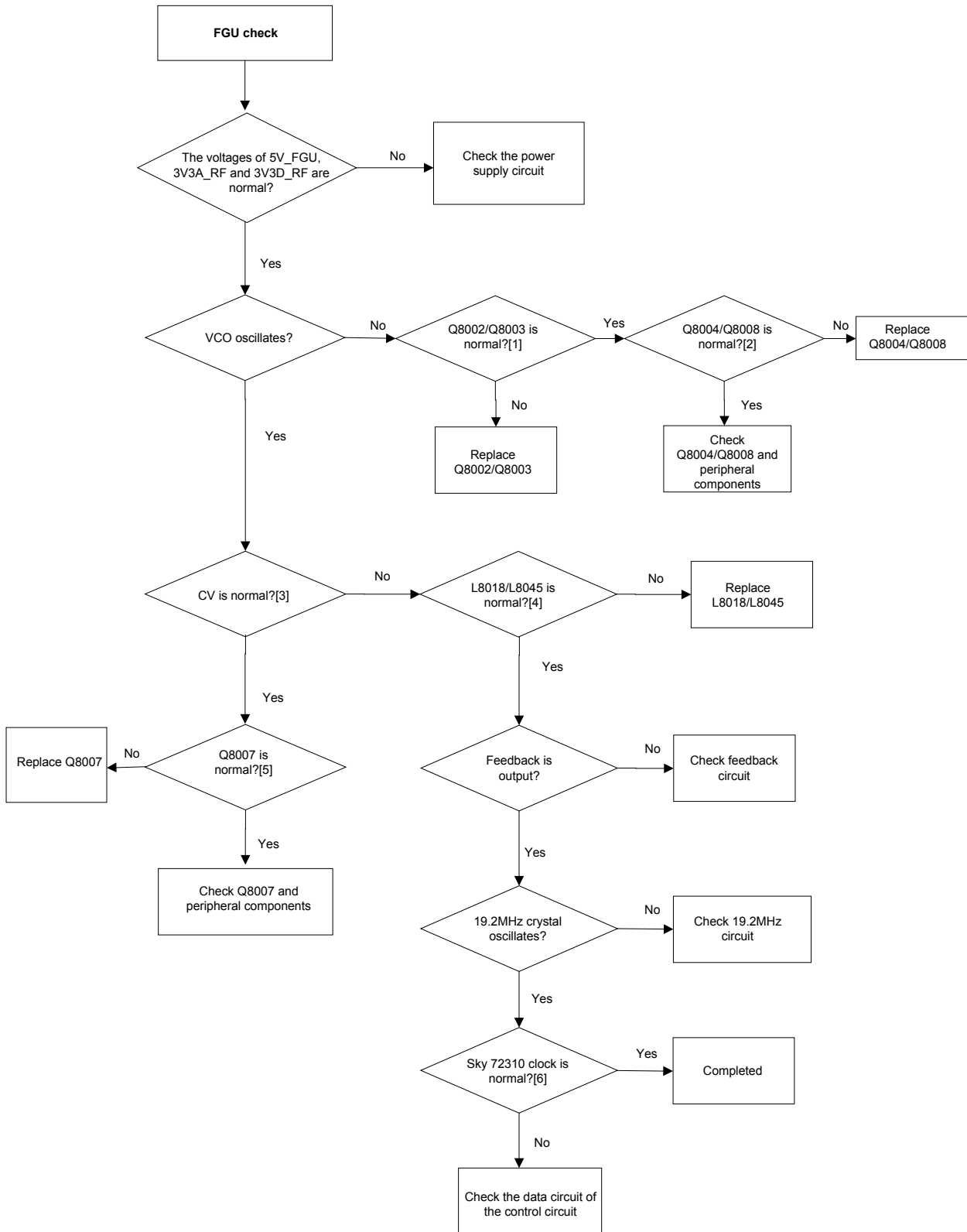


Description of Normal Situations:

[1] Voltage of the power supply: about 7.4 V.

- [2] For low power, VGG: 1.8–2.1 V; for high power, VGG: 2.4–2.8 V.
- [3] For low power, TV/APC: 1-1.3 V; for high power, TV/APC: 1.8-2.1 V.
- [4] TX_En: about 3.3 V.
- [5] 5VA_TX: about 5 V.
- [6] High power: about 4.2 W; low power: about 1.2 W.
- [7] Start-up voltage of D7001: about 0.7 V. The low-pass coil must be soldered appropriately and remain in good condition. The spring plate for the antenna must well fit the antenna connector.
- [8] The match components must not be soldered inappropriately or damaged.
- [9] Vdd: about 7.3 V; for low power, Vgg: 1-1.2 V; for high power, Vgg: 1.35-1.55 V.
- [10] Vdd: about 7.3 V; for low power, Vgg: 1.8-2.1 V; for high power, Vgg: 2.4-2.8 V.
- [11] Vc: about 4.8 V; Vb: about 1.4 V; Ve: about 1.1 V.
- [12] Vc: about 4.7 V; Vb: about 0.7 V; Ve: 0V. Start-up voltage of D9007: about 0.7 V.

6.4 FGU



Description of Normal Situations:

[1] During transmission, output voltage by Q8002 PIN3: about 4V. During reception, output voltage by

Q8003 PIN3: about 4 V.

[2] During transmission, voltage at Q8008 E: about 1.8 V. During reception, voltage at Q8004 E: about 1.8 V.

[3] The CV value varies with frequencies. Generally, it is within the range 0.5-4.5 V.

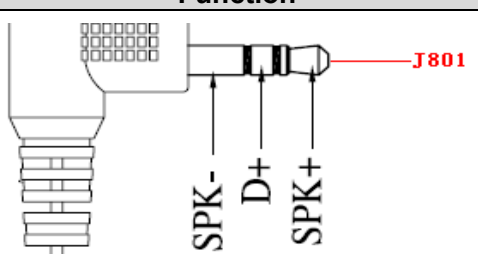
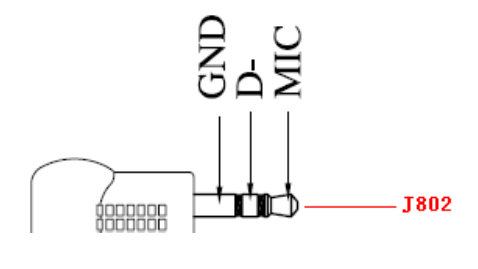
[4] L8018/L8045 is on.

[5] Voltage at Q8007 B: about 0.7 V.

[6] PLL_Clk outputs 960 KHz clock.

7. Interface Definition

7.1 J801 and J802: Double-Pin Interface for Earpiece, Programming and Downloading

Pin	Pin No.	Signal	Function
J801	1	SPK-	
	2	USB+	
	3	SPK+	
	4	SPK+	
	5	SPK-	
J802	1	GND	
	2	MIC	
	3	USB-	
	4	OPTSEL1	

8. Tuning Description

8.1 Required Test Instruments

- Radio test sets: Aeroflex 3920 and HP8921
- 3A/10V power supply
- Multimeter
- Tuner software

8.2 Tuning Procedures

8.2.1 Tuning a Radio

After the radio is reassembled, it must be tuned via the Tuner software.

The specific operations are described in the table below.

Items	Method
TX Section	
Reference Oscillator Warp	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with HP8921, and set HP8921 to TX test mode. 2. Open the Tuner software, go to "TUNE_DATA -> TX" and double click "Reference Oscillator Warp" from the navigation tree on the left. Then click the "Transmit On" button. 3. Observe the frequency displayed on HP8921, and adjust the vernier on Tuner until the frequency offset is less than or equals to 40 Hz. 4. Click the "Transmit Off" button. 5. Click the "Save" button to save your settings.
Transmit Power Calibration	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with HP8921, and set HP8921 to TX test mode. 2. Open the Tuner software, go to "TUNE_DATA -> TX" and double click "Transmit Power Calibration" from the navigation tree on the left. Then select an appropriate channel. 3. Click the "Transmit On" button. 4. Adjust the power to the required level as described below: L: 1.2 ± 0.1 W H: 4.7 ± 0.1 W

	<ol style="list-style-type: none"> Click the “Save” button to save your settings.
Transmit-to-Deviation	<ol style="list-style-type: none"> Connect the antenna connector of the radio with HP8921, and set HP8921 to TX test mode. Set the HP8921 parameters as follows: IF Filter: 230 kHz Filter1: <20 Hz HPF Filter2: <15 kHz LPF De-Emphasis: OFF Open the Tuner software, go to “TUNE_DATA -> TX” and double click “Transmit-to-Deviation” from the navigation tree on the left. Then click the “Transmit On” button. Observe the frequency deviation displayed on HP8921, and adjust the vernier on Tuner until the frequency deviation is $5\text{ k}\pm 50\text{ Hz}$. Click the “Transmit Off” button. Click the “Save” button to save your settings.
Modulation Balance	<ol style="list-style-type: none"> Connect the antenna connector of the radio with HP8921, and set HP8921 to TX test mode. Set the HP8921 parameters as follows: IF Filter: 230 kHz Filter1: <20 Hz HPF Filter2: <15 kHz LPF De-Emphasis: OFF Open the Tuner software, go to “TUNER_DATA -> TX” and double click “Modulation Balance” from the navigation tree on the left. Then select an appropriate channel. Click the “Transmit On” button. Adjust the value in the dialog box until the frequency deviation displayed on HP8921 is $4.93\text{ k}\pm 50\text{ Hz}$. Press the Enter key on the keyboard to confirm your settings if the value is input via the keyboard. If the value is adjusted via the vernier, skip this step.

	<ol style="list-style-type: none"> 7. Click the "Transmit Off" button. 8. Click the "Save" button to save your settings.
Transmit Oscillator Voltage	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with HP8921, and set HP8921 to TX test mode. 2. Open the Tuner software, go to "TUNE_DATA -> TX" and double click "Transmit Oscillator Voltage" from the navigation tree on the left. 3. Click the "Save" button to save the existing value to the radio.
RX Section	
Front-end Filter	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with HP8921. 2. Connect the Audio Out port of the radio with the Audio In port of HP8921, and set HP8921 to RX test mode. 3. Set the HP8921 parameters as follows: Output RF signal: -118 dBm/Frequency (current channel frequency) Modulation frequency: 1 kHz Modulation deviation: 3 kHz De-Emphasis: 750 us 4. Observe the value displayed on the HP8921 and adjust the vernier on the Tuner until the SINAD value is more than 14 dB. 5. Set the HP8921 parameters as follows: Output RF signal: -25 Bm/(current channel frequency: -22.425 MHz) 6. Observe the value displayed on the HP8921 and adjust the vernier on the Tuner until the SINAD value is less than 14 dB. 7. Press the Enter key on the keyboard to confirm your settings if the value is input via the keyboard. If the value is adjusted via the vernier, skip this step. 8. Click the "Save" button to save your settings.
Front-end Gain	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with HP8921, and set HP8921 to RX test mode. 2. Set the HP8921 to output -70 dBm/Frequency (current channel frequency) unmodulated RF signals. 3. Press the Enter key on the keyboard to confirm your settings if the value is input via the keyboard. If the value is adjusted via the vernier, skip this step. 4. Click the "Save" button to save your settings.

Receive Voltage	Oscillator 1. Connect the antenna connector of the radio with HP8921, and set HP8921 to RX test mode. 2. Open the Tuner software, go to "TUNE_DATA -> RX" and double click "Receive Oscillator Voltage" from the navigation tree on the left. 3. Click the "Save" button to save the existing value to the radio.
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8.2.2 Test a Radio

After tuning the radio, it is required to test the digital RF signal.

Transmitting

Step 1 Open the Tuner software and go to "TEST -> TX", and double click "Transmit BER (0.153)" from the navigation tree on the left to open Transmit BER (0.153) interface.

Step 2 Select the channel to be tested and select "High Power" in the "Parameter".

Step 3 Set the Aeroflex 3920 as follows:

- Freq: Be consistent with the frequency to be tested.
- STD IB 511(153)

Step 4 Click the "Transmit On" button.

Step 5 View all items on the Aeroflex 3920.

- Frequency Error \leq 100 Hz
- Transmit Power: 4.7 ± 0.3 W
- FSK Error \leq 5%
- Magnitude Error \leq 1%

Receiving

Step 1 Open the Tuner software and go to "TEST -> RX", and double click "Receiver BER (0.153)" from the navigation tree on the left to open Receiver BER (0.153) interface.

Step 2 Select the frequency to be tested.

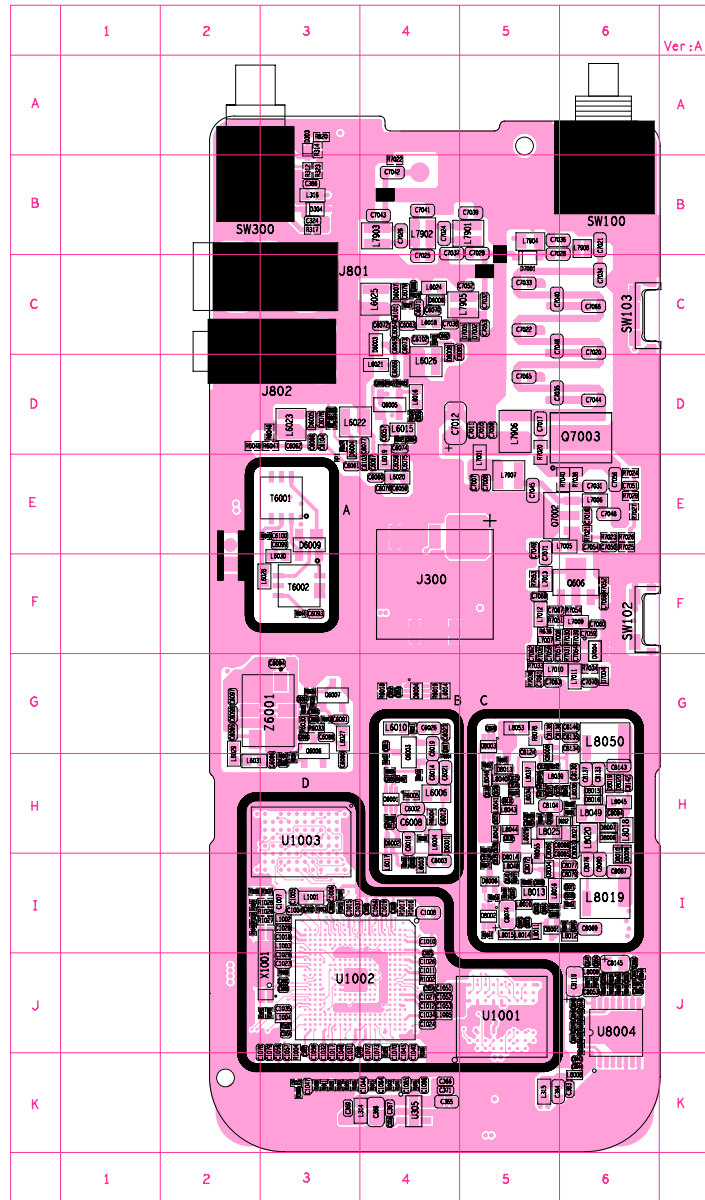
Step 3 Set the Aeroflex 3920 as follows:

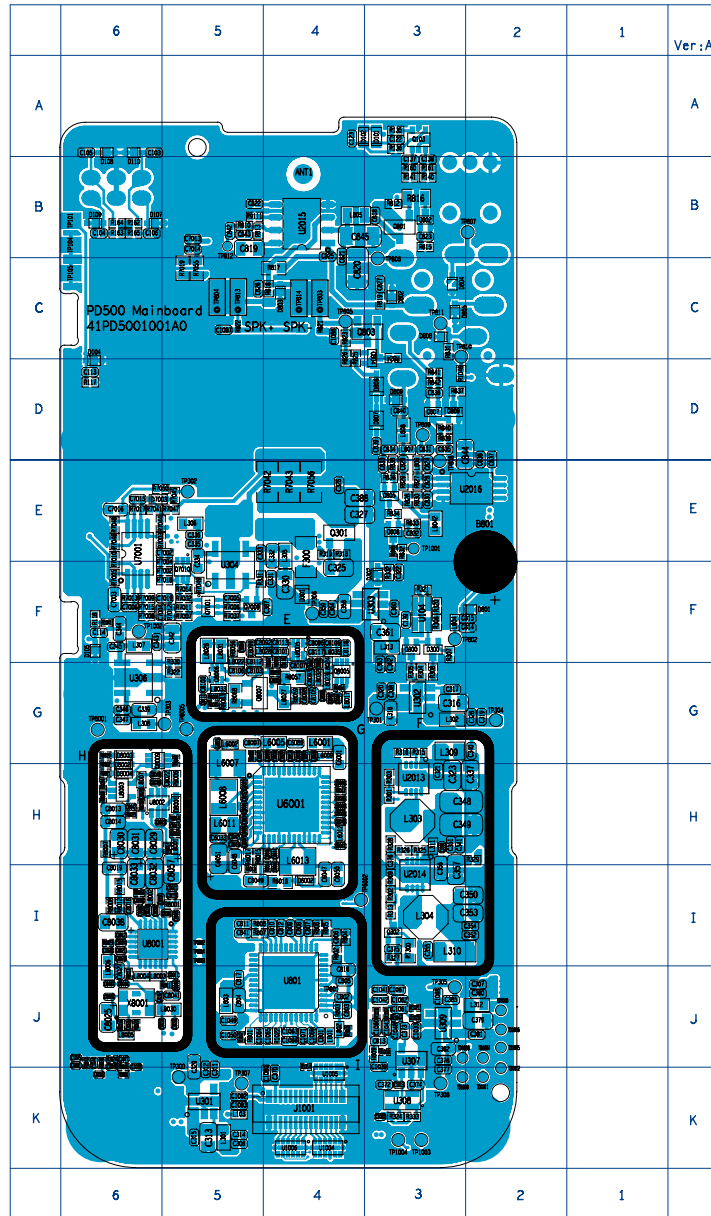
- Freq: Be consistent with the frequency to be tested.
- STD IB 511(.153)
- Lvl: -116.0 dBm

Step 4 Click the "Start" button.

Step 5 The average error rate is less than or equal to 5%.

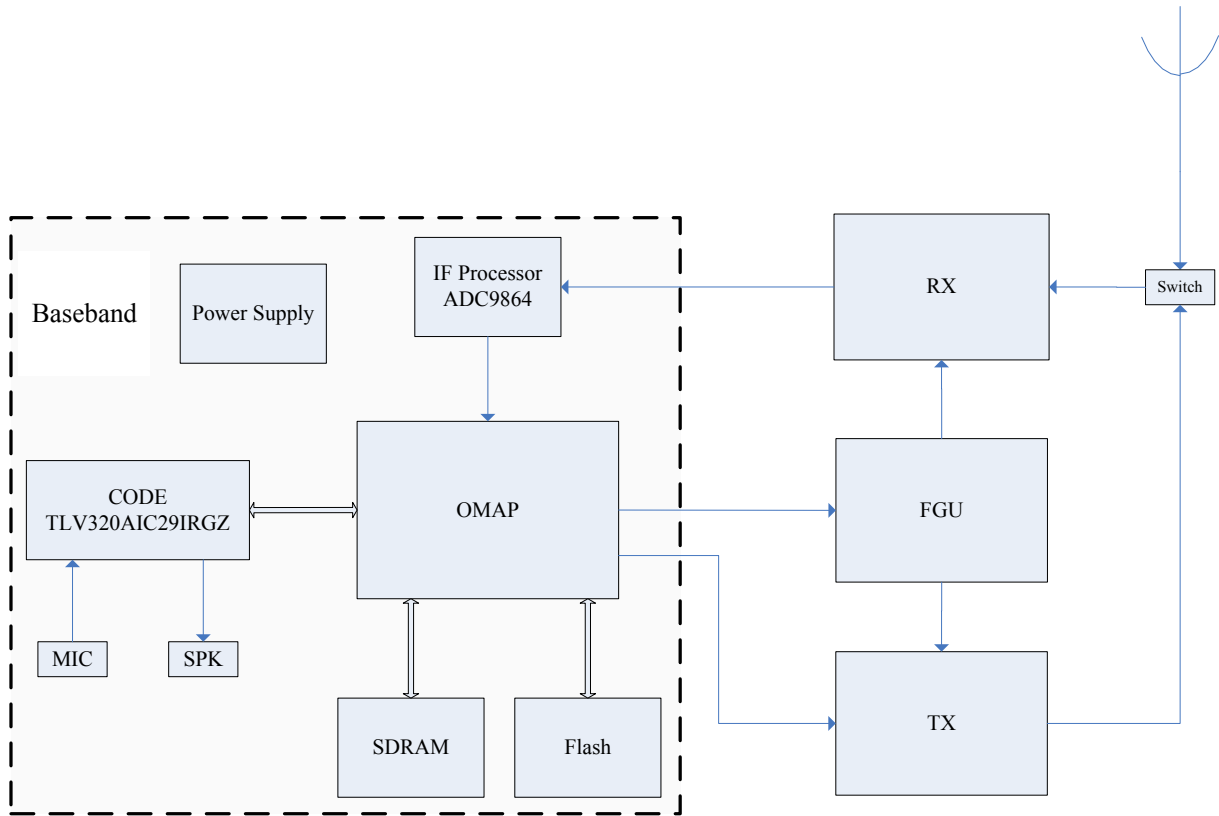
9. PCB

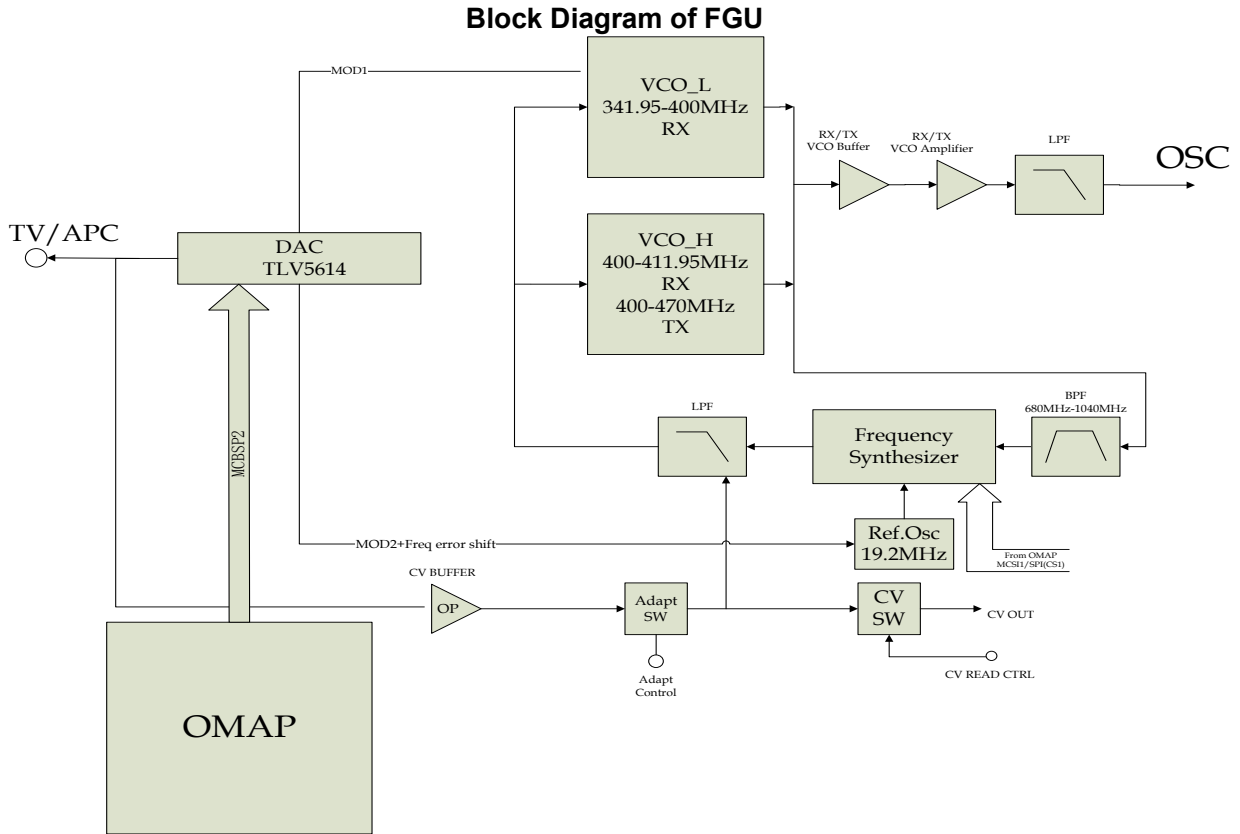




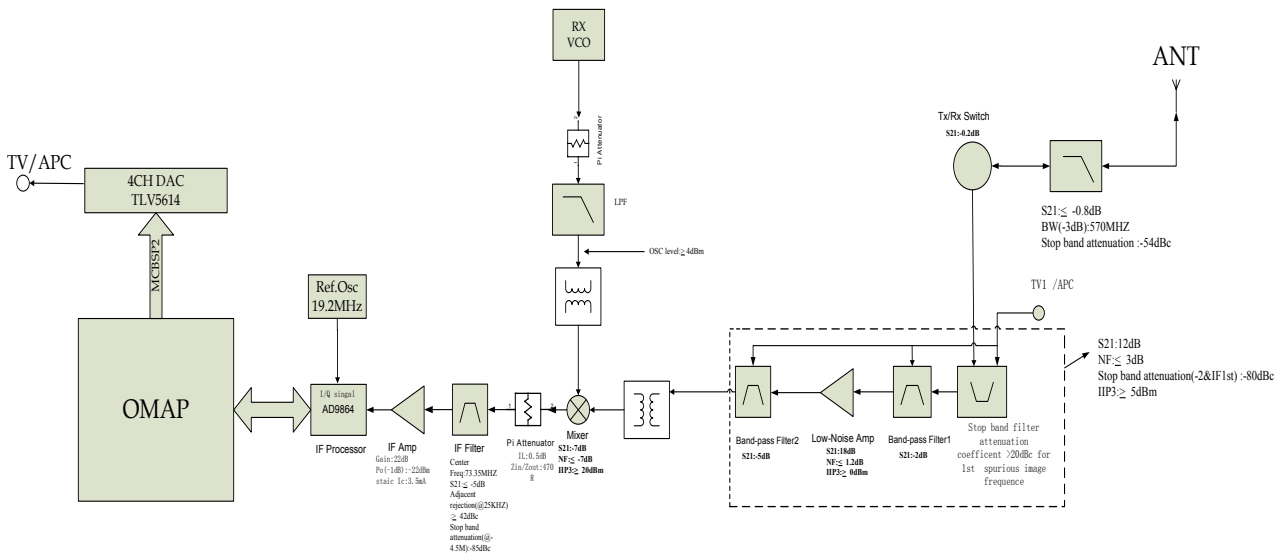
10. Block Diagram

Radio General Diagram

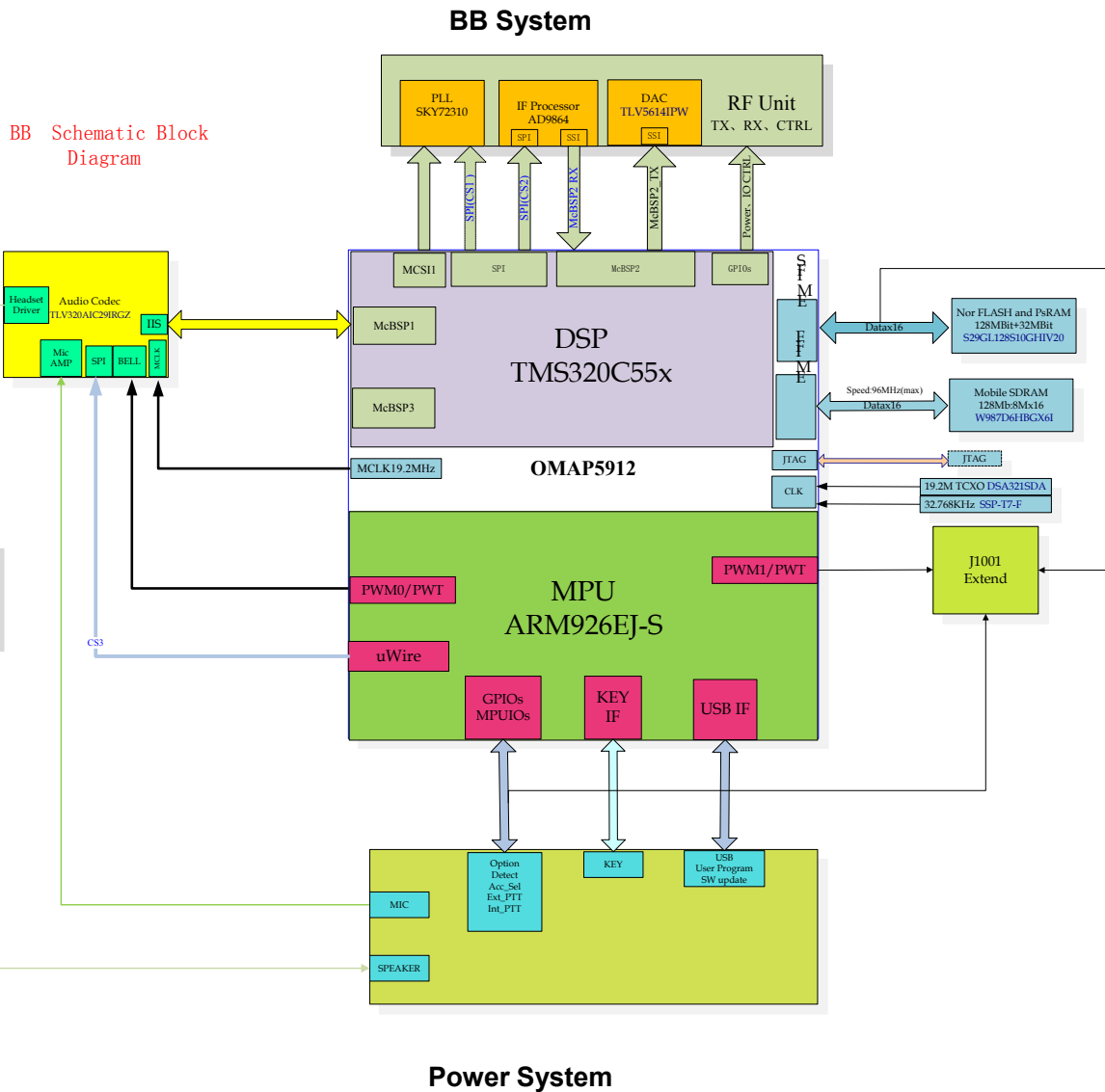
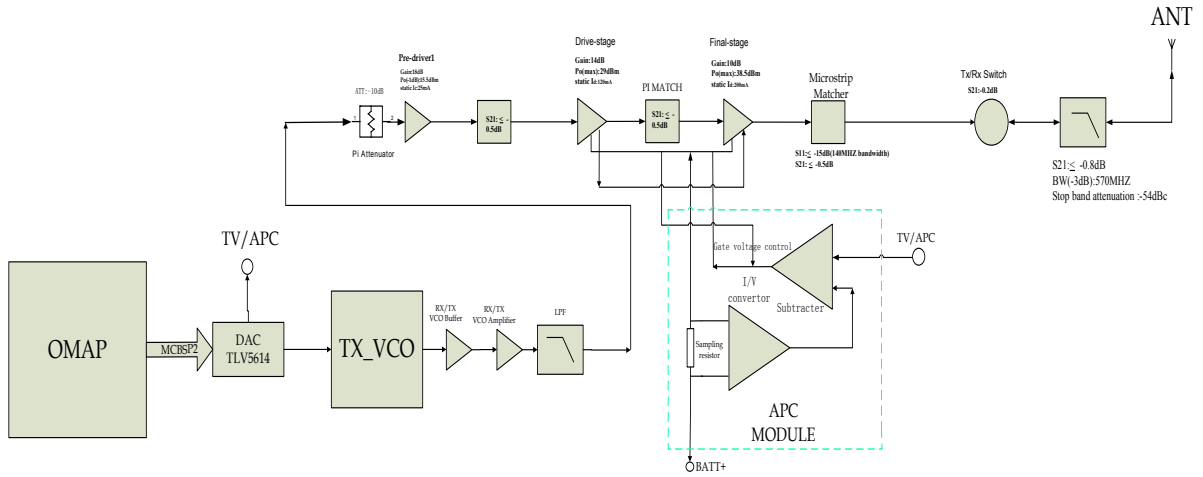




Block Diagram of RX Circuit

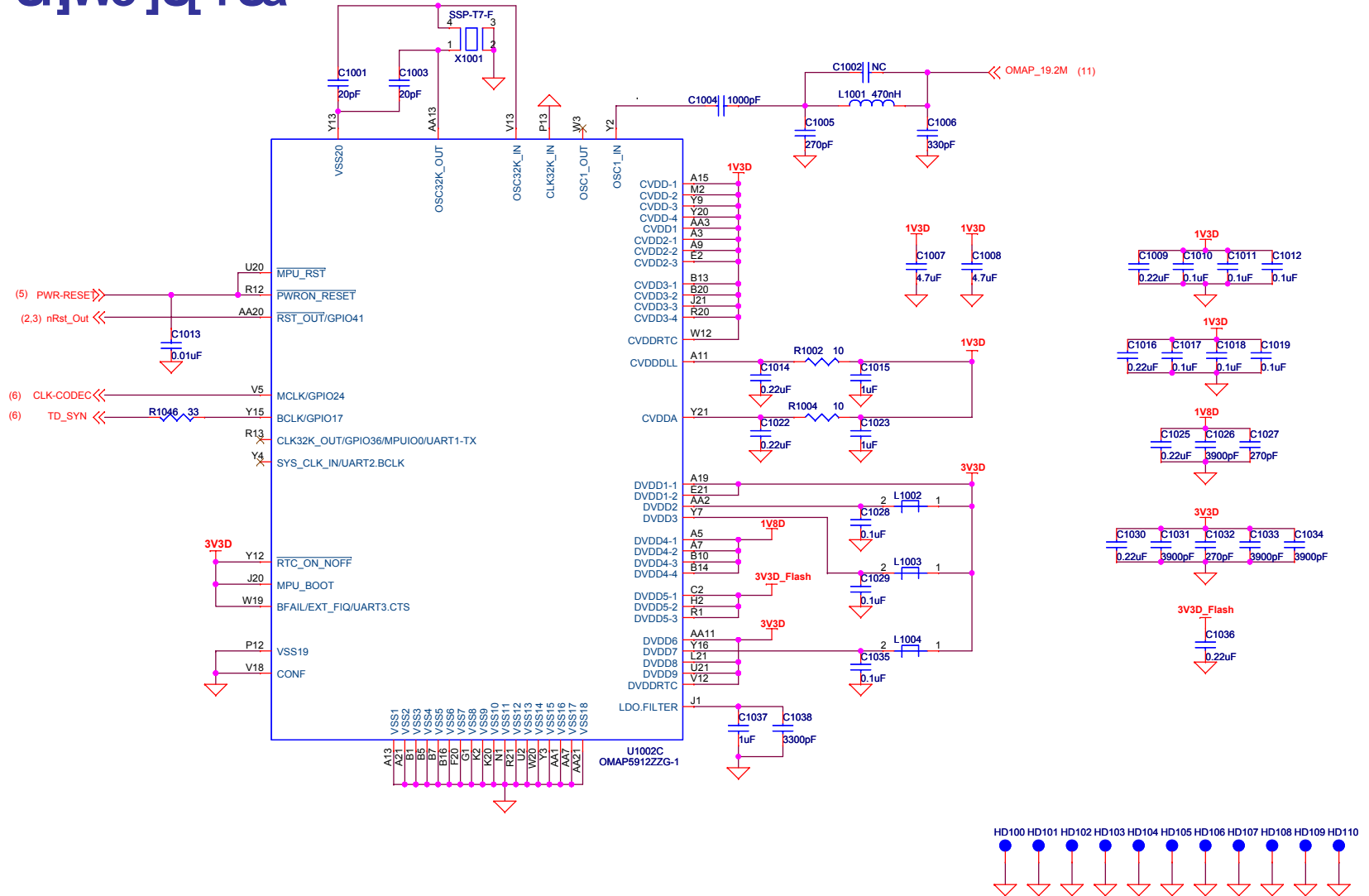


Block Diagram of TX Circuit

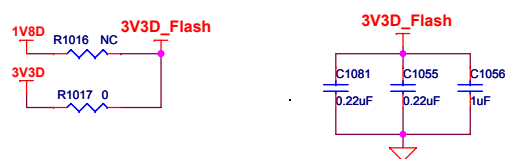
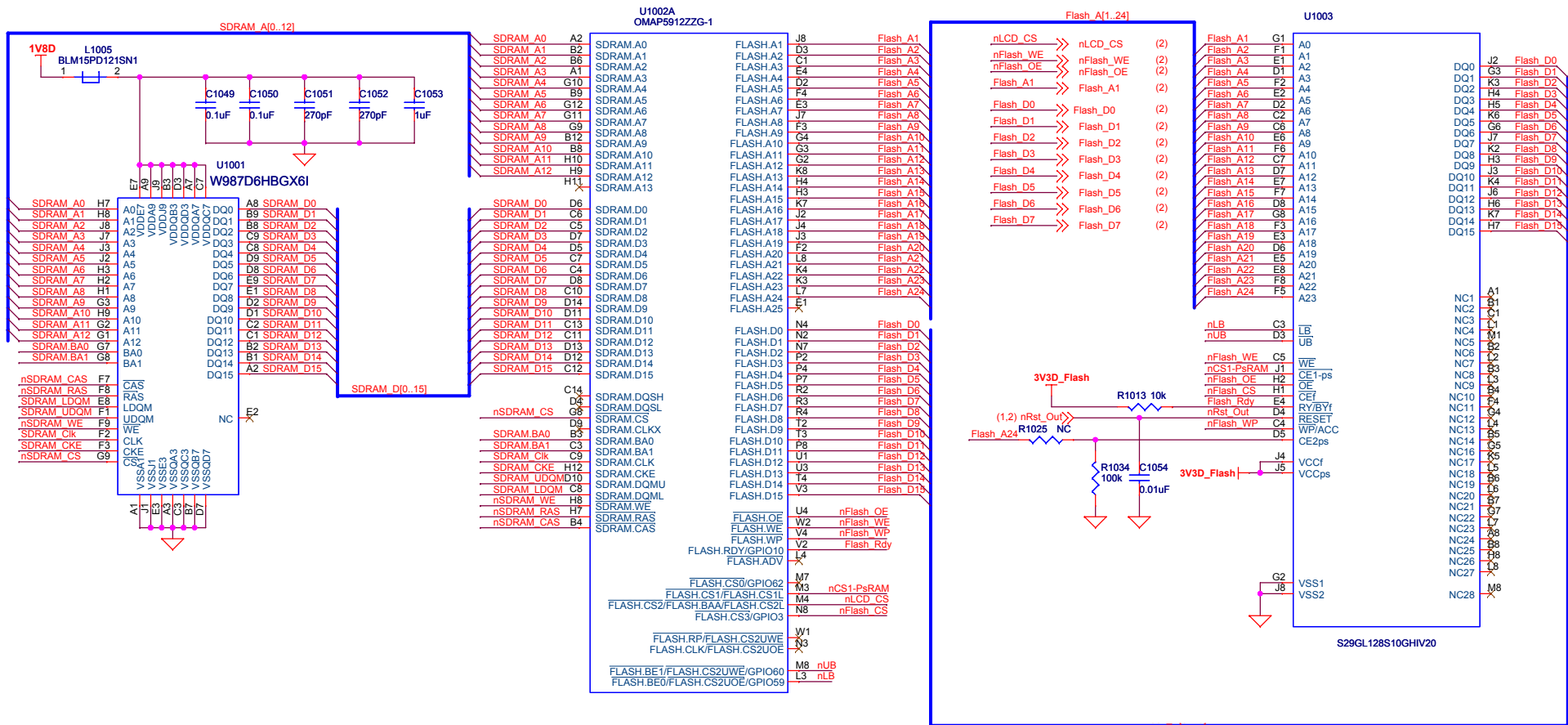


11.GW Ya UjW8 Ju fUa

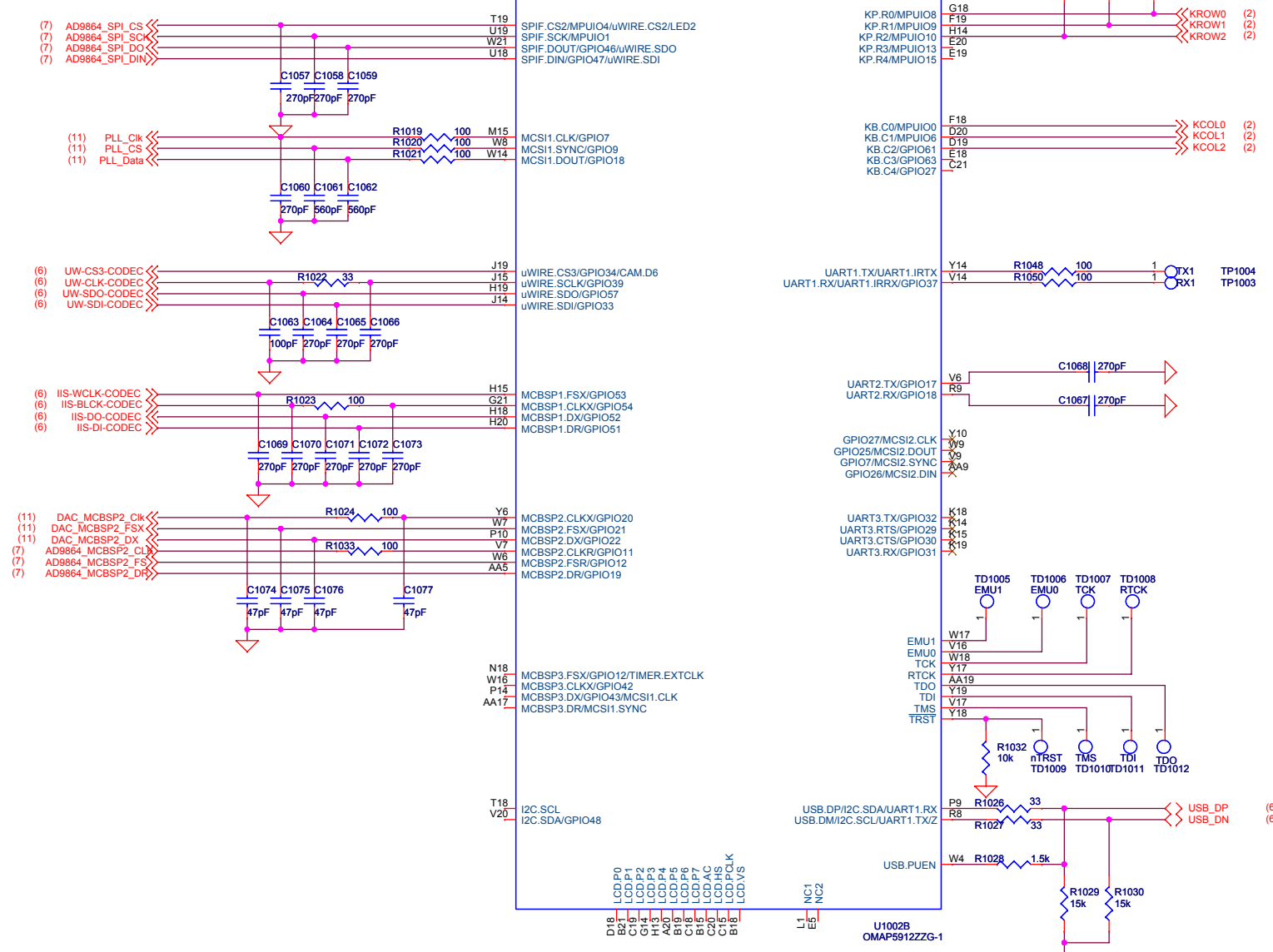
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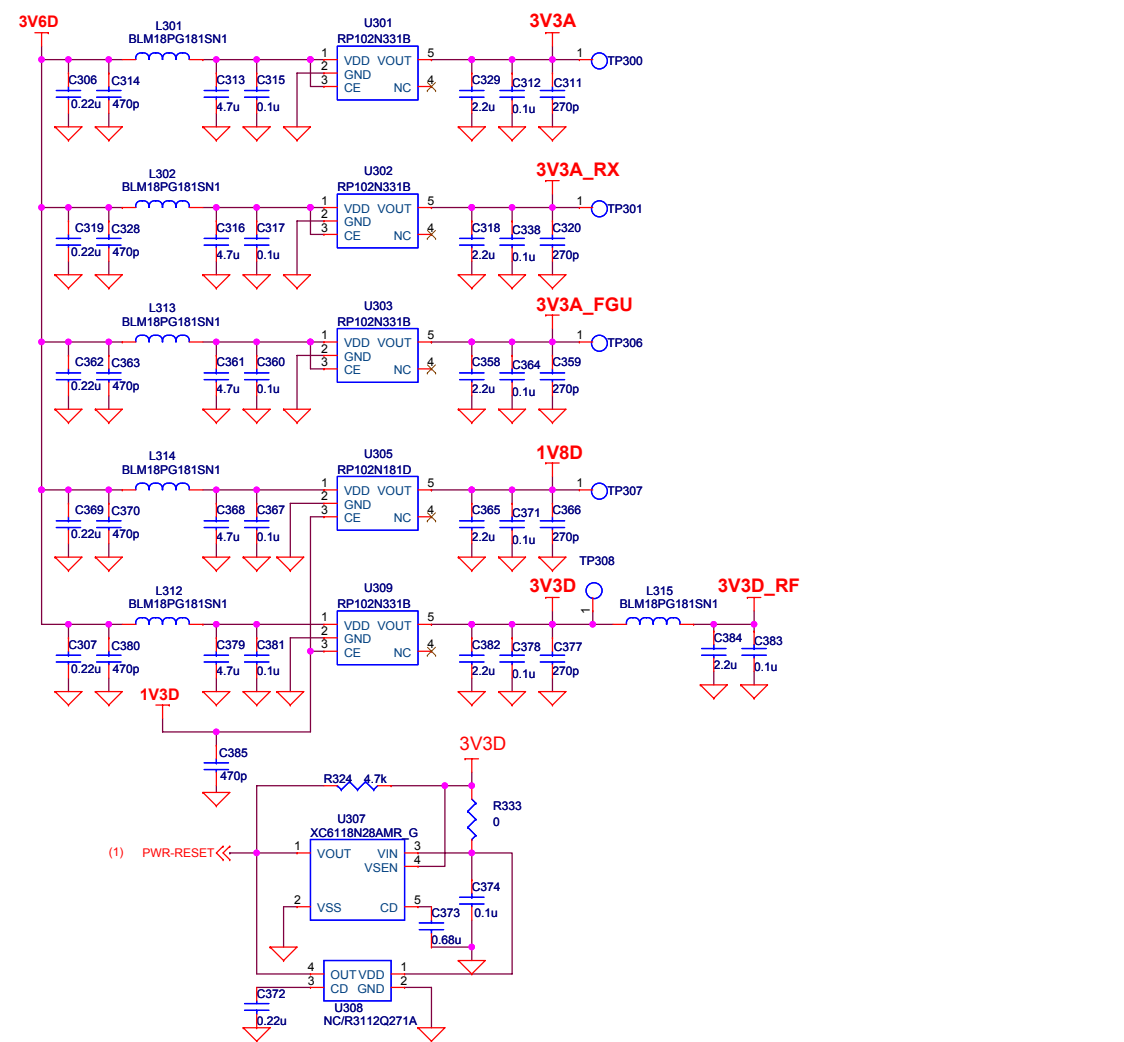
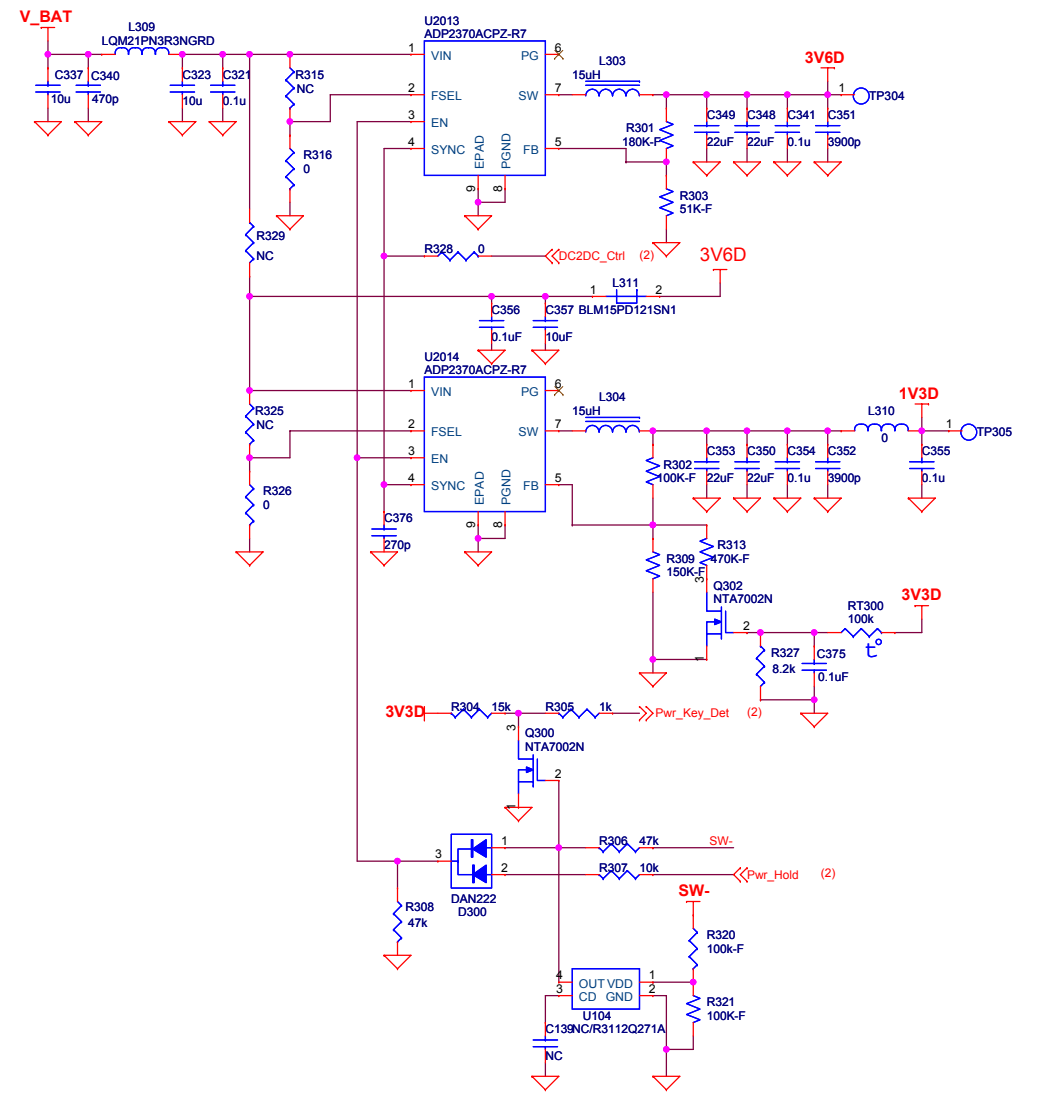
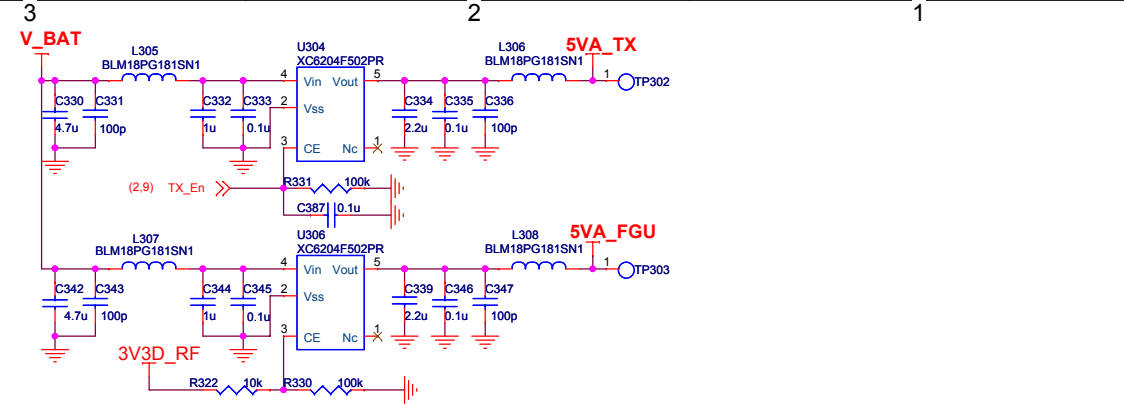
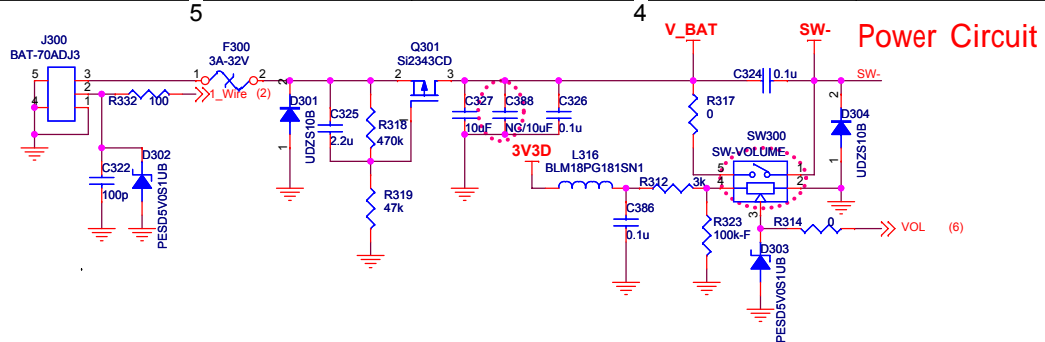


OMAP-Memory

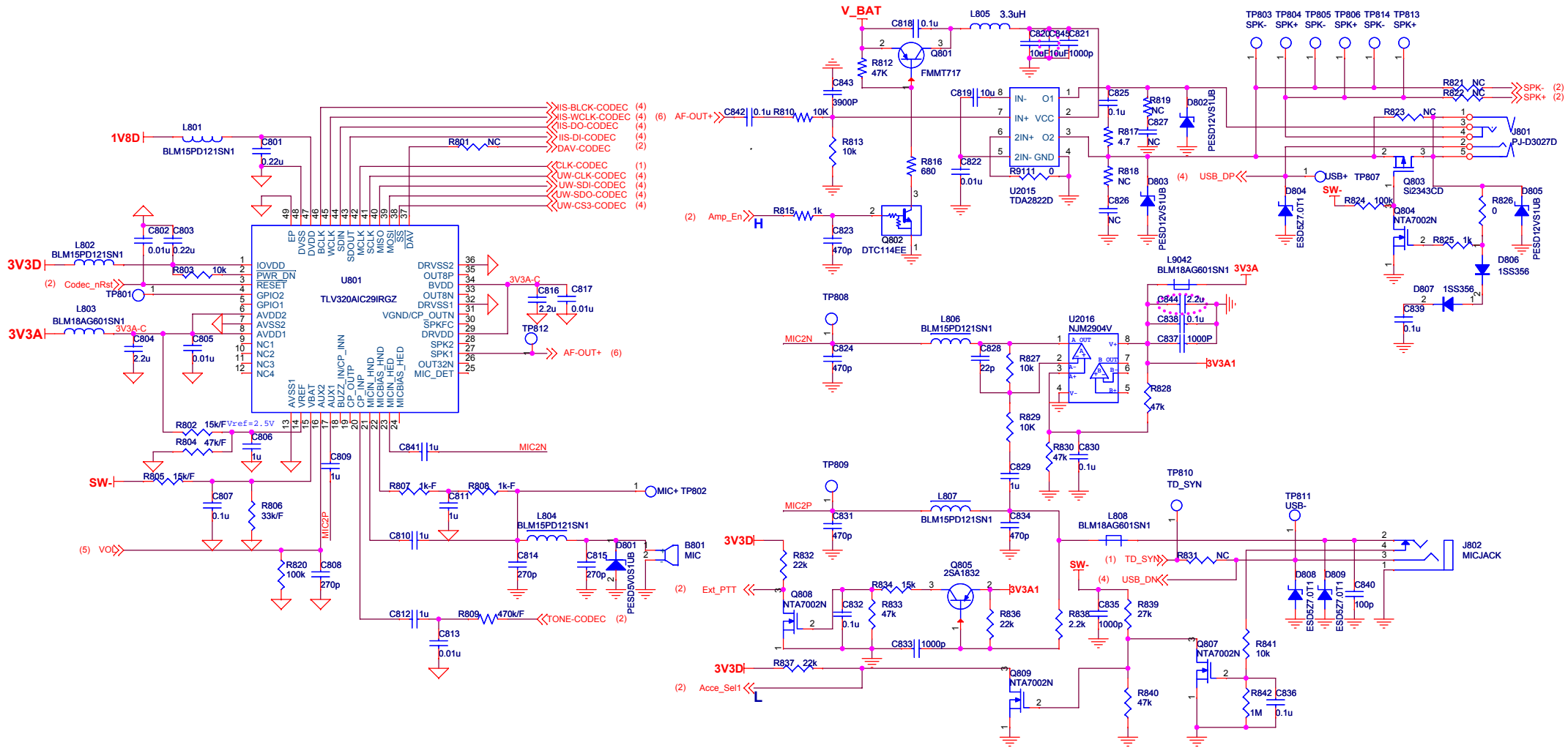


OMAP-SI

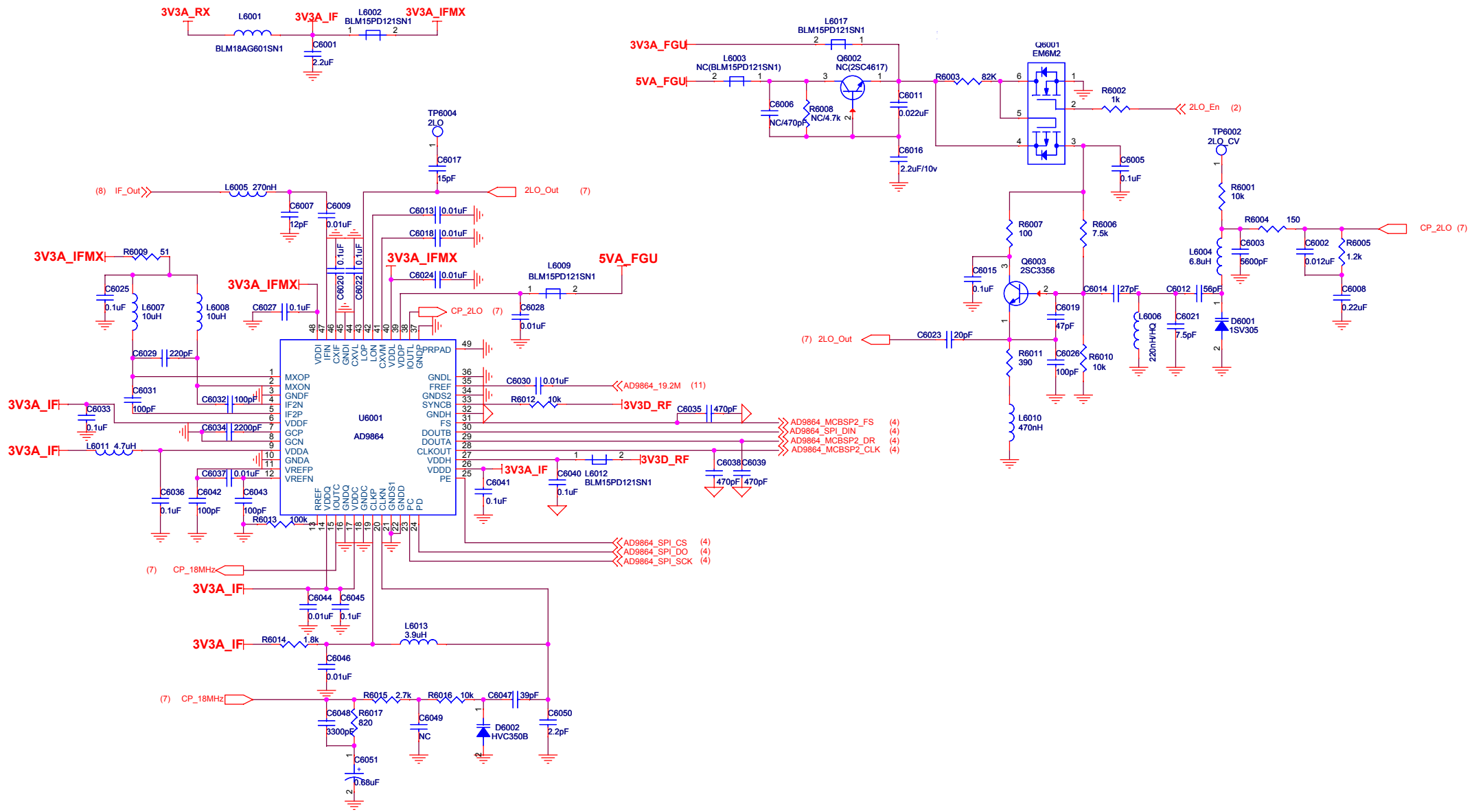




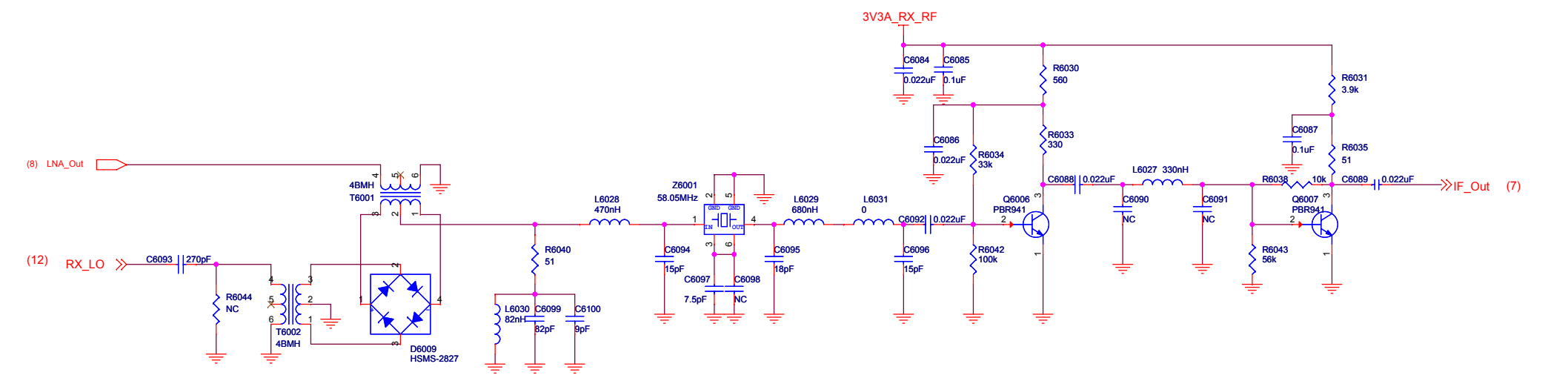
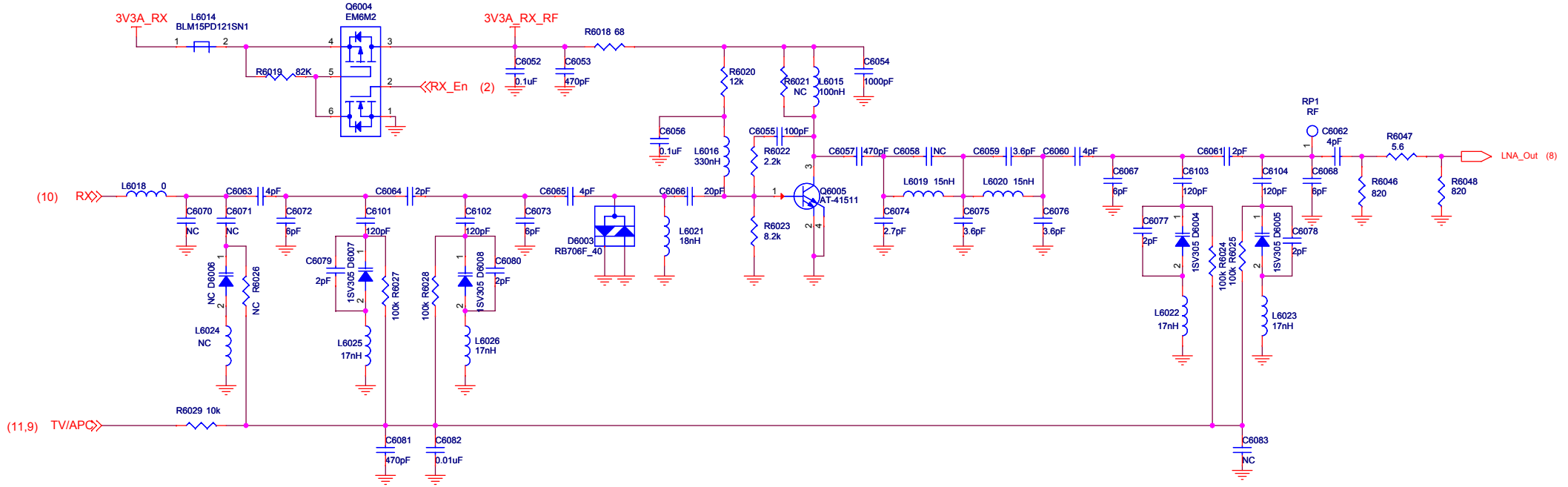
Audio Processing Circuit



AD9864

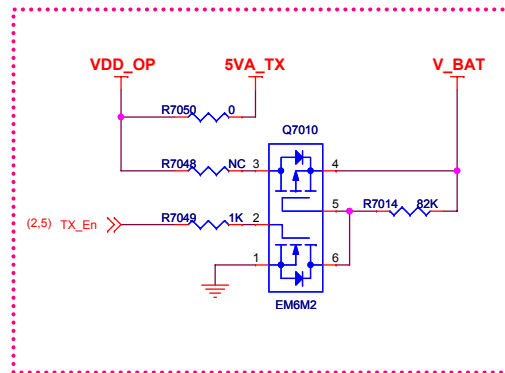
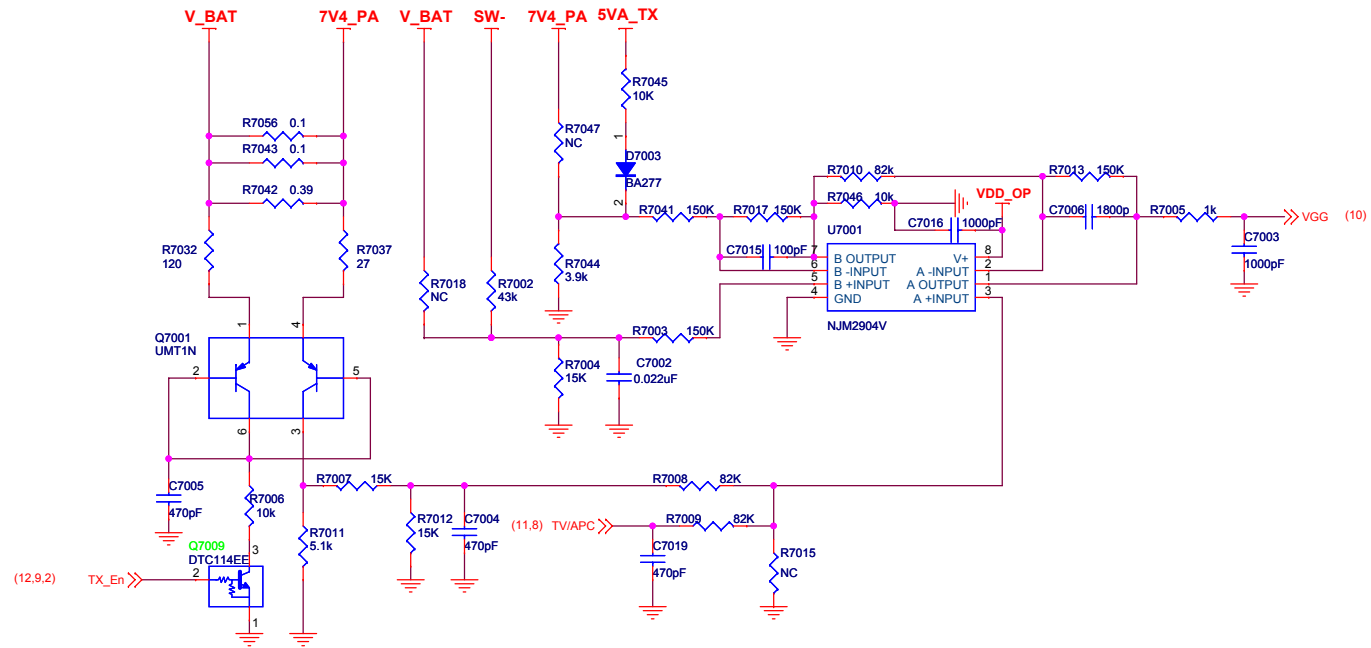


RX-FRONT-END



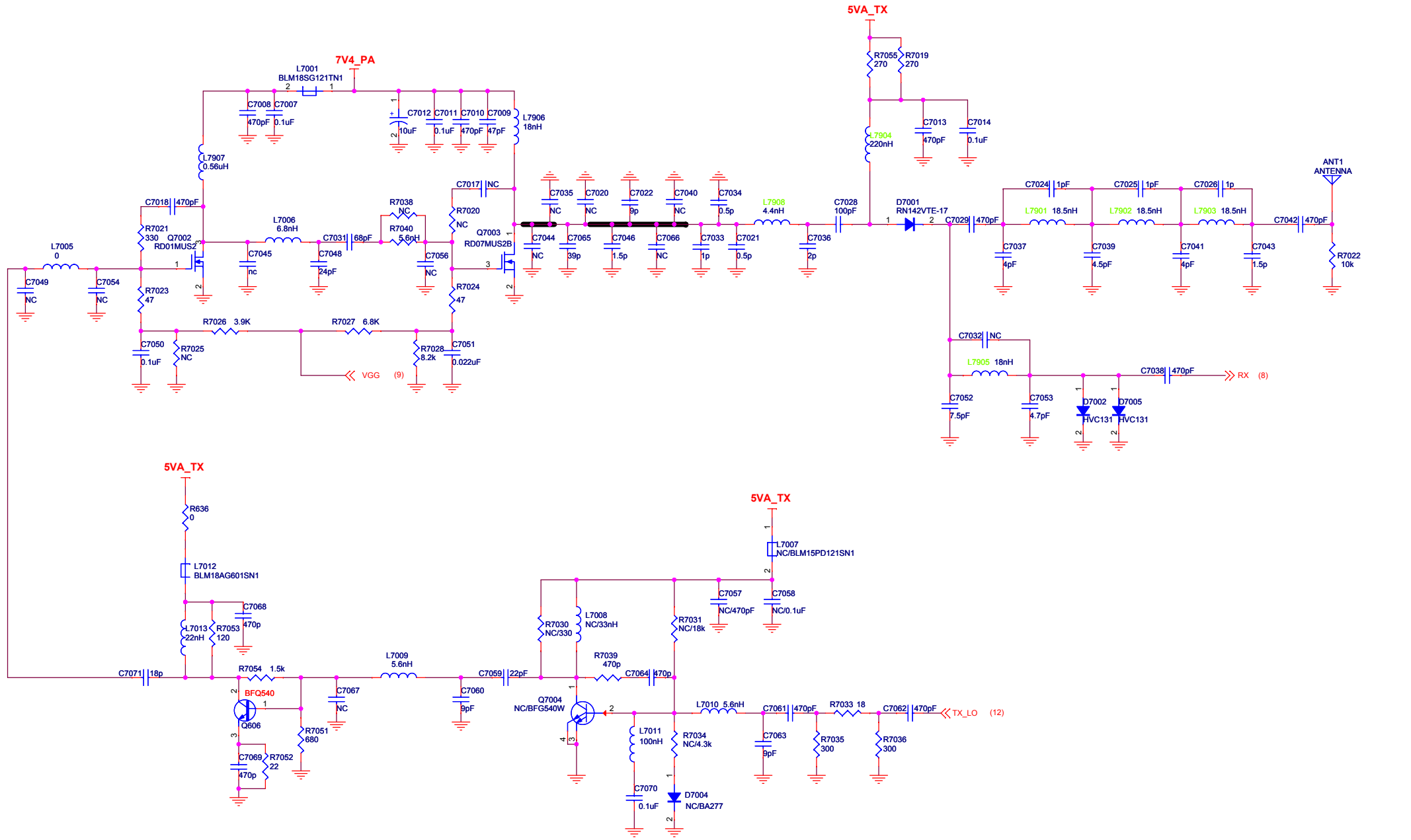
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TX-CTRL



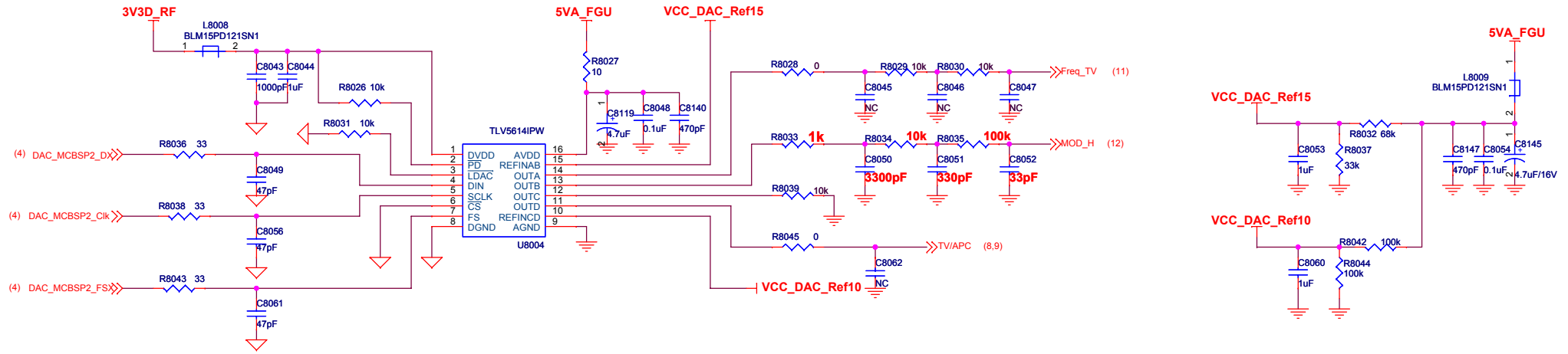
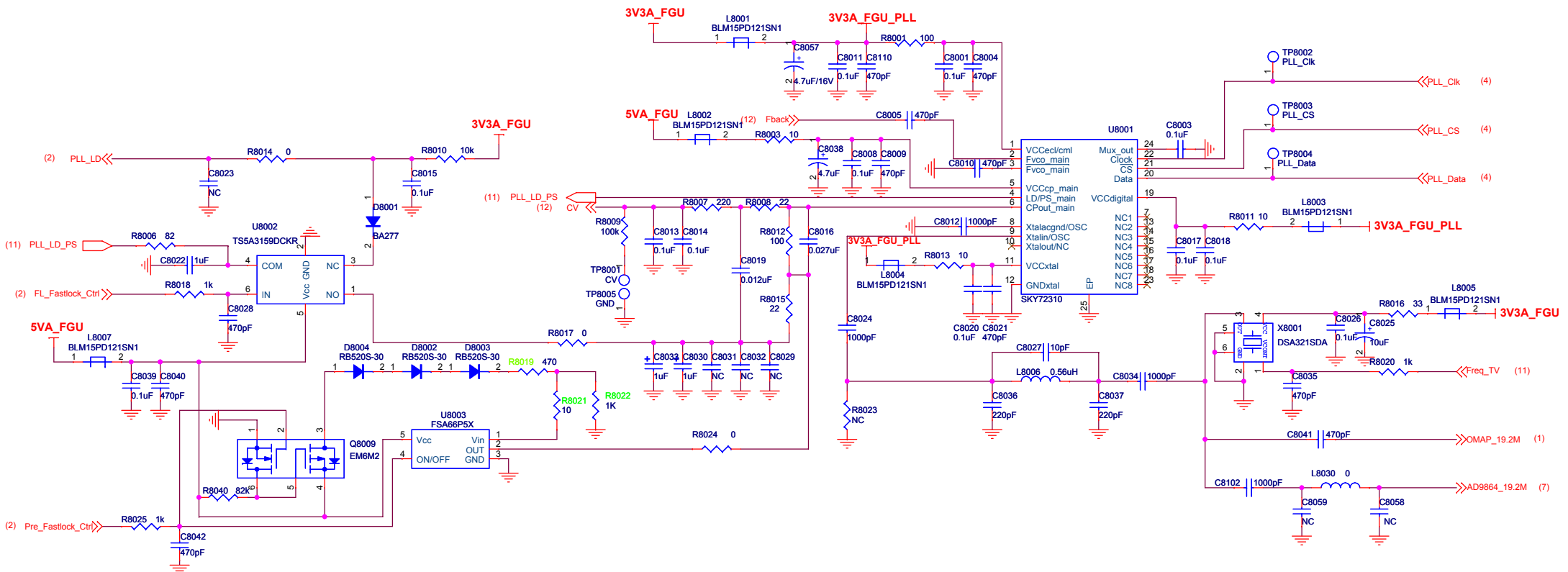
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TX-PA-LINEUP

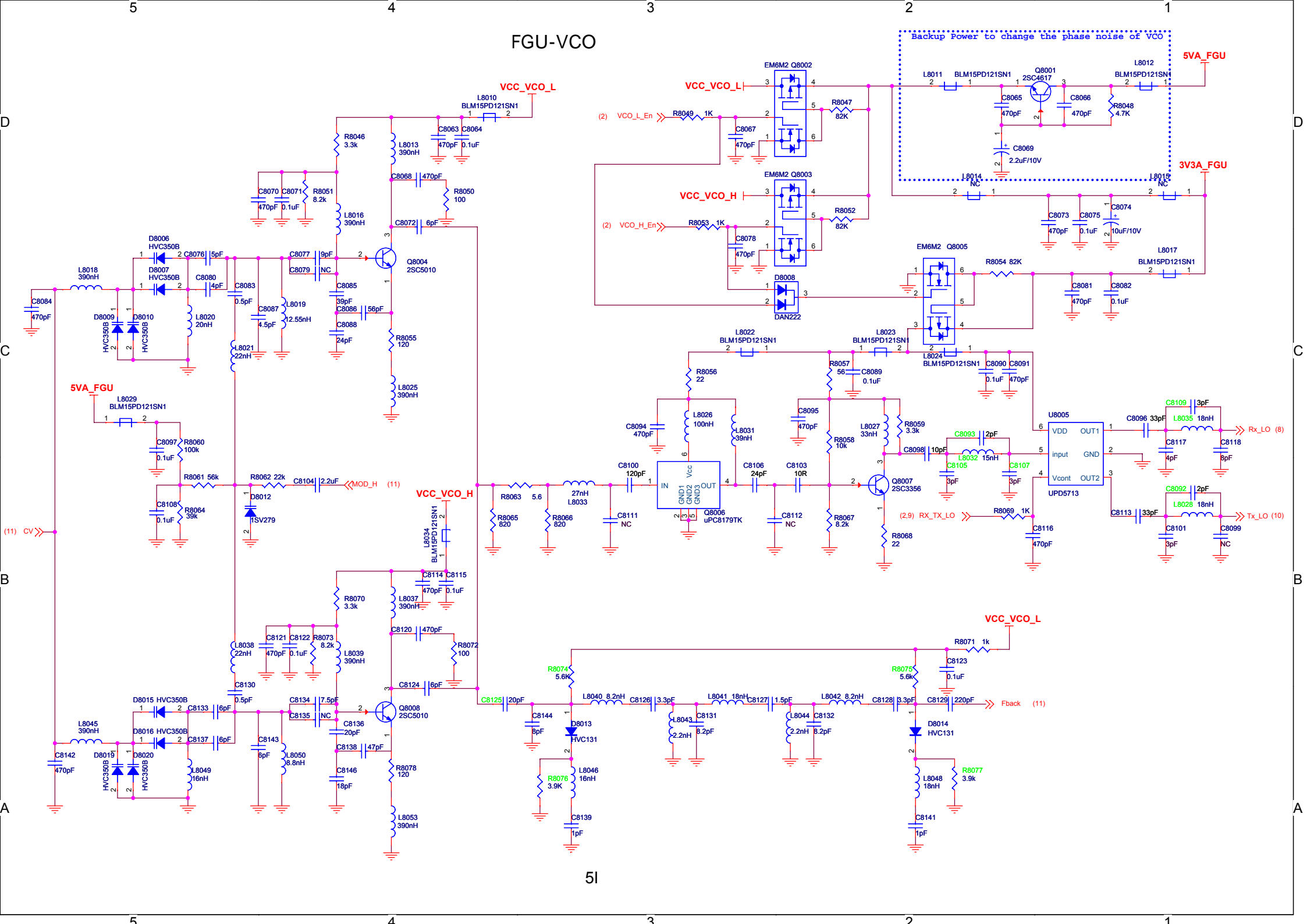


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FGU-PLL/DAC



FGU-VCO



12. Part List

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
1	A	/	6203391000000	Shielding mask	514	D6009	T1E	3301250300000	Schottky barrier diode
2	B	/	6203391000000	Shielding mask	515	D7001	T4C	3305180300000	Variable resistor diode
3	C	/	6203392000010	Shielding mask	516	D7002	T3C	3399030000010	PIN diode
4	C1001	T1J	3101012000000	20pF	517	D7003	B4E	3303030800020	Switching diode
5	C1003	T1J	3101012000000	20pF	518	D7005	T3C	3399030000010	PIN diode
6	C1004	T1I	3101051020010	1000pF	519	D8001	B4H	3303030800020	Switching diode
7	C1005	T1I	3101052710000	270pF	520	D8002	B4H	3301990000030	Schottky barrier diode
8	C1006	T2I	3101053310030	330pF	521	D8003	B4G	3301990000030	Schottky barrier diode
9	C1007	T1I	3101064750010	4.7uF	522	D8004	B4H	3301990000030	Schottky barrier diode
10	C1008	T3I	3101064750010	4.7uF	523	D8006	T4H	3304010100180	Varactor
11	C1009	T2K	3101012240010	0.22uF	524	D8007	T4H	3304010100220	Varactor
12	C1010	T3I	3101051040060	0.1uF	525	D8008	T3I	3303030100010	Switching diode
13	C1011	T3J	3101051040060	0.1uF	526	D8009	T5H	3304010100180	Varactor
14	C1012	T3J	3101051040060	0.1uF	527	D801	B1F	3399040600000	ESD protection diode
15	C1013	B2K	3101011030050	0.01uF	528	D8010	T4H	3304010100220	Varactor
16	C1014	T3J	3101012240010	0.22uF	529	D8012	T4I	3304010100890	Varactor
17	C1015	T2I	3101051050160	1uF	530	D8013	T3H	3399030000010	PIN diode
18	C1016	T2K	3101012240010	0.22uF	531	D8014	T4I	3399030000010	PIN diode
19	C1017	T2K	3101051040060	0.1uF	532	D8015	T4H	3304010100180	Varactor
20	C1018	T1I	3101051040060	0.1uF	533	D8016	T4H	3304010100220	Varactor
21	C1019	T2I	3101051040060	0.1uF	534	D8017	T3H	3399030000010	PIN diode
22	C1022	T1J	3101012240010	0.22uF	535	D8019	T5H	3304010100180	Varactor
23	C1023	T1J	3101051050160	1uF	536	D802	B2C	3399040600020	ESD protection diode
24	C1024	T3J	3101052710000	270pF	537	D8020	T5H	3304010100220	Varactor
25	C1025	T3J	3101012240010	0.22uF	538	D803	B3C	3399040600020	ESD protection diode
26	C1026	T3J	3101053920000	3900uF	539	D804	B1C	3310249900000	ESD protection diode
27	C1027	T3J	3101052710000	270pF	540	D805	B1C	3399040600020	ESD protection diode
28	C1028	T1I	3101051040060	0.1uF	541	D806	B2D	3303030800040	Switching diode
29	C1029	T1J	3101051040060	0.1uF	542	D807	B2D	3303030800040	Switching diode
30	C103	B4A	3101054710010	470pF	543	D808	B1C	3310249900000	ESD protection diode
31	C1030	B2K	3101012240010	0.22uF	544	D809	B2D	3310249900000	ESD protection diode
32	C1031	T2K	3101053920000	3900uF	545	E	/	6203391000000	Shielding mask
33	C1032	T2K	3101052710000	270pF	546	F	/	6203394000000	Shielding mask
34	C1033	B1J	3101053920000	3900uF	547	F300	B3E	4099000000050	Fuse
35	C1034	T3J	3101053920000	3900uF	548	G	/	6203395000000	Shielding mask
36	C1035	T1J	3101051040060	0.1uF	549	H	/	6203396000000	Shielding mask
37	C1036	T2I	3101012240010	0.22uF	550	I	/	6203397000000	Shielding mask
38	C1037	T2I	3101051050160	1uF	551	J300	T3F	5205003100020	Battery connector
39	C1038	T2I	3101013320000	3300pF	552	L1001	T2I	3210406471000	470nH
40	C1039	B2K	3101053920000	3900uF	553	L1002	T1I	3221505121010	Ferrite bead
41	C104	B5B	3101054710010	470pF	554	L1003	T1I	3221505121010	Ferrite bead
42	C1040	T3K	3101052710000	270pF	555	L1004	T1J	3221505121010	Ferrite bead
43	C1041	B2J	3101052710000	270pF	556	L1005	T3J	3221505121010	Ferrite bead
44	C1042	B2J	3101052710000	270pF	557	L103	B3K	3221505121010	Ferrite bead
45	C1043	B2J	3101052710000	270pF	558	L301	B3K	3221506181000	Ferrite bead

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
46	C1044	T2K	3101052710000	270pF	559	L302	B1G	3221506181000	Ferrite bead
47	C1045	T2K	3101052710000	270pF	560	L303	B2H	3217099153000	15uH
48	C1046	T2K	3101053310030	330pF	561	L304	B1I	3217099153000	15uH
49	C1047	T1K	3101052710000	270pF	562	L305	B3E	3221506181000	Ferrite bead
50	C1048	B2J	3101052710000	270pF	563	L306	B4E	3221506181000	Ferrite bead
51	C1049	B3J	3101051040060	0.1uF	564	L307	B4F	3221506181000	Ferrite bead
52	C105	B5A	3101054710010	470pF	565	L308	B4G	3221506181000	Ferrite bead
53	C1050	B3J	3101051040060	0.1uF	566	L309	B1G	3210107332000	3.3uH
54	C1051	T3J	3101052710000	270pF	567	L310	B1I	3001080000000	0 Ω
55	C1052	T3J	3101052710000	270pF	568	L311	B1H	3221505121010	Ferrite bead
56	C1053	T3J	3101051050160	1uF	569	L312	B1J	3221506181000	Ferrite bead
57	C1054	T1J	3101011030050	0.01uF	570	L313	B2F	3221506181000	Ferrite bead
58	C1055	T2I	3101012240010	0.22uF	571	L314	T2K	3221506181000	Ferrite bead
59	C1056	T2I	3101051050160	1uF	572	L315	T4K	3221506181000	Ferrite bead
60	C1057	T1K	3101052710000	270pF	573	L316	T2B	3221506181000	Ferrite bead
61	C1058	T1K	3101052710000	270pF	574	L6001	B2G	3221506601000	Ferrite bead
62	C1059	T2K	3101052710000	270pF	575	L6002	B3G	3221505121010	Ferrite bead
63	C106	B4B	3101054710010	470pF	576	L6003	T3I	3221505121010	Ferrite bead
64	C1060	B2J	3101052710000	270pF	577	L6004	T3H	3213306682000	6.8uH
65	C1061	B2J	3101055610040	560pF	578	L6005	B3G	3210406271000	270nH
66	C1062	B2J	3101055610040	560pF	579	L6006	T3H	3297107391000	390nH
67	C1063	B3J	3101051010030	100pF	580	L6007	B3H	3215099103000	10uH
68	C1064	B3J	3101052710000	270pF	581	L6008	B3H	3215099103000	10uH
69	C1065	B3J	3101052710000	270pF	582	L6009	B2G	3221505121010	Ferrite bead
70	C1066	B3J	3101052710000	270pF	583	L6010	T2G	3210406471000	470nH
71	C1067	B2J	3101052710000	270pF	584	L6011	B3H	3210407472000	4.7uH
72	C1068	B1J	3101052710000	270pF	585	L6012	B2H	3221505121010	Ferrite bead
73	C1069	B3J	3101052710000	270pF	586	L6013	B3H	3217107392000	3.9uH
74	C1070	T2K	3101052710000	270pF	587	L6014	T3G	3221505121010	Ferrite bead
75	C1071	B3J	3101052710000	270pF	588	L6015	T2D	3217106181010	180nH
76	C1072	T2K	3101052710000	270pF	589	L6016	T3D	3210306101000	100nH
77	C1073	T2K	3101052710000	270pF	590	L6018	T3C	3001060000000	0 Ω
78	C1074	B5J	3101014700000	47pF	591	L6019	T2E	3210106121000	120nH
79	C1075	B5J	3101014700000	47pF	592	L6021	T2D	3210306680000	68nH
80	C1076	B4K	3101014700000	47pF	593	L6022	T2D	3237199270000	27nH
81	C1077	B4J	3101014700000	47pF	594	L6023	T1D	3237199270000	27nH
82	C1078	T1K	3101052710000	270pF	595	L6024	T3C	3210306560000	56nH
83	C1079	T1K	3101052710000	270pF	596	L6025	T2C	3237199270000	27nH
84	C1080	B3K	3101051040060	0.1uF	597	L6026	T3D	3237199270000	27nH
85	C1081	B1H	3101012240010	0.22uF	598	L6027	T2G	3213306102000	1uH
86	C1082	B3K	3101051040060	0.1uF	599	L6028	T1F	3210306561010	560nH
87	C1083	B3K	3101051050160	1uF	600	L6029	T1H	3213306102000	1uH
88	C1084	T2K	3101052710000	270pF	601	L6030	T1E	3217106151000	150nH
89	C1085	T2K	3101052710000	270pF	602	L6031	T1H	3001060000000	0 Ω
90	C1086	T3K	3101052710000	270pF	603	L6032	T1E	3001060000000	0 Ω
91	C1087	B3C	3101051040060	0.1uF	604	L7001	T3E	3221506121000	Ferrite bead
92	C1088	B2C	3101051040060	0.1uF	605	L7005	T4E	3001060000000	0 Ω
93	C113	B5D	3101054710010	470pF	606	L7006	T4E	3210306569000	5.6nH
94	C114	B5F	3101054710010	470pF	607	L7007	T4F	3221505121010	Ferrite bead
95	C122	B2A	3101051040060	0.1uF	608	L7008	T4F	3210105680000	68nH
96	C123	B2A	3101051040060	0.1uF	609	L7009	T4F	3212106689000	6.8nH
97	C137	B2B	3101054710010	470pF	610	L7010	T4G	3212106100000	10nH
98	C138	B1B	3101054710010	470pF	611	L7012	T4F	3221506601000	Ferrite bead
99	C306	B3K	3101052240010	0.22uF	612	L7013	T4F	3210106680000	68nH
100	C307	B1J	3101052240010	0.22uF	613	L7901	T3B	3233099400020	7TR
101	C311	B3K	3101052710000	270pF	614	L7902	T3B	3233099400020	7TR
102	C312	B4K	3101051040060	0.1uF	615	L7903	T2B	3233099400020	7TR
103	C313	B4K	3101074750000	4.7uF	616	L7904	T4C	3213212561000	0.56uH
104	C314	B3K	3101054710010	470pF	617	L7905	T3C	3210306680000	68nH

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
105	C315	B4K	3101051040060	0.1uF	618	L7906	T4D	3233099470000	8TR
106	C316	B1G	3101074750000	4.7uF	619	L7907	T3E	3217112102020	1uH
107	C317	B1G	3101051040060	0.1uF	620	L7909	T4D	3231351630000	3TR
108	C318	B2G	3101062250000	2.2uF	621	L7910	T4C	3233099185900	4TR
109	C319	B1G	3101052240010	0.22uF	622	L7911	T4C	3231351640000	4TL
110	C320	B2G	3101052710000	270pF	623	L8001	B4H	3221505121010	Ferrite bead
111	C321	B1H	3101051040060	0.1uF	624	L8002	B4I	3221505121010	Ferrite bead
112	C322	B2F	3101051010030	100pF	625	L8003	B4J	3221505121010	Ferrite bead
113	C323	B1H	3101071060280	10uF	626	L8004	B4J	3221505121010	Ferrite bead
114	C324	T2B	3101051040060	0.1uF	627	L8005	B4J	3221505121010	Ferrite bead
115	C325	B2F	3101072250100	2.2uF	628	L8006	B5J	3213306561000	0.56uH
116	C326	B2E	3101051040060	0.1uF	629	L8007	B4H	3221505121010	Ferrite bead
117	C327	B2E	3101071060280	10uF	630	L8008	T4K	3221505121010	Ferrite bead
118	C328	B1G	3101054710010	470pF	631	L8009	T4J	3221505121010	Ferrite bead
119	C329	B4K	3101062250000	2.2uF	632	L801	B2J	3221505121010	Ferrite bead
120	C330	B3F	3101074750000	4.7uF	633	L8010	T4I	3221505121010	Ferrite bead
121	C331	B3F	3101051010030	100pF	634	L8011	T4I	3221505121010	Ferrite bead
122	C332	B3E	3101061050020	1uF	635	L8012	T4I	3221505121010	Ferrite bead
123	C333	B3E	3101051040060	0.1uF	636	L8013	T4I	3217106781000	780nH
124	C334	B4F	3101062250000	2.2uF	637	L8016	T4I	3217106781000	780nH
125	C335	B4E	3101051040060	0.1uF	638	L8017	B2G	3221505121010	Ferrite bead
126	C336	B4E	3101051010030	100pF	639	L8018	T5H	3217106781000	780nH
127	C337	B1H	3101071060280	10uF	640	L8019	T4I	3217107560010	56nH
128	C338	B2G	3101051040060	0.1uF	641	L802	B2J	3221505121010	Ferrite bead
129	C339	B4G	3101062250000	2.2uF	642	L8020	T5I	3217107680000	68nH
130	C340	B1G	3101054710010	470pF	643	L8022	B3G	3221505121010	Ferrite bead
131	C341	B1H	3101051040060	0.1uF	644	L8023	B2G	3221505121010	Ferrite bead
132	C342	B4F	3101074750000	4.7uF	645	L8024	B2G	3221505121010	Ferrite bead
133	C343	B4F	3101051010030	100pF	646	L8025	T4H	3217106781000	780nH
134	C344	B4F	3101061050020	1uF	647	L8026	B4F	3210306101000	100nH
135	C345	B4F	3101051040060	0.1uF	648	L8027	B3G	3210106101000	100nH
136	C346	B4G	3101051040060	0.1uF	649	L8028	B3F	3210305270000	27nH
137	C347	B4G	3101051010030	100pF	650	L8029	T4I	3221505121010	Ferrite bead
138	C348	B1H	3101082260120	22uF	651	L803	B3J	3221506601000	Ferrite bead
139	C349	B1H	3101082260120	22uF	652	L8030	B4J	3213306332000	3.3uF
140	C350	B1I	3101072260000	22uF	653	L8031	B3F	3217106151000	150nH
141	C351	B1H	3101053920000	3900uF	654	L8032	B2G	3210305330000	33nH
142	C352	B1I	3101053920000	3900uF	655	L8033	B3G	3210305270000	27nH
143	C353	B1I	3101072260000	22uF	656	L8034	T4H	3221505121010	Ferrite bead
144	C354	B1I	3101051040060	0.1uF	657	L8035	B2F	3210305330000	33nH
145	C355	B1I	3101051040060	0.1uF	658	L8037	T4H	3217106781000	780nH
146	C356	B1I	3101061040010	0.1uF	659	L8039	T4H	3217106781000	780nH
147	C357	B1I	3101071060280	10uF	660	L804	B1F	3221505121010	Ferrite bead
148	C358	B2F	3101062250000	2.2uF	661	L8040	T3H	3210305560000	56nH
149	C359	B2F	3101052710000	270pF	662	L8041	T3H	3210305560000	56nH
150	C360	B2F	3101051040060	0.1uF	663	L8042	T3H	3210305560000	56nH
151	C361	B2F	3101074750000	4.7uF	664	L8043	T3H	3210305120000	12nH
152	C362	B2G	3101052240010	0.22uF	665	L8045	T5H	3217106781000	780nH
153	C363	B2G	3101054710010	470pF	666	L8046	T3H	3210305390000	39nH
154	C364	B2F	3101051040060	0.1uF	667	L8047	T3G	3212106560000	56nH
155	C365	T3K	3101062250000	2.2uF	668	L8048	T4I	3210305560000	56nH
156	C366	T3K	3101052710000	270pF	669	L8049	T4H	3217107560010	56nH
157	C367	T2K	3101051040060	0.1uF	670	L805	B2B	3210107332000	3.3uH
158	C368	T2K	3101074750000	4.7uF	671	L8050	T4G	3217607330000	33nH
159	C369	T2K	3101052240010	0.22uF	672	L8051	T5H	3217106781000	780nH
160	C370	B3K	3101054710010	470pF	673	L8053	T4G	3217106781000	780nH
161	C371	T3K	3101051040060	0.1uF	674	L806	B1E	3221505121010	Ferrite bead
162	C372	B2K	3101052240010	0.22uF	675	L807	B2D	3221505121010	Ferrite bead
163	C373	B2J	3101056840010	0.68uF	676	L808	B2D	3221506601000	Ferrite bead
164	C374	B1K	3101051040060	0.1uF	677	L9042	B1E	3221506601000	Ferrite bead

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
165	C375	B2I	3101051040060	0.1uF	678	Q103	B1A	3503040000000	Compound MOSFET
166	C376	B2H	3101052710000	270pF	679	Q300	B2F	3599990000610	N-MOSFET
167	C377	B1K	3101052710000	270pF	680	Q301	B2E	3505990000040	P-MOSFET
168	C378	B1J	3101051040060	0.1uF	681	Q302	B2I	3599990000610	N-MOSFET
169	C379	B1J	3101074750000	4.7uF	682	Q6001	T2H	3403999000070	Compound transistor
170	C380	B1J	3101054710010	470pF	683	Q6002	T2H	3403003000060	NPN transistor
171	C381	B1J	3101051040060	0.1uF	684	Q6003	T2G	3408002000000	NPN transistor
172	C382	B1J	3101062250000	2.2uF	685	Q6004	T3G	3403999000070	Compound transistor
173	C383	T4K	3101051040060	0.1uF	686	Q6005	T2D	3418001000010	NPN transistor
174	C384	T4K	3101062250000	2.2uF	687	Q6006	T2G	3404006000000	NPN transistor
175	C385	B1J	3101054710010	470pF	688	Q6007	T2G	3404006000000	NPN transistor
176	C386	T2B	3101051040060	0.1uF	689	Q606	T4F	3420999000060	NPN transistor
177	C387	B3F	3101051040060	0.1uF	690	Q7001	B4F	3403014000020	Compound transistor
178	C6001	B2G	3101062250000	2.2uF	691	Q7002	T4E	3504990000010	Amplifying MOSFET
179	C6002	T3H	3101061230000	0.012uF	692	Q7003	T4D	3504990000070	N-MOSFET
180	C6003	T3I	3101065620010	5600pF	693	Q7009	B3F	3403008000010	Biasing resistor transistor
181	C6005	T2H	3101011040080	0.1uF	694	Q7010	B4F	3403999000070	Compound transistor
182	C6006	T3I	3101014710010	470pF	695	Q8001	T4I	3403003000060	NPN transistor
183	C6007	B3G	3101051200020	12pF	696	Q8002	T3I	3403999000070	Compound transistor
184	C6008	T3H	3101072240000	0.22uF	697	Q8003	T3G	3403999000070	Compound transistor
185	C6009	B3G	3101011030050	0.01uF	698	Q8004	T4I	3408002000080	NPN transistor
186	C6011	T2H	3101012230010	0.022uF	699	Q8005	B2G	3403999000070	Compound transistor
187	C6012	T3H	3101054700010	47pF	700	Q8006	B3G	3609003999000	MMIC amplifier
188	C6013	B3G	3101011030050	0.01uF	701	Q8007	B3G	3408002000000	NPN transistor
189	C6014	T3H	3101063900060	39pF	702	Q8008	T4H	3408002000080	NPN transistor
190	C6015	T2G	3101011040080	0.1uF	703	Q8009	B4G	3403999000070	Compound transistor
191	C6016	T2H	3101062250000	2.2uF	704	Q801	B2B	3499000000180	PNP transistor
192	C6017	T3G	3101011500020	15pF	705	Q802	B1B	3403008000010	Biasing resistor transistor
193	C6018	B3G	3101011030050	0.01uF	706	Q803	B2C	3505990000040	P-MOSFET
194	C6019	T3G	3101064700000	47pF	707	Q804	B2C	3599990000610	N-MOSFET
195	C6020	B3G	3101011040080	0.1uF	708	Q805	B2E	3401001000490	PNP transistor
196	C6021	T3H	3101063690000	3.6pF	709	Q807	B1D	3599990000610	N-MOSFET
197	C6022	B3G	3101011040080	0.1uF	710	Q808	B2E	3599990000610	N-MOSFET
198	C6023	T3G	3101052000020	20pF	711	Q809	B1D	3599990000610	N-MOSFET
199	C6024	B3G	3101011030050	0.01uF	712	Q9002	T4G	3408002000000	NPN transistor
200	C6025	B3G	3101011040080	0.1uF	713	R1002	T3J	3001051000000	10 Ω
201	C6026	T3G	3101061010010	100pF	714	R1004	T1K	3001051000000	10 Ω
202	C6027	B3G	3101011040080	0.1uF	715	R1006	T3K	3001011020060	1K Ω
203	C6028	B3G	3101011030050	0.01uF	716	R1007	B2J	3001011020060	1K Ω
204	C6029	B3H	3101012210010	20pF	717	R1008	T2K	3001011030080	10K Ω
205	C6030	B2H	3101011030050	0.01uF	718	R1009	T1K	3001011020060	1K Ω
206	C6031	B3H	3101011010040	100pF	719	R1012	T1K	3001011030080	10K Ω
207	C6032	B3H	3101011010040	100pF	720	R1013	T2I	3001011030080	10K Ω
208	C6033	B3H	3101051040060	0.1uF	721	R1014	B3K	3001011030080	10K Ω
209	C6034	B3H	3101012220000	2200pF	722	R1015	T2K	3001011030080	10K Ω
210	C6035	B2H	3101014710010	470pF	723	R1017	T2I	3001050000000	0 Ω
211	C6036	B3H	3101011040080	0.1uF	724	R1018	B2J	3001011030080	10K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
212	C6037	B3H	3101011030050	0.01uF	725	R1019	B2J	3001011010080	100 Ω
213	C6038	B2H	3101014710010	470pF	726	R1020	B2J	3001011010080	100 Ω
214	C6039	B2H	3101014710010	470pF	727	R1021	B2J	3001011010080	100 Ω
215	C6040	B2H	3101011040080	0.1uF	728	R1022	B3J	3001053300000	33 Ω
216	C6041	B2H	3101011040080	0.1uF	729	R1023	T2K	3001011010080	100 Ω
217	C6042	B3H	3101011010040	100pF	730	R1024	B5J	3001011010080	100 Ω
218	C6043	B3H	3101011010040	100pF	731	R1026	T1I	3001053300000	33 Ω
219	C6044	B3H	3101011030050	0.01uF	732	R1027	T1I	3001053300000	33 Ω
220	C6045	B3H	3101011040080	0.1uF	733	R1028	T1I	3001051520010	1.5K Ω
221	C6046	B3I	3101011030050	0.01uF	734	R1029	T1I	3001011530010	15K Ω
222	C6047	B2I	3101063900061	40pF	735	R1030	T1I	3001011530010	15K Ω
223	C6048	B3H	3101063320000	3300pF	736	R1031	T2K	3001011020060	1K Ω
224	C6050	B2I	3101065690090	5.6pF	737	R1032	T1J	3001011030080	10K Ω
225	C6051	B3H	3101076840020	0.68uF	738	R1033	T1J	3001011010080	100 Ω
226	C6052	T2G	3101011040080	0.1uF	739	R1034	T2I	3001011040030	100K Ω
227	C6053	T2G	3101011020060	1000pF	740	R1035	T2K	3001011030080	10K Ω
228	C6054	T3D	3101011020060	1000pF	741	R1036	T2K	3001011030080	10K Ω
229	C6055	T2D	3101011010040	100pF	742	R1037	T1I	3001011030080	10K Ω
230	C6056	T3D	3101011040080	0.1uF	743	R1038	T1I	3001014730010	47K Ω
231	C6057	T2D	3101053310030	330pF	744	R1040	B2E	3001013300000	33 Ω
232	C6058	T2E	3101053390010	3.3pF	745	R1041	B5F	3001013300000	33 Ω
233	C6059	T2E	3001050000000	0 Ω	746	R1042	B3J	3001013300000	33 Ω
234	C6060	T2E	3101052000020	20pF	747	R1043	T2K	3001013300000	33 Ω
235	C6061	T2D	3101050600010	6pF	748	R1044	T2K	3001013300000	33 Ω
236	C6062	T1D	3101052000020	20pF	749	R1045	T3K	3001013300000	33 Ω
237	C6063	T2C	3101052000020	20pF	750	R1046	B1D	3001053300000	33 Ω
238	C6064	T2C	3101050600010	6pF	751	R1047	B2J	3001011030080	10K Ω
239	C6065	T2C	3101052000020	20pF	752	R1048	T1J	3001011010080	100 Ω
240	C6066	T2D	3101054700010	47pF	753	R1049	T1I	3001014730010	47K Ω
241	C6067	T2E	3101050500010	5pF	754	R1050	T1J	3001011010080	100 Ω
242	C6068	T1D	3101050600010	6pF	755	R1051	B2J	3001014730010	47K Ω
243	C6070	T3C	3101051500020	15pF	756	R117	B5D	3001054730010	47K Ω
244	C6071	T3C	3101051000020	10pF	757	R118	B5F	3001054730010	47K Ω
245	C6072	T2C	3101050500010	5pF	758	R135	B2A	3001053310000	330 Ω
246	C6073	T3C	3101050600010	6pF	759	R136	B2A	3001058200000	82 Ω
247	C6074	T2D	3101051200020	12pF	760	R140	B1B	3001054720000	4.7K Ω
248	C6075	T2E	3101051500020	15pF	761	R141	B2B	3001054720000	4.7K Ω
249	C6081	T2C	3101011020060	1000pF	762	R160	B2B	3001051040000	100K
250	C6082	T3C	3101011030050	0.01uF	763	R161	B1B	3001051040000	100K
251	C6084	T2G	3101012230010	0.022uF	764	R162	B4B	3001054730010	47K Ω
252	C6085	T2G	3101011040080	0.1uF	765	R163	B4B	3001054730010	47K Ω
253	C6086	T1G	3101012230010	0.022uF	766	R164	B4B	3001054730010	47K Ω
254	C6087	T1G	3101011040080	0.1uF	767	R165	B4B	3001054730010	47K Ω
255	C6088	T2G	3101052230000	0.022uF	768	R301	B2H	3001051840010	180K Ω
256	C6089	B3G	3101052230000	0.022uF	769	R302	B2I	3001051040000	100K
257	C6092	T1H	3101012230010	0.022uF	770	R303	B2H	3001055130000	51K Ω
258	C6093	T2F	3101051020010	1000pF	771	R304	B1G	3001051530010	15K Ω
259	C6094	T1G	3101051800010	18pF	772	R305	B2G	3001051020000	1K Ω
260	C6095	T1G	3101051800010	18pF	773	R306	B1F	3001054730010	47K Ω
261	C6096	T1H	3101051000020	10pF	774	R307	B1F	3001051030050	10K Ω
262	C6097	T1G	3101057590000	7.5pF	775	R308	B1G	3001054730010	47K Ω
263	C6098	T1G	3101057590000	7.5pF	776	R309	B2I	3001051540000	150K Ω
264	C6099	T1E	3101018200010	82pF	777	R312	T1B	3001052720010	2.7K Ω
265	C6101	T2C	3101055600000	56pF	778	R313	B2I	3001054740010	470K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
266	C6102	T3C	3101055600000	56pF	779	R314	T2A	3001050000000	0 Ω
267	C6103	T2D	3101055600000	56pF	780	R316	B2G	3001050000000	0 Ω
268	C6104	T2D	3101055600000	56pF	781	R317	T2B	3001050000000	0 Ω
269	C7002	B4E	3101052230000	0.022uF	782	R318	B2E	3001054740010	470K Ω
270	C7003	B4F	3101061020000	1000pF	783	R319	B2E	3001054730010	47K Ω
271	C7004	B4F	3101054710010	470pF	784	R320	B1F	3001051040000	100K
272	C7005	B3F	3101054710010	470pF	785	R321	B1F	3001051040000	100K
273	C7006	B4F	3101052220010	2200pF	786	R322	B4G	3001051030050	10K Ω
274	C7007	T3E	3101051040060	0.1uF	787	R323	T2B	3001051040000	100K
275	C7008	T3E	3101051020010	1000pF	788	R324	B2K	3001054720000	4.7K Ω
276	C7009	T3D	3101054700010	47pF	789	R326	B2H	3001050000000	0 Ω
277	C7010	T3D	3101051020010	1000pF	790	R327	B2I	3001058220010	8.2K Ω
278	C7011	T3D	3101051040060	0.1uF	791	R328	B2H	3001050000000	0 Ω
279	C7012	T3D	3101081060010	10uF	792	R330	B4G	3001051040000	100K
280	C7013	T4C	3101051020010	1000pF	793	R331	B3F	3001051040000	100K
281	C7014	T4C	3101051040060	0.1uF	794	R332	B2F	3001051010040	100 Ω
282	C7015	B4E	3101051010030	100pF	795	R333	B2K	3001050000000	0 Ω
283	C7016	B4E	3101061020000	1000pF	796	R6001	T3H	3001011030080	10K Ω
284	C7018	T4E	3101051020010	1000pF	797	R6002	T2H	3001011020060	1K Ω
285	C7019	B4F	3101054710010	470pF	798	R6003	T2H	3001018230000	82K Ω
286	C7020	T4C	3101062700010	27pF	799	R6004	T3H	3001051510000	150 Ω
287	C7022	T4C	3101060700020	7pF	800	R6005	T3H	3001051220090	1.2K
288	C7024	T3B	3101060600010	6pF	801	R6006	T2H	3001017520020	7.5K Ω
289	C7025	T3C	3101060900010	9pF	802	R6007	T2H	3001011010080	100 Ω
290	C7026	T2B	3101062790000	2.7pF	803	R6008	T2I	3001014720050	4.7K Ω
291	C7028	T4C	3101062210000	220pF	804	R6009	B3G	3001015100060	51 Ω
292	C7029	T3C	3101061020000	1000pF	805	R6010	T3H	3001011030080	10K Ω
293	C7031	T4E	3101061010010	100pF	806	R6011	T3G	3001013910000	39 Ω
294	C7036	T4B	3101061000000	10pF	807	R6012	B2H	3001011030080	10K Ω
295	C7037	T3C	3101060800010	8pF	808	R6013	B3I	3001011040030	100K Ω
296	C7038	T3C	3101051020010	1000pF	809	R6014	B3I	3001011820000	1.8K Ω
297	C7039	T3B	3101062400010	24pF	810	R6015	B3H	3001052720010	2.7K Ω
298	C7041	T3B	3101062000000	20pF	811	R6016	B3I	3001061030010	10K Ω
299	C7042	T2B	3101061020000	1000pF	812	R6017	B3H	3001058210000	820 Ω
300	C7043	T2B	3101061100010	11pF	813	R6018	T2G	3001051010040	100 Ω
301	C7044	T4C	3101060500010	5pF	814	R6019	T3G	3001058230000	82K Ω
302	C7048	T5E	3101062400010	24pF	815	R6020	T3D	3001011030080	10K Ω
303	C7050	T5E	3101051040060	0.1uF	816	R6022	T2D	3001016810020	680 Ω
304	C7051	T5E	3101054710010	470pF	817	R6023	T2D	3001015620030	5.6K Ω
305	C7052	T3C	3101051000020	10pF	818	R6024	T2D	3001011040030	100K Ω
306	C7057	T4G	3101051020010	1000pF	819	R6025	T2D	3001011040030	100K Ω
307	C7058	T4G	3101051040060	0.1uF	820	R6026	T3C	3001011040030	100K Ω
308	C7059	T4F	3101052200010	22pF	821	R6027	T2C	3001011040030	100K Ω
309	C7060	T4F	3101051500020	15pF	822	R6028	T3C	3001011040030	100K Ω
310	C7061	T4G	3101051020010	1000pF	823	R6029	T2D	3001011030080	10K Ω
311	C7062	T4G	3101051020010	1000pF	824	R6030	T1G	3001055610000	560 Ω
312	C7063	T4G	3101052700000	27pF	825	R6031	T1G	3001013920030	3.9K Ω
313	C7065	T4D	3101065600040	56pF	826	R6033	T2G	3001053310000	330 Ω
314	C7066	T4C	3101061100010	11pF	827	R6034	T1H	3001013330010	33K Ω
315	C7068	T4F	3101051020010	1000pF	828	R6035	T2G	3001015100060	51 Ω
316	C7069	T4F	3101051020010	1000pF	829	R6038	T2G	3001011030080	10K Ω
317	C7071	T4E	3101061800000	18pF	830	R6040	T1E	3001015100060	51 Ω
318	C8001	B4I	3101011040080	0.1uF	831	R6042	T1H	3001011040030	100K Ω
319	C8003	B4I	3101011040080	0.1uF	832	R6043	T2G	3001015630000	56K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
320	C8004	B4I	3101011020060	1000pF	833	R6047	T1D	3001050000000	0 Ω
321	C8005	B4I	3101011020060	1000pF	834	R636	T4F	3001050000000	0 Ω
322	C8008	B4I	3101011040080	0.1uF	835	R7002	B4F	3001054330000	43K Ω
323	C8009	B4I	3101011020060	1000pF	836	R7003	B4E	3001051540000	150K Ω
324	C801	B2J	3101052240010	0.22uF	837	R7004	B4F	3001051530010	15K Ω
325	C8010	B4I	3101011020060	1000pF	838	R7005	B4F	3001051020000	1K Ω
326	C8011	B4I	3101011040080	0.1uF	839	R7006	B3F	3001051030050	10K Ω
327	C8012	B4I	3101011020060	1000pF	840	R7007	B4F	3001051530010	15K Ω
328	C8013	B4H	3101061040010	0.1uF	841	R7008	B4F	3001058230000	82K Ω
329	C8014	B4H	3101061040010	0.1uF	842	R7009	B4F	3001058230000	82K Ω
330	C8015	B4H	3101011040080	0.1uF	843	R7010	B4E	3001058230000	82K Ω
331	C8016	B4I	3101052730000	0.027uF	844	R7011	B4F	3001055120030	5.1K Ω
332	C8017	B4J	3101011040080	0.1uF	845	R7012	B4F	3001051530010	15K Ω
333	C8018	B4J	3101011040080	0.1uF	846	R7013	B4F	3001051540000	150K Ω
334	C8019	B4I	3101061230000	0.012uF	847	R7014	B4F	3001058230000	82K Ω
335	C802	B2J	3101051030020	0.01uF	848	R7017	B4E	3001051540000	150K Ω
336	C8020	B4I	3101011040080	0.1uF	849	R7019	B4C	3001062710000	270 Ω
337	C8021	B4I	3101011020060	1000pF	850	R7021	T4E	3001052210000	220 Ω
338	C8022	B4H	3101051050160	1uF	851	R7022	T2B	3001051030050	10K Ω
339	C8024	B4I	3101011020060	1000pF	852	R7023	T5E	3001051510000	150 Ω
340	C8025	B5J	3101071060280	10uF	853	R7024	T5E	3001054700010	47 Ω
341	C8026	B5J	3101011040080	0.1uF	854	R7026	T5E	3001053920000	3.9K Ω
342	C8027	B4J	3101051000020	10pF	855	R7027	T5E	3001056820010	6.8K Ω
343	C8028	B4H	3101014710010	470pF	856	R7028	T5E	3001058220010	8.2K Ω
344	C8029	B4H	3101073940000	0.39uF	857	R7030	T4F	3001055100020	51 Ω
345	C803	B2J	3101052240010	0.22uF	858	R7031	T4G	3001055620000	5.6K Ω
346	C8030	B4H	3101073940000	0.39uF	859	R7032	B4F	3001051210010	120 Ω
347	C8031	B4H	3101073940000	0.39uF	860	R7033	T4G	3001051800010	18 Ω
348	C8032	B4I	3101073940000	0.39uF	861	R7034	T4G	3001051520010	1.5K Ω
349	C8033	B4I	3101074740000	0.47uF	862	R7035	T4G	3001053010010	300 Ω
350	C8034	B4J	3101011020060	1000pF	863	R7036	T4G	3001053010010	300 Ω
351	C8035	B4J	3101014710010	470pF	864	R7037	B3F	3001052700010	27 Ω
352	C8036	B5I	3101012210010	20pF	865	R7040	T4E	3210306330000	33nH
353	C8037	B5J	3101012210010	20pF	866	R7041	B4E	3001051540000	150K Ω
354	C8038	B4I	3101074750000	4.7uF	867	R7042	B3E	3099080398010	0.39 Ω
355	C8039	B4H	3101011040080	0.1uF	868	R7043	B3E	3001080190000	0.1 Ω
356	C804	B3J	3101062250000	2.2uF	869	R7044	B4E	3001053920000	3.9K Ω
357	C8040	B4H	3101014710010	470pF	870	R7045	B4E	3001051030050	10K Ω
358	C8041	B4J	3101054710010	470pF	871	R7046	B4E	3001051030050	10K Ω
359	C8042	B4H	3101014710010	470pF	872	R7049	B4F	3001051020000	1K Ω
360	C8043	T4K	3101011020060	1000pF	873	R7050	B4E	3001050000000	0 Ω
361	C8044	T4K	3101011050000	1uF	874	R7051	T4F	3001056810000	680 Ω
362	C8048	T4J	3101011040080	0.1uF	875	R7052	T4F	3001052200010	22 Ω
363	C8049	B5K	3101014700000	47pF	876	R7053	T4F	3001055100020	51 Ω
364	C805	B2J	3101051030020	0.01uF	877	R7054	T4F	3001051520010	1.5K Ω
365	C8050	T4J	3101013320000	3300pF	878	R7055	B4C	3001062710000	270 Ω
366	C8051	T5J	3101013310020	330pF	879	R7056	B3E	3001080190000	0.1 Ω
367	C8052	T5J	3101013300010	33pF	880	R7057	T4G	3001051000020	10 Ω
368	C8053	T4J	3101051050160	1uF	881	R8001	B4I	3001051010040	100 Ω
369	C8054	T4J	3101011040080	0.1uF	882	R8003	B4I	3001051000000	10 Ω
370	C8056	B5K	3101014700000	47pF	883	R8006	B4H	3001058200000	82 Ω
371	C8057	B4I	3101074750000	4.7uF	884	R8007	B5H	3001052210000	220 Ω
372	C806	B2I	3101051050160	1uF	885	R8008	B5I	3001052200010	22 Ω
373	C8060	T5J	3101051050160	1uF	886	R8009	B5H	3001011040030	100K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
374	C8061	B5J	310101470000	47pF	887	R8010	B4H	3001011030080	10K Ω
375	C8063	T4I	3101011020060	1000pF	888	R8011	B4J	3001051000000	10 Ω
376	C8064	T4I	3101011040080	0.1uF	889	R8012	B4I	3001051010040	100 Ω
377	C8065	T4I	3101014710010	470pF	890	R8013	B4J	3001051000000	10 Ω
378	C8066	T4I	3101014710010	470pF	891	R8014	B4H	3001010000050	0 Ω
379	C8067	T3I	3101014710010	470pF	892	R8015	B4I	3001052200010	22 Ω
380	C8068	T4I	3101011020060	1000pF	893	R8016	B4J	3001013300000	33 Ω
381	C8069	T4I	3101062250000	2.2uF	894	R8017	B4H	3001010000050	0 Ω
382	C807	B3I	3101051040060	0.1uF	895	R8018	B4H	3001011020060	1K Ω
383	C8070	T4I	3101011020060	1000pF	896	R8019	B5G	3001011010080	100 Ω
384	C8071	T4I	3101011040080	0.1uF	897	R802	B2I	3001051530010	15K Ω
385	C8072	T4I	3101051000030	10pF	898	R8020	B4J	3001011020060	1K Ω
386	C8076	T4I	3101061000000	10pF	899	R8021	B5H	3001051000000	10 Ω
387	C8077	T4I	3101050900000	9pF	900	R8022	B5H	3001011810000	180 Ω
388	C8078	T3G	3101014710010	470pF	901	R8024	B5H	3001010000050	0 Ω
389	C8079	T4I	3101050200010	2pF	902	R8025	B4H	3001011020060	1K Ω
390	C808	B3I	3101052710000	270pF	903	R8026	T4K	3001011030080	10K Ω
391	C8080	T4I	3101060800010	8pF	904	R8027	T4J	3001051000000	10 Ω
392	C8081	B2G	3101014710010	470pF	905	R8028	T4J	3001010000050	0 Ω
393	C8082	B2G	3101011040080	0.1uF	906	R8029	T4J	3001011030080	10K Ω
394	C8083	T4I	3199051290000	1.2pF	907	R803	B2J	3001051030050	10K Ω
395	C8085	T4H	3101054700010	47pF	908	R8030	T4J	3001011030080	10K Ω
396	C8086	T4H	3101051510000	150pF	909	R8031	B4K	3001011030080	10K Ω
397	C8087	T5I	3101060900010	9pF	910	R8032	T4J	3001016830000	68K Ω
398	C8088	T4H	3101053900000	39pF	911	R8033	T5J	3001011020060	1K Ω
399	C8089	B2G	3101011040080	0.1uF	912	R8034	T4J	3001011030080	10K Ω
400	C809	B3I	3101051050160	1uF	913	R8035	T5J	3001011040030	100K Ω
401	C8090	B2G	3101011040080	0.1uF	914	R8036	B4K	3001013300000	33 Ω
402	C8091	B3G	3101011020060	1000pF	915	R8037	T4J	3001013330010	33K Ω
403	C8092	B3F	3101051200020	12pF	916	R8038	B5J	3001013300000	33 Ω
404	C8093	B3G	3101050600010	6pF	917	R8039	T5J	3001011030080	10K Ω
405	C8094	B3F	3101011020060	1000pF	918	R804	B2I	3001054730010	47K Ω
406	C8095	B3G	3101011020060	1000pF	919	R8040	B4G	3001018230000	82K Ω
407	C8096	B2F	3101051010030	100pF	920	R8042	T5J	3001011040030	100K Ω
408	C8097	T4I	3101011040080	0.1uF	921	R8043	B5J	3001013300000	33 Ω
409	C8098	B3G	3101051500020	15pF	922	R8044	T5J	3001011040030	100K Ω
410	C8099	B3F	3101051800010	18pF	923	R8045	T5J	3001010000050	0 Ω
411	C810	B3I	3101051050160	1uF	924	R8046	T4I	3001013320000	3.3K Ω
412	C8100	B4G	3101051210000	120pF	925	R8047	T4I	3001018230000	82K Ω
413	C8101	B3F	3101053900000	39pF	926	R8048	T4I	3001014720050	4.7K Ω
414	C8102	B4J	3101011020060	1000pF	927	R8049	T3I	3001011020060	1K Ω
415	C8103	B3G	3101053300000	33pF	928	R805	B2I	3001051530010	15K Ω
416	C8104	T5I	3101062250000	2.2uF	929	R8050	T4I	3001011010080	100 Ω
417	C8105	B3G	3101050600010	6pF	930	R8051	T4I	3001018220020	8.2K Ω
418	C8106	B3G	3101053300000	33pF	931	R8052	T3H	3001018230000	82K Ω
419	C8107	B3G	3101050600010	6pF	932	R8053	T3I	3001011020060	1K Ω
420	C8108	T4I	3101011040080	0.1uF	933	R8054	B2G	3001018230000	82K Ω
421	C8109	B2F	3101050400010	4pF	934	R8055	T4H	3001061510000	150 Ω
422	C811	B3I	3101051050160	1uF	935	R8056	B3F	3001052200010	22 Ω
423	C8110	B4I	3101011020060	1000pF	936	R8057	B3G	3001065600000	56 Ω
424	C8112	B3G	3001058210000	820 Ω	937	R8058	B3G	3001011030080	10K Ω
425	C8113	B3F	3101051010030	100pF	938	R8059	B3G	3001053320000	3.3K Ω
426	C8114	T4H	3101011020060	1000pF	939	R806	B2I	3001053330000	33K Ω

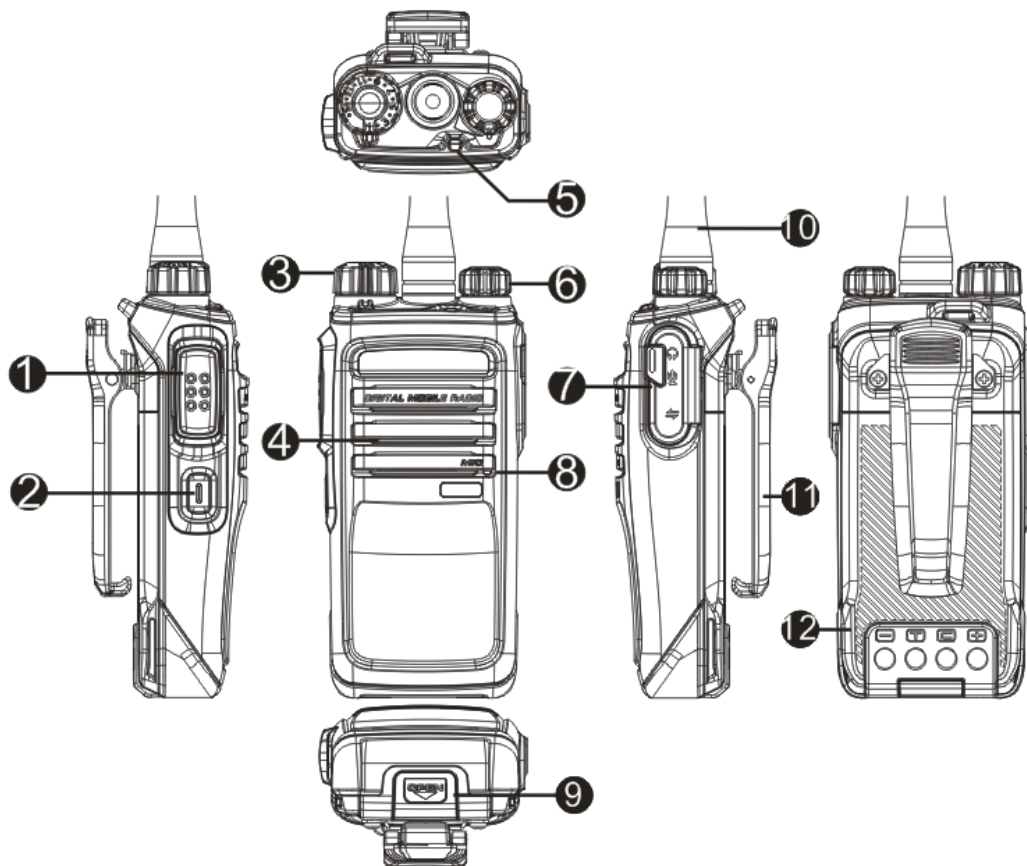
No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
427	C8115	T4H	3101011040080	0.1uF	940	R8060	T4I	3001011040030	100K Ω
428	C8116	B3G	3101014710010	470pF	941	R8061	T4I	3001015630000	56K Ω
429	C8117	B2F	3101051200020	12pF	942	R8062	T4I	3001012240000	220K Ω
430	C8118	B2F	3101051200020	12pF	943	R8063	B3G	3001055690000	5.6 Ω
431	C8119	T4J	3101074750000	4.7uF	944	R8064	T4I	3001013930000	39K Ω
432	C812	B3I	3101051050160	1uF	945	R8065	B3G	3001018210040	820 Ω
433	C8120	T4H	3101011020060	1000pF	946	R8066	B3G	3001018210040	820 Ω
434	C8121	T4H	3101011020060	1000pF	947	R8067	B3G	3001018220020	8.2K Ω
435	C8122	T4H	3101011040080	0.1uF	948	R8068	B3G	3001062200000	22 Ω
436	C8123	T3H	3101011040080	0.1uF	949	R8069	B3G	3001011020060	1K Ω
437	C8124	T4H	3101051000030	10pF	950	R807	B3I	3001051020000	1K Ω
438	C8125	T4H	3101012200020	22pF	951	R8070	T4H	3001013320000	3.3K Ω
439	C8126	T3H	3101014790000	4.7pF	952	R8071	T3I	3001011020060	1K Ω
440	C8127	T3H	3101014790000	4.7pF	953	R8072	T4H	3001011010080	100 Ω
441	C8128	T3H	3101010400000	4pF	954	R8073	T4H	3001018220020	8.2K Ω
442	C8129	T3I	3101011020060	1000pF	955	R8074	T3H	3001013320000	3.3K Ω
443	C813	B2J	3101051030020	0.01uF	956	R8075	T3I	3001013320000	3.3K Ω
444	C8131	T3H	3101011800010	18pF	957	R8076	T3H	3001013920030	3.9K Ω
445	C8133	T4H	3101060900010	9pF	958	R8077	T4I	3001013920030	3.9K Ω
446	C8134	T4H	3101050800000	8pF	959	R8078	T4G	3001061510000	150 Ω
447	C8135	T4G	3101050100030	1pF	960	R8079	T4G	3001013920030	3.9K Ω
448	C8136	T4G	3101054700010	47pF	961	R808	B3I	3001051220090	1.2K
449	C8137	T4H	3101060800010	8pF	962	R8080	T4H	3001011020060	1K Ω
450	C8138	T4G	3101051510000	150pF	963	R8081	T4H	3001013320000	3.3K Ω
451	C8139	T3H	3101012290010	2.2pF	964	R8082	T3I	3001014730010	47K Ω
452	C814	B1F	3101052710000	270pF	965	R8083	T5J	3001011030080	10K Ω
453	C8140	T4J	3101014710010	470pF	966	R809	B2J	3001054740010	470K Ω
454	C8141	T3I	3101012290010	2.2pF	967	R810	B3B	3001051030050	10K Ω
455	C8142	T5H	3101054710010	470pF	968	R812	B2B	3001054730010	47K Ω
456	C8143	T4G	3101060800010	8pF	969	R813	B3B	3001051030050	10K Ω
457	C8144	T4G	3101010900000	9pF	970	R815	B1B	3001051020000	1K Ω
458	C8145	T4J	3101074750000	4.7uF	971	R816	B1B	3001076810000	680 Ω
459	C8146	T4G	3101053900000	39pF	972	R817	B3C	3001064790000	4.7 Ω
460	C8147	T5J	3101014710010	470pF	973	R820	T2A	3001051040000	100K
461	C8148	T4H	3101011040080	0.1uF	974	R824	B2C	3001051040000	100K
462	C8149	T4H	3101051010030	100pF	975	R825	B2C	3001051020000	1K Ω
463	C815	B1F	3101052710000	270pF	976	R826	B2C	3001050000000	0 Ω
464	C816	B2J	3101062250000	2.2uF	977	R827	B1E	3001051030050	10K Ω
465	C817	B3J	3101051030020	0.01uF	978	R828	B2E	3001054730010	47K Ω
466	C818	B2B	3101051040060	0.1uF	979	R829	B2E	3001051030050	10K Ω
467	C819	B3B	3101071060280	10uF	980	R830	B1E	3001054730010	47K Ω
468	C820	B2C	3101081060010	10uF	981	R832	B2E	3001054730010	47K Ω
469	C821	B2B	3101051020010	1000pF	982	R833	B2E	3001051040000	100K
470	C822	B3B	3101051030020	0.01uF	983	R834	B2E	3001051530010	15K Ω
471	C823	B1B	3101054710010	470pF	984	R836	B2E	3001054730010	47K Ω
472	C824	B1E	3101054710010	470pF	985	R837	B1D	3001054730010	47K Ω
473	C825	B2B	3101051040060	0.1uF	986	R838	B2E	3001052220000	2.2K Ω
474	C828	B1E	3101052200010	22pF	987	R839	B1D	3001052730000	27K Ω
475	C829	B2E	3101051050160	1uF	988	R840	B1D	3001055630010	56K Ω
476	C830	B1E	3101051040060	0.1uF	989	R841	B1D	3001051030050	10K Ω
477	C831	B1D	3101054710010	470pF	990	R842	B1D	3001051050000	1M Ω
478	C832	B2E	3101051040060	0.1uF	991	R9111	B3B	3001050000000	0 Ω
479	C833	B2E	3101051020010	1000pF	992	RT300	B2I	3001080190000	0.1 Ω
480	C834	B2D	3101054710010	470pF	993	SW102	T5F	4318080000000	Momentary

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
									contact switch
481	C835	B1D	3101051020010	1000pF	994	SW103	T5C	/	/
482	C836	B1D	3101051040060	0.1uF	995	T6001	T1E	5406000000200	Transformer
483	C837	B1E	3101051020010	1000pF	996	T6002	T1F	/	/
484	C838	B1E	3101051040060	0.1uF	997	TP803	B2C	6203354000000	Spring plate for antenna
485	C839	B2D	3101051040060	0.1uF	998	TP804	B3C	/	/
486	C840	B2D	3101051010030	100pF	999	U1001	T3J	3612024000020	Memory
487	C841	B3I	3101051050160	1uF	1000	U1002	T2I	3610010000010	OMAP
488	C842	B3B	3101051040060	0.1uF	1001	U1003	T1H	3612016000000	Memory
489	C843	B3B	3101053920000	3900uF	1002	U2013	B2H	3608025000010	Power management IC
490	C844	B1D	3101072250100	2.2uF	1003	U2014	B2I	3608025000010	Power management IC
491	C845	B2B	3101081060010	10uF	1004	U2015	B3B	3605017005540	Operational amplifier
492	D	/	6203393000000	Shielding mask	1005	U2016	B1E	3605008005070	Operational amplifier
493	D101	B2A	3307110100070	Light emitting diode (LED)	1006	U301	B4K	3608006000000	Power management IC
494	D102	B2A	3307110100080	Light emitting diode (LED)	1007	U302	B1G	3608006000000	Power management IC
495	D104	B5D	3399040600000	ESD protection diode	1008	U303	B2F	3608006000000	Power management IC
496	D105	B5F	3399040600000	ESD protection diode	1009	U304	B3F	3608015000270	Power management IC
497	D107	B4B	3399040600000	ESD protection diode	1010	U305	T3K	3608006000030	Power management IC
498	D108	B5A	3399040600000	ESD protection diode	1011	U306	B4G	3608015000270	Power management IC
499	D109	B5B	3399040600000	ESD protection diode	1012	U307	B2J	3626015000010	Reset IC
500	D110	B4A	3399040600000	ESD protection diode	1013	U309	B1J	3608006000000	Power management IC
501	D300	B1F	3303030100010	Switching diode	1014	U6001	B3H	3603999000000	IF processor IC
502	D301	B3F	3302030000030	Zener diode	1015	U7001	B4E	3605008005070	Operational amplifier
503	D302	B2F	3399040600000	ESD protection diode	1016	U8001	B4I	3604019000000	PLL IC
504	D303	T1A	3399040600000	ESD protection diode	1017	U8002	B4H	3616010000000	Switch IC
505	D304	T2B	3302030000030	Zener diode	1018	U8003	B4H	3616059000000	Switch IC
506	D6001	T3H	3304010100220	Varactor	1019	U8004	T5J	3606010000010	D/A conversion IC
507	D6002	B3I	3304010100220	Varactor	1020	U8005	B3F	4399990000780	RF switch
508	D6003	T2C	3303030300000	Schottky barrier diode	1021	U801	B3J	3613010000000	Baseband processor IC
509	D6004	T2D	3304010100180	Varactor	1022	X1001	T1J	3701327610060	Crystal
510	D6005	T2D	3304010100180	Varactor	1023	X8001	B4J	3701019250000	VC-TCXO
511	D6006	T3C	3304010100180	Varactor	1024	Z6001	T1G	3802448540040	Crystal filter
512	D6007	T2C	3304010100180	Varactor	1025	/	/	/	PCB main board
513	D6008	T3C	3304010100180	Varactor	/	/	/	/	/

UHF1 (400 – 470 MHz)

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1. Product Controls



No.	Part Name	No.	Part Name
1	PTT (Push-to-Talk) Key	7	Accessory Connector
2	SK1 (Side Key 1)	8	Microphone
3	Channel Selector Knob	9	Battery Latch
4	Speaker	10	Antenna
5	LED Indicator	11	Belt Clip
6	Power On-Off/Volume Control Knob	12	Battery

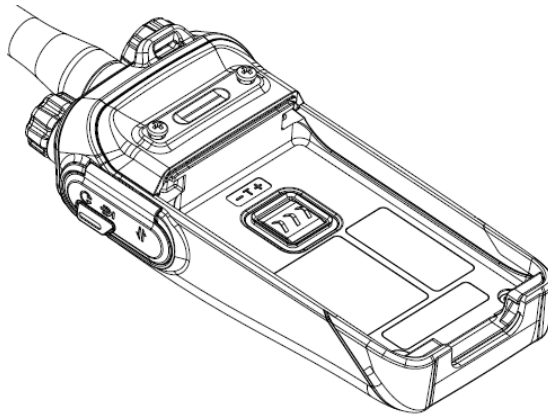
2. Disassembly and Assembly

This section is designed to introduce the way to disassemble the radio. To assemble the radio, do vice versa.

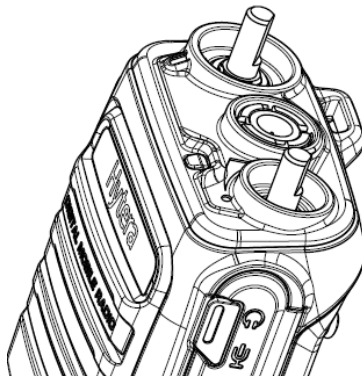
Caution

- Please position the waterproof ring properly during reassembly.
- After reassembly, please check the waterproof performance of the radio using the waterproof test instrument specified by the Company.

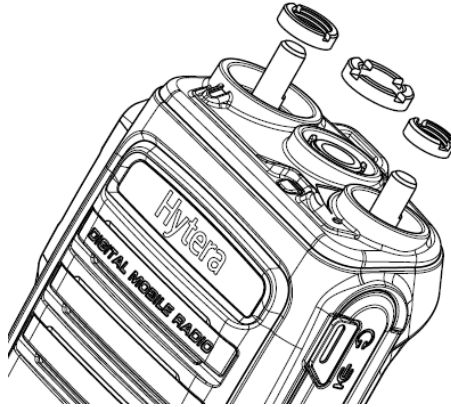
Step 1 Remove the battery.



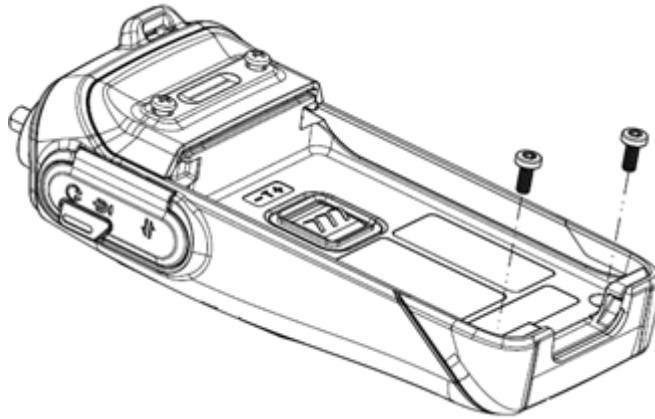
Step 2 Detach the antenna and disassemble **Channel Selector** knob and **Power On-Off/Volume Control** knob.



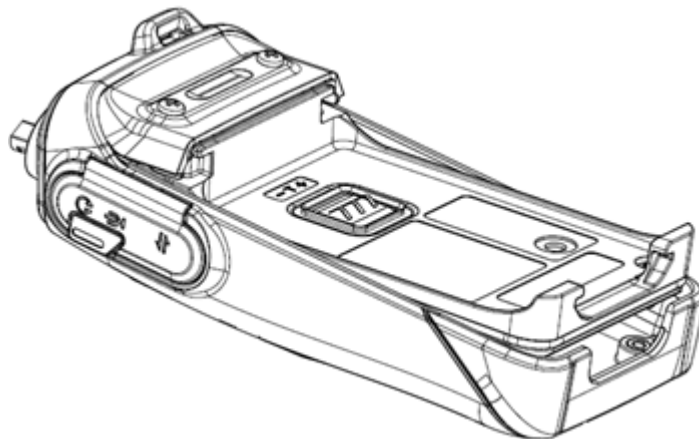
Step 3 Disassemble the nuts for securing the antenna, **Channel Selector** knob and **Power On-Off/Volume Control** knob.



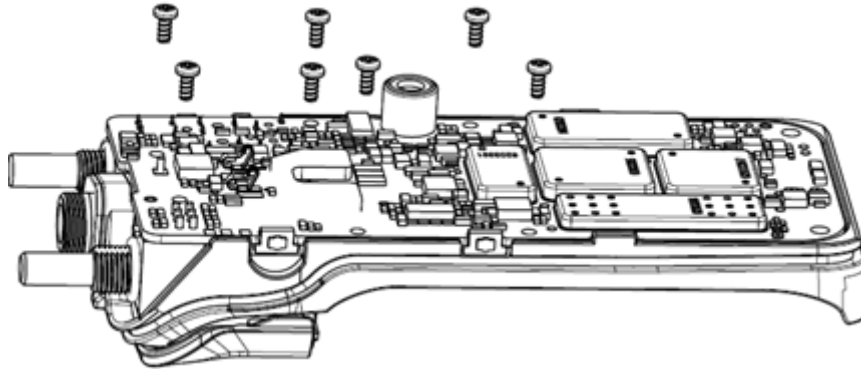
Step 4 Loosen the two screws on the bottom of the aluminum chassis.



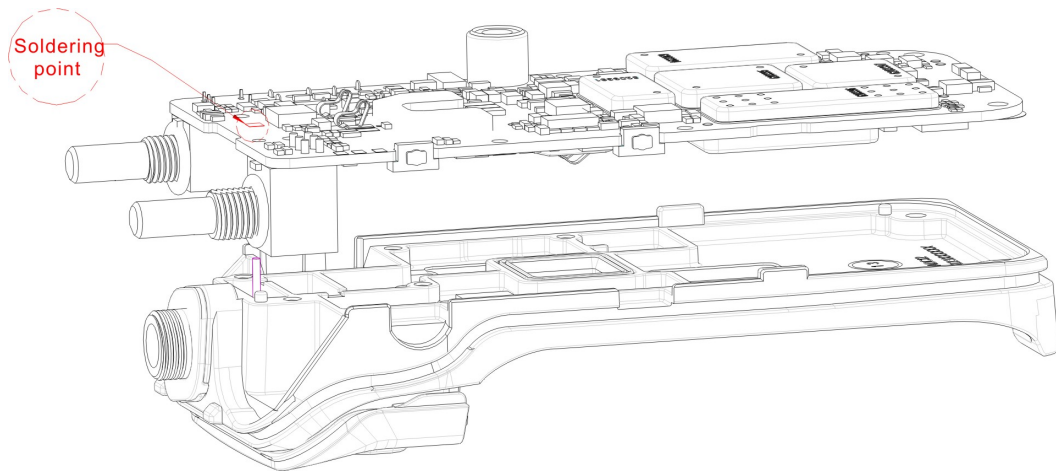
Step 5 Remove the aluminum chassis along with the main board.



Step 6 Loosen the seven screws on the main board.

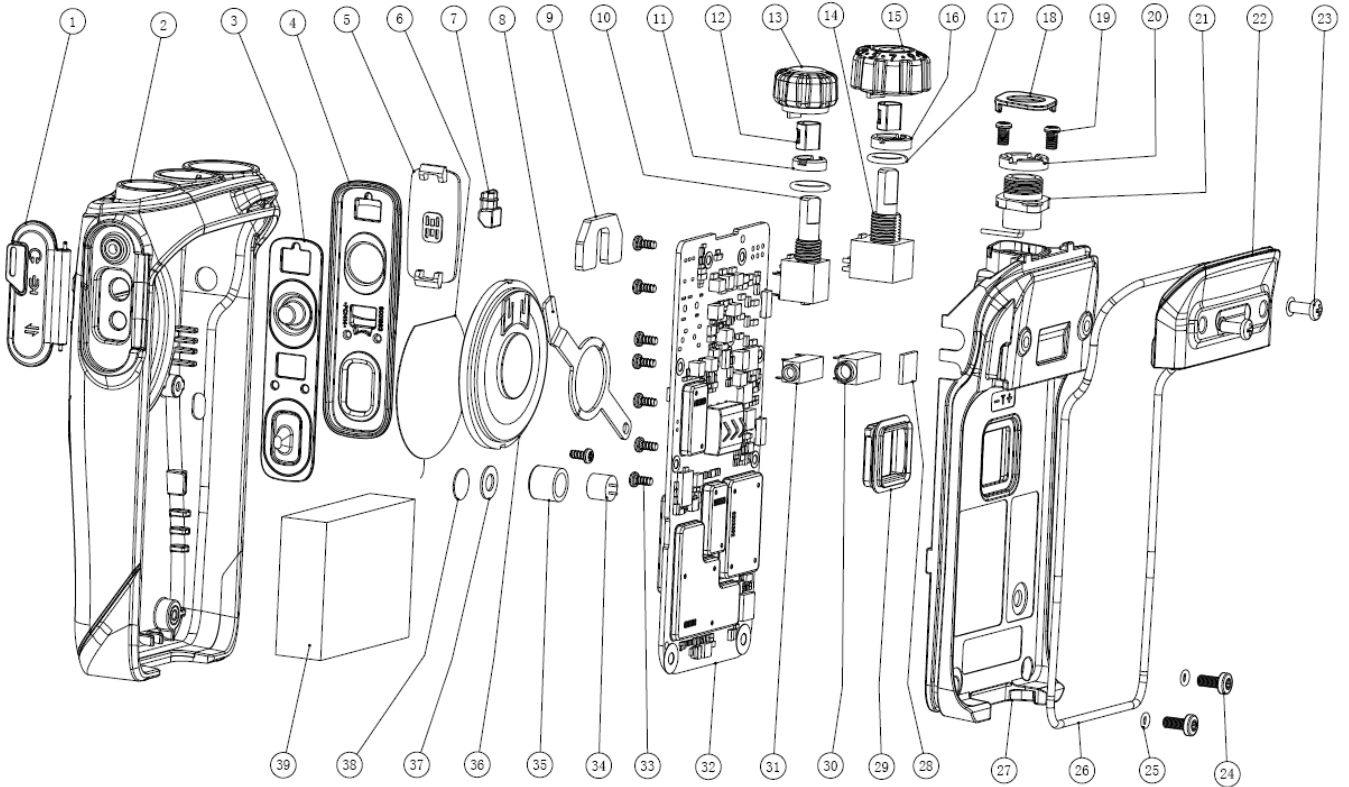


Step 7 Desolder the soldering joint of the antenna and remove the main board.



3. Exploded View and Packaging Guide

3.1 Exploded View



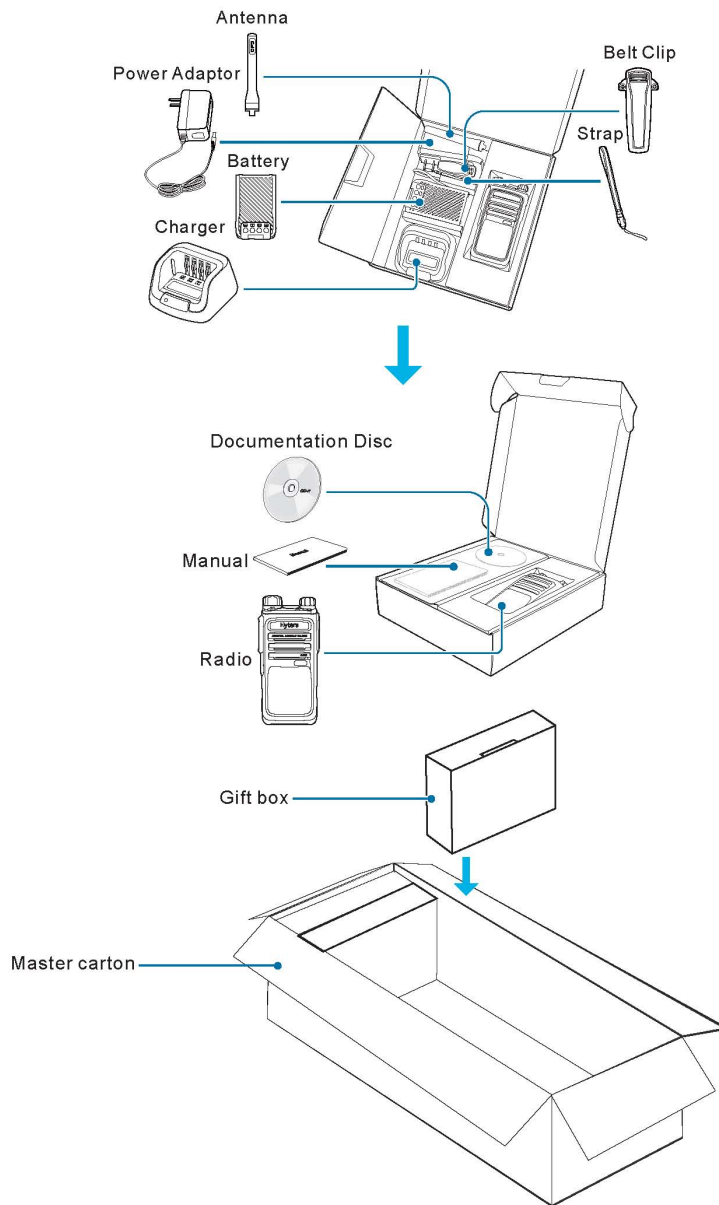
Parts list:

No.	Part No.	Description	Qty.	No.	Part No.	Description	Qty.
1	600197800000	Accessory connector cover	1	21	4400100036000	SMA RF connector	1
2	6001881100000	Front case	1	22	6001882000000	Rear cover	1
3	6100892100000	PTT and programmable key silicone rubber	1	23	7103006004000	Machine screw	2
4	6001883000000	PTT key plastic cover	1	24	7102506002100	Machine screw	2
5	6000787000000	PTT key cover	1	25	6100527100000	Waterproof ring for screw	1
6	7400601000000	Speaker felt	1	26	6100890100000	Main waterproof ring	1
7	6100891100000	Transparent light guide high tensile silicone rubber	1	27	6300223000000	Aluminum chassis	1
8	6201905000000	Speaker fixing sheet	1	28	7500272000000	Heat sink pad	1
9	7400633000000	Speaker supporting PC sheet	1	29	6100505000010	Waterproof ring for battery connector	1
10	4323020000020	Volume switch	1	30	5205005000040	Earpiece Connector	1
11	7206002500210	Nut for volume switch	1	31	5205004000030	Earpiece Connector	1
12	6201739000000	Inner lining of knob	2	32	/	Main board	1
13	6001069000010	Volume control knob	1	33	7101904020200	Self-tapping Screw	8
14	4304030000010	Gray code rotary switch	1	34	5002220000070	Microphone	1
15	6001068000010	Channel selector knob	1	35	6100345000000	MIC cover	1
16	7207002201000	Switch nut for channel selector knob	1	36	5001210000170	Speaker	1
17	6100334000000	O-RING for switch	2	37	7400329000000	MIC pad	1
18	6100957100000	Waterproof ring for antenna connector	1	38	7400141000000	MIC felt	1
19	7102504000300	Machine screw	2	39	7500447000000	Sound-absorption sponge	1
20	7209002501000	Antenna nut	1	/	/	/	/

 **Note**

Parts that are not marked with Part Number may vary with the frequency band.

3.2 Packaging Guide



4. Specifications

4.1 Specifications

General	
Frequency Range	400–470 MHz
Channel Capacity	32
Channel Spacing	25 KHz/20 KHz/12.5 KHz
Operating Voltage	<ul style="list-style-type: none"> ● Rated voltage: 7.4 V ● Extreme voltage: 6.2 V–8.4 V
Battery	1500 mAh Li-Ion battery
Battery Life (5-5-90 Duty Cycle, High TX Power) High-capacity 2000 mAh Li-Ion Battery	Analog: 11 hours Digital: 15 hours
Operating Temperature	-30°C - +60°C
Dimension (H×W×D) (with standard battey, without antenna)	117×55×28 mm
Weight (with antenna & standard battey)	About 280 g
Frequency Stability	±1.5 ppm
Receiver	
Sensitivity	<ul style="list-style-type: none"> ● Analog <ul style="list-style-type: none"> ➢ 0.3 μV (12 dB SINAD) ➢ 0.22 μV (Typical value)(12 dB SINAD) ➢ 0.4 μV (20 dB SINAD) ● Digital: 0.3 μV/BER5%
Adjacent Channel Selectivity	<ul style="list-style-type: none"> ● TIA-603: 60 dB@12.5 kHz/70 dB@20&25 kHz ● ETSI: 60 dB@12.5 kHz/70 dB@20&25 kHz
Intermodulation	<ul style="list-style-type: none"> ● TIA-603: 70 dB@12.5/20/25 kHz ● ETSI: 65 dB@12.5/20/25 kHz
Spurious Response Rejection	<ul style="list-style-type: none"> ● TIA-603: 70 dB@12.5/20/25 kHz ● ETSI: 70 dB@12.5/20/25 kHz

Blocking	84 dB
Rated Audio Power Output	0.5 W (16 Ω load)
Rated Audio Distortion	$\leq 3\%$
Transmitter	
Power Output	4 W/1 W
Conducted/Radiated Emission	<ul style="list-style-type: none"> ● -36 dBm < 1 GHz ● -30 dBm > 1 GHz
Modulation Limiting	<ul style="list-style-type: none"> ● ± 2.5 kHz @ 12.5 kHz ● ± 4.0 kHz @ 20 kHz ● ± 5.0 kHz @ 25 kHz
FM Noise	<ul style="list-style-type: none"> ● 40 dB @ 12.5 kHz ● 43 dB @ 20 kHz ● 45 dB @ 25 kHz
Audio Distortion	$\leq 3\%$

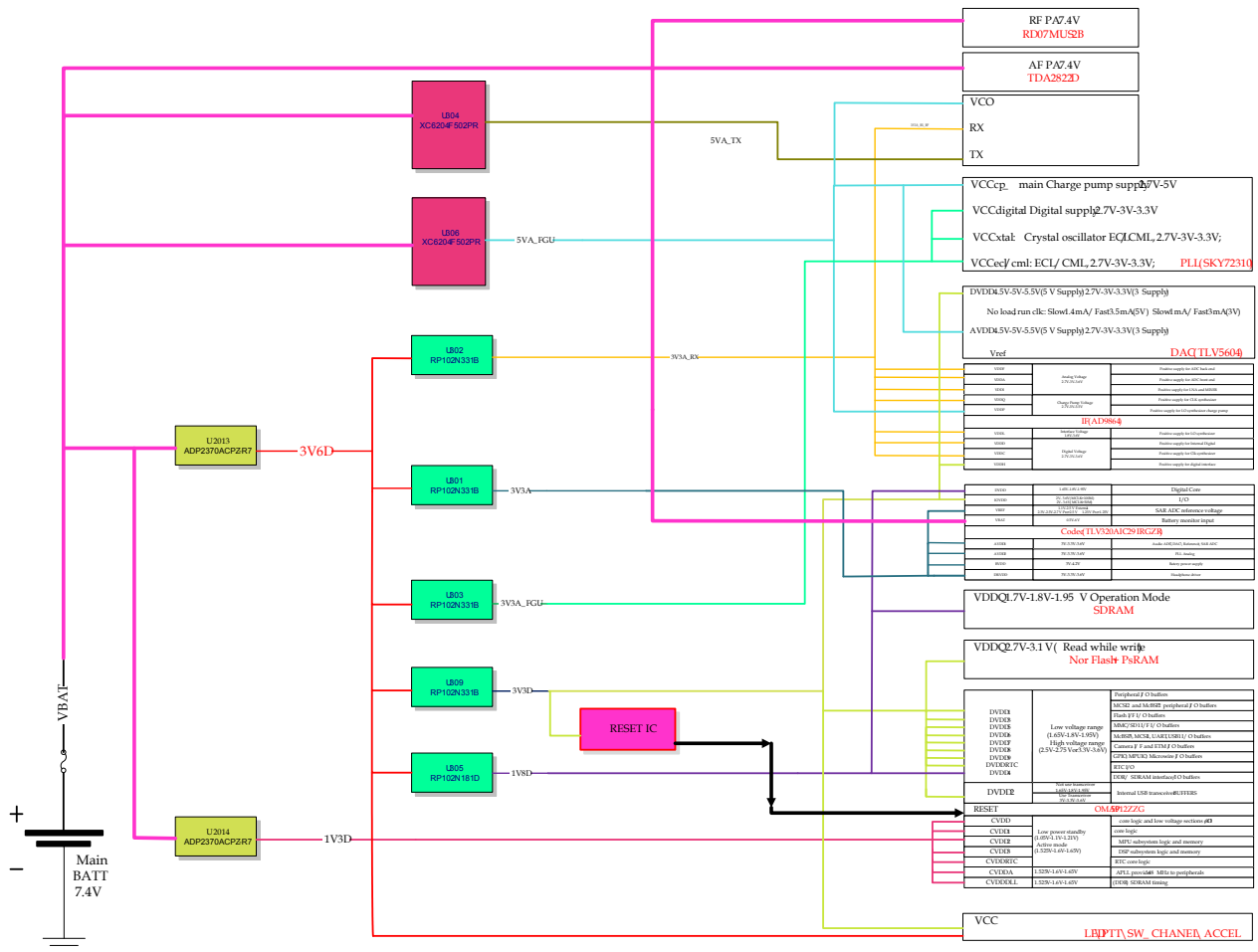
All Specifications are tested according to applicable standards, and subject to change without notice due to continuous development.

5. Circuit Description

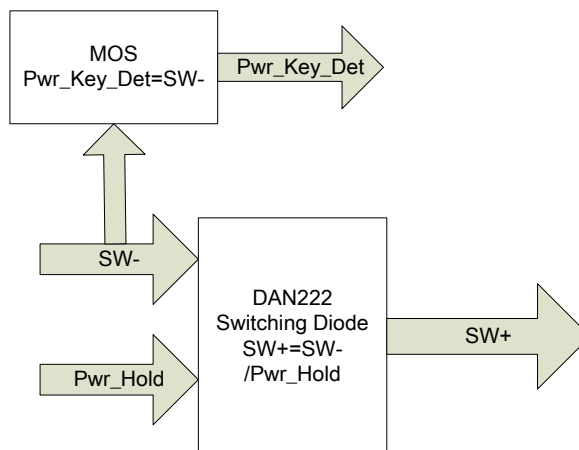
5.1 Baseband Section

5.1.1 Power Supply Module

Diagram of Power Control



Power On/Off



The radio-on signal (SW+) satisfies the equation: $SW+ = SW- | Pwr_Hold$. When the **Power**

On-Off/Volume Control knob is on, SW- and SW+ are at high level, and the radio powers up. After power-on, Pwr_Hold goes to high level, and Pwr_Key_Det goes to low level.

During power-off, SW- is at low level, while Pwr_Key_Det is at high level. The system detects power-off procedure via Pwr_Key_Det and implements the power-off procedure. Then Pwr_Hold and SW+ go to low level, and the power is cut off.

Power Protection

Power protection includes over-current, reverse-voltage and ESD protection.

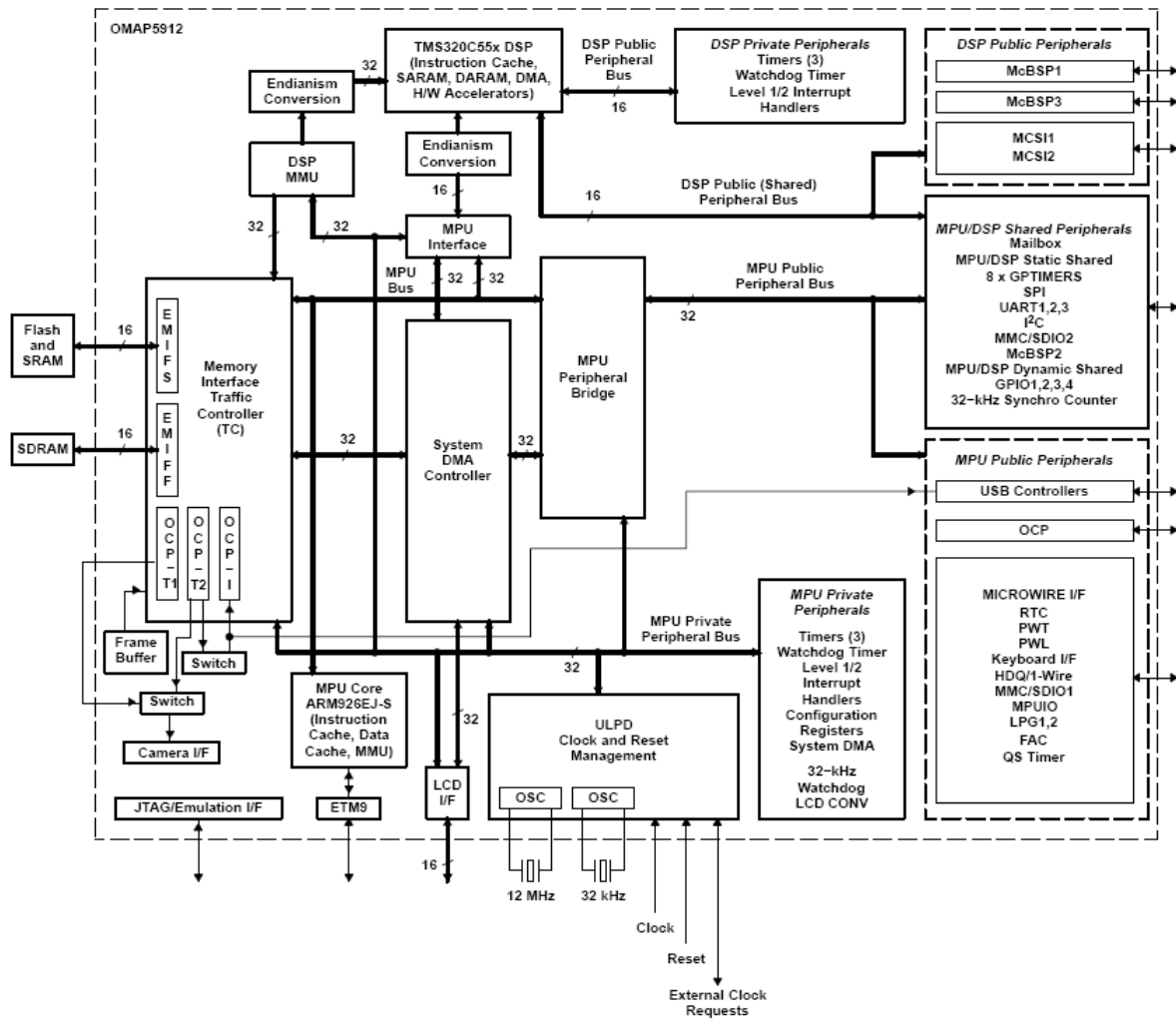
Power Consumption Control

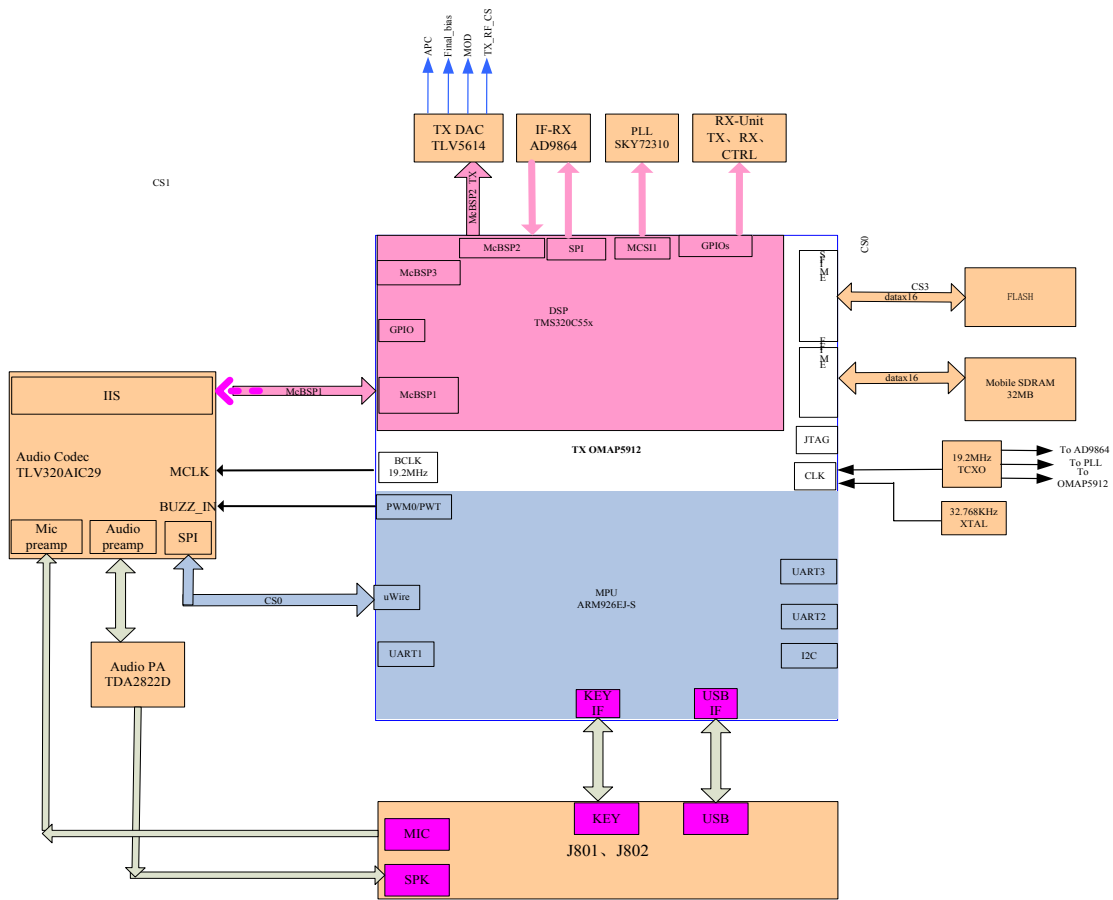
OMAP can control and configure the power supply and working mode of the peripheral modules (RF section and baseband section) via the I/O interface and serial bus, so as to reduce power consumption.

5.1.2 Control Module

OMAP5912 Dual-core Processor

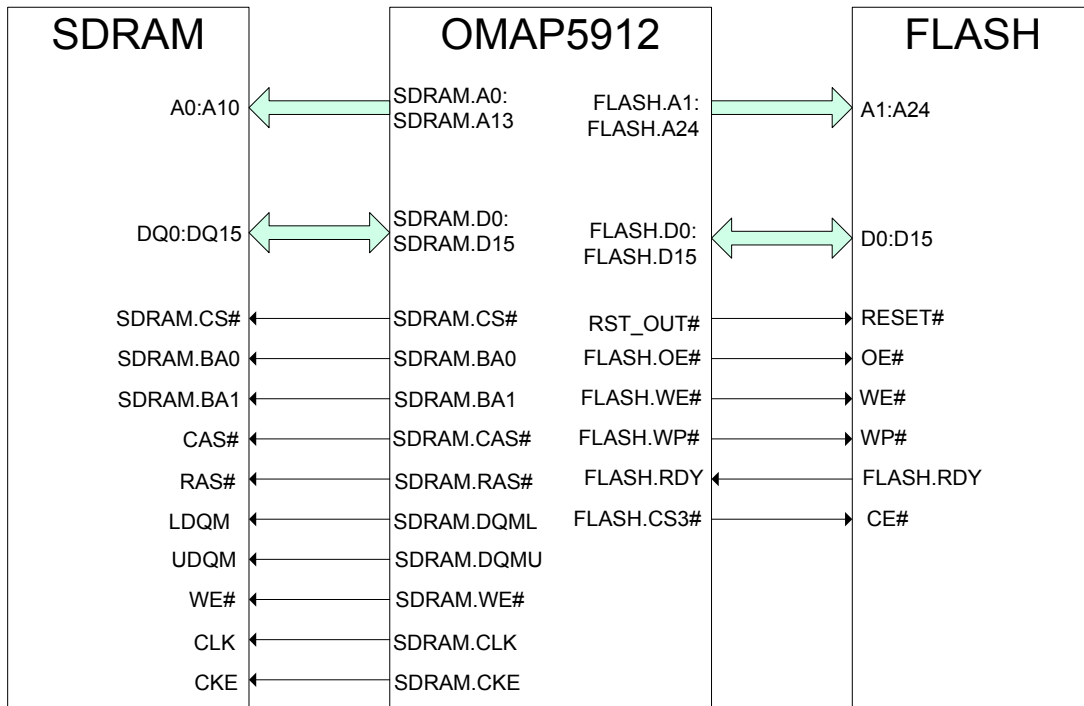
The radio uses the dual-core processor OMAP5912, which is mainly composed of ARM926EJ-S and TMS320C55xx. ARM926EJ-S is the main controller, while TMS320C55xx is used for modulation/demodulation and voice encoding/decoding.





External Memory

OMAP5912 provides two types of external memory interfaces: external memory interface slow (EMIFS) and external memory interface fast (EMIFF).



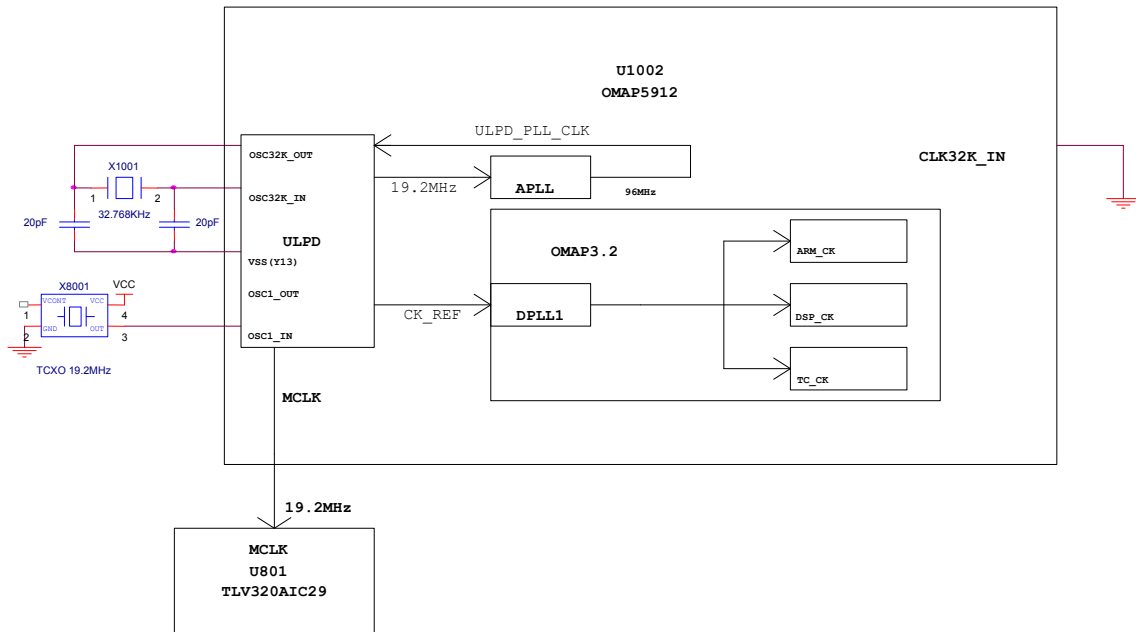
EMIFS

EMIFS can support 16-bit external device width, and provides four chip-selects CS0-CS3 each of which can support up to 64MB bytes of addressable memory. A number of different memory types can be connected to EMIFS, such as NANA Flash, NOR Flash, SRAM and so on.

EMIFF

EMIFF can support 16-bit external device width, and memories namely SDRAM, mobile SDRAM and mobile DDR can connect with it.

Clock



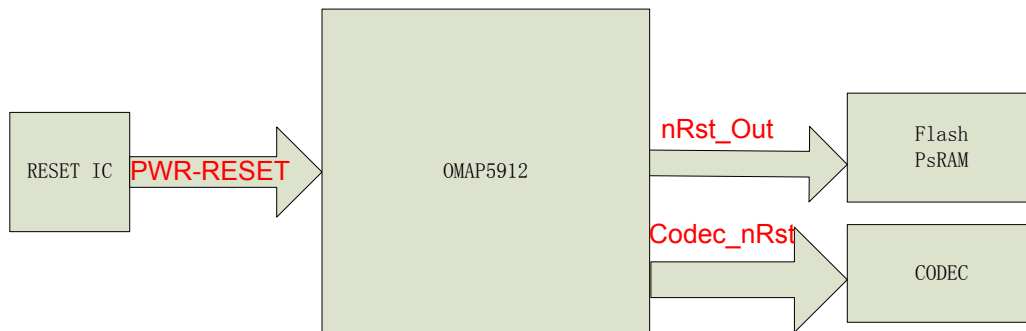
Input Clock

- 32K Clock: It is also called “sleep clock” and is mainly used for system timing and sleeping.
- 19.2 MHz System Clock: It is mainly used to provide the input clock for APLL and DPLL.

Output Clock

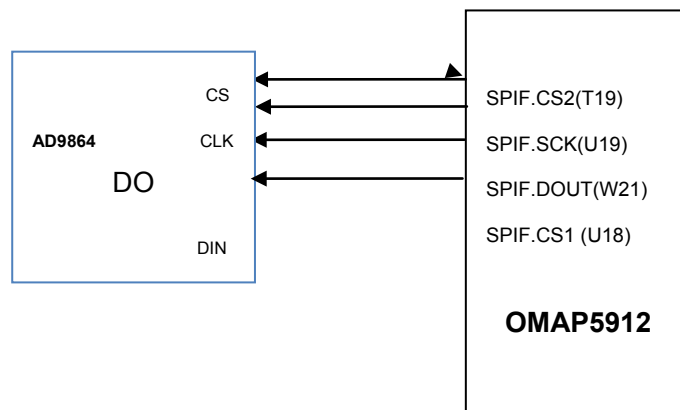
There is one output clock: MCLK. MCLK provides 16 MHz clock to audio codec.

Reset Signal



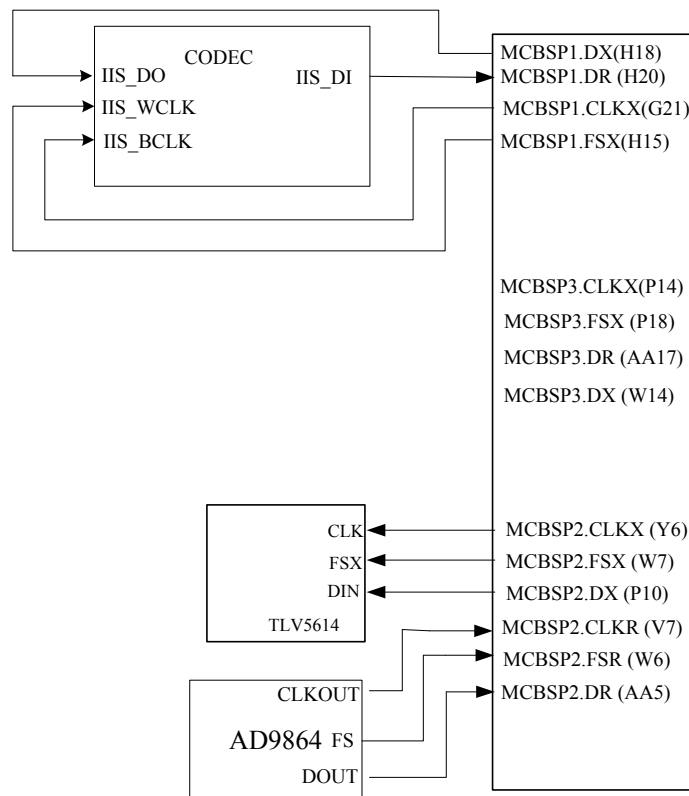
SPI

OMAP5912 has one SPI, which has four chip selects for connecting four external SPI components. The available SPI signals are SPI.DOUT, SPI.DIN, SPI.CLK and SPI.CS. The system uses SPIF.CS2 to select the IF processor AD9864, to configure the register of AD9864. The connection of SPI is shown below.



MCBSP

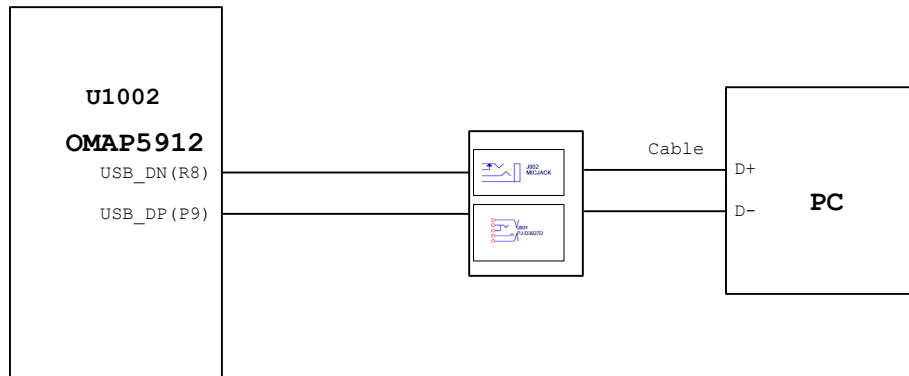
OMAP5912 provides 3 MCBSP interfaces: MCBSP1, MCBSP2 and MCBSP3. MCBSP1 is connected to the I²S interface of the audio codec, to realize two-way transmission of digital voice and data. MCBSP2 uses independent clock and frame synchronization for transmission and reception. AD9864 SSI is connected to the RX end of OMAP5912 MCBSP2. AD9864 works in master mode, while DSP works in slave mode. DAC is connected to the TX end of MCBSP2, and DSP works in master mode. MCBSP3 is connected to the interface for option board. The connection of MCBSP is shown below.



USB

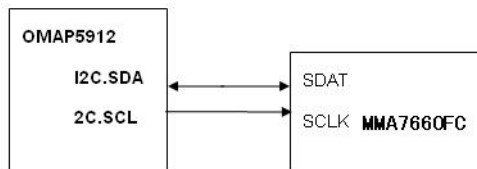
OMAP5912 provides three USB interfaces, one of which integrates USB transceiver. The integrated USB transceiver is connected to the accessory connector, and is used for programme downloading and

data applying.



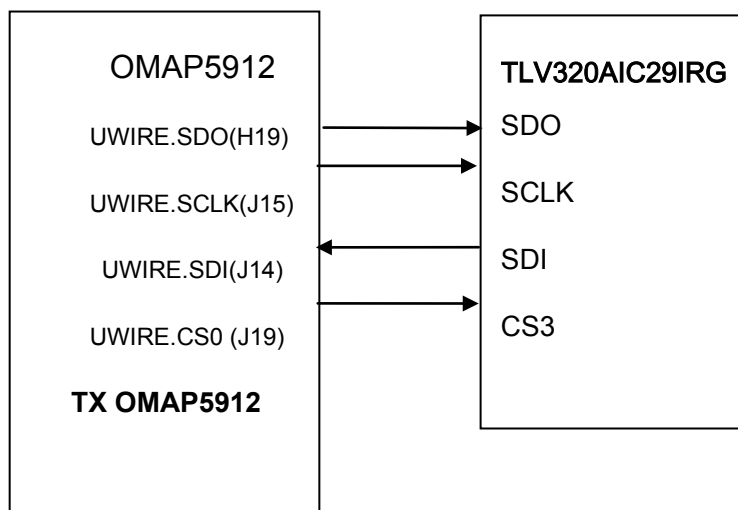
I²C

OMAP5912 provides one I²C interface, and supports a communication rate up to 400 Kbps. OMAP5912 I²C interface is used for connecting with the the acceleration sensor and works in the slave mode. The connection of I²C is shown below.



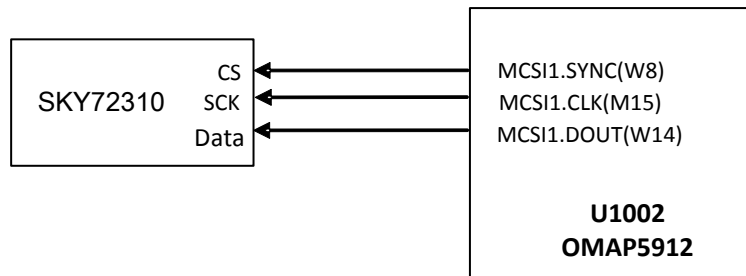
MICROWIRE

OMAP5912 provides a MICROWIRE. The four chip selects can drive four external components. MICROWIRE is used to configure the audio codec and read the value of its register. It uses the chip select 3. The connection is shown below.



MCSI1

OMAP5912 provides two MCSI interfaces. MCSI1 is used for PLL configuration and data transmission. The connection of MCSI1 is shown below.



5.1.3 Audio Module

Audio Diagram

The audio module is mainly for audio input and output. TLV320AIC29 is used as the audio codec to convert and process audio signal and digital signal. The audio amplifier TDA2822 is used to amplify the analog audio signal.

DSP processes digital signal (including audio signal encoding/decoding, digital signal decoding, and digital audio signal processing). AD9864 converts and processes the RF IF signal, and sends the undemodulated serial digital signal to the DSP for processing. Then TLV5614 converts the digital signal output by DSP to analog signal.

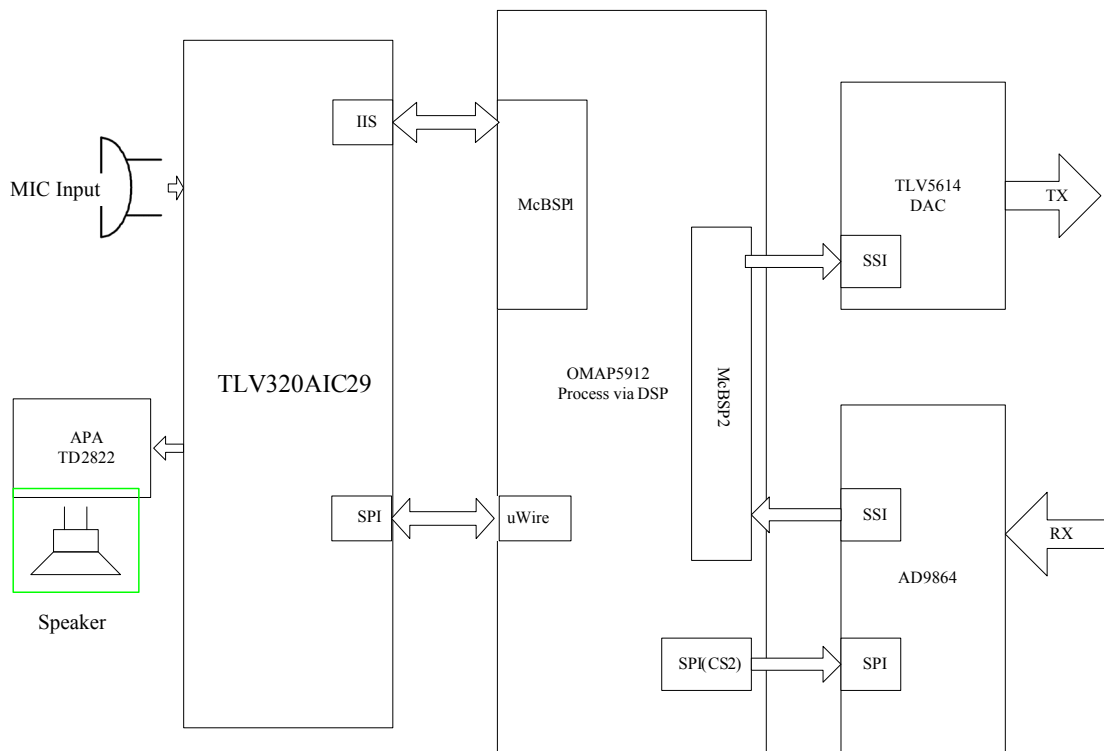
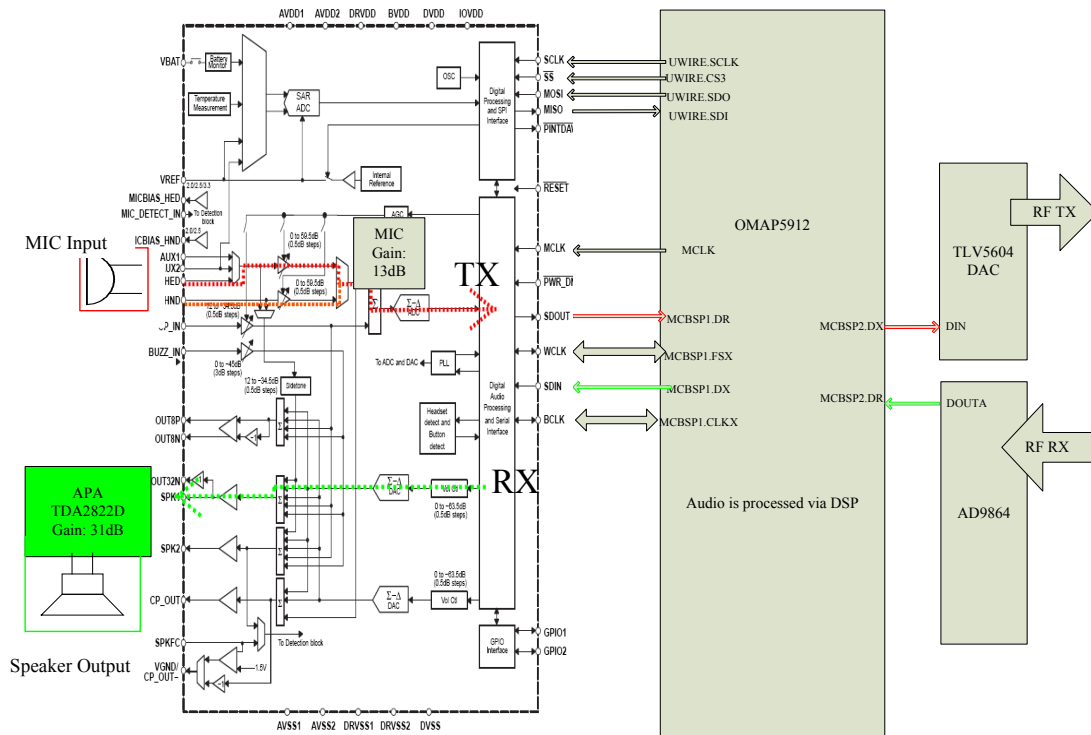


Diagram of Signal Flow

The microphone converts the audio signal into electrical signal, which is then amplified by PGA of the codec and sent to ADC of the codec for sampling. After digital audio processing, the signal is output to

DSP for processing. Then the signal is sent to DAC (TLV5614), which converts the signal to modulation signal. After modulated and amplified in the RF module, the signal is sent out from the antenna.

The RF signal received by the RF module is converted to digital signal by ADC (AD9864), and is then sent to DSP for demodulation and processing. Then the digital signal is sent to the digital audio processor of the codec for digital audio processing, and is then converted into analog audio signal by DAC of the codec. Finally the signal is amplified by the external audio amplifier (TDA2822) to drive the speaker, and the audio signal is output.



Audio Amplifier

Main parameters of TDA2822 are listed in the table below:

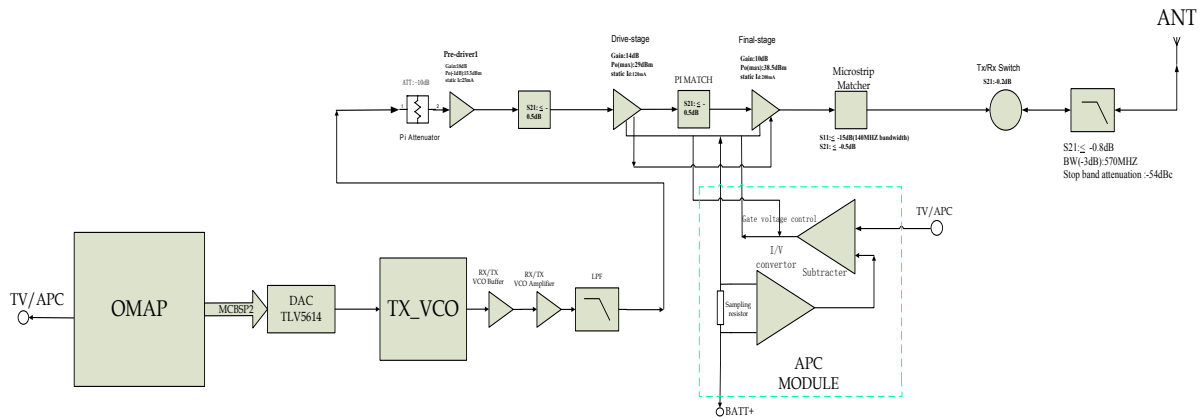
Rated Power (P_o)	0.5 W	R _L = 16 Ω
Maximum Power (P_{max})	1.6 W	R _L = 16 Ω

5.2 RF Section

5.2.1 Transmitter Circuit

The transmitter circuit is mainly composed of:

- RF power amplifier circuit
- Low-pass filter circuit (for suppressing harmonics)
- Auto Power Control Circuit (APC)



RF Power Amplifier Circuit

The carrier signal generated by TX VCO is first to be modulated and amplified, and then feeds to the transmitter circuit. See the steps below.

- Step 1** In this circuit, the signal passes through a π -type attenuator first, allowing certain isolation between the RF power amplifier circuit and TX VCO.
- Step 2** After that, the signal goes to the driver amplifier (RD01) for further power amplification, to provide appropriate amplification signal to the final-stage amplifier (RD07) for final power amplification.
- Step 3** After amplified by multiple amplifiers, the signal will pass through a microstrip matcher to complete output impedance matching, so as to reduce output power loss due to impedance mismatch.
- Step 4** Finally, the signal passes through the TX/RX switch and goes to the low-pass filter.

Low-pass Filter Circuit (for suppressing harmonics)

The low-pass filter for suppressing harmonics is a high-order Elliptic filter composed of lumped-parameter inductors and capacitors. Via this filter, the spurious signal within the stop band can be attenuated as much as possible while the in-band ripple is within the required range.

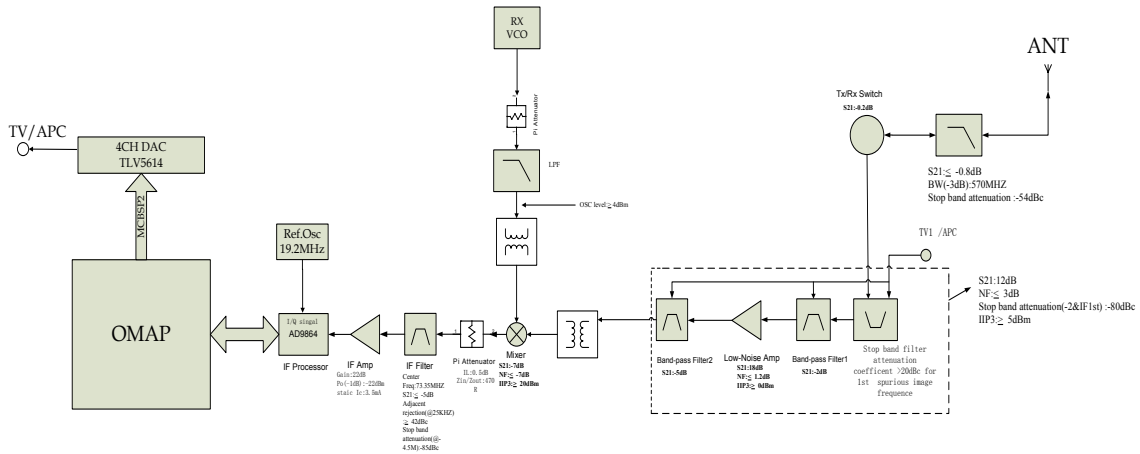
Auto Power Control Circuit

In the auto power control and temperature detection circuit, the drain current from the driver amplifier and final-stage amplifier is converted to voltage via the sampling resistor and subtraction circuit (composed of the first operational amplifier).

This voltage is compared with the APC control voltage (output by DAC) at the second operational amplifier. Then the error voltage, which is output by the second operational amplifier, controls TX power by controlling the compensated gate bias voltage of the amplifiers, namely, the driver amplifier and the final-stage amplifier.

5.2.2 Receiver Circuit

The receiver circuit mainly comprises the RF band-pass filter, low-noise amplifier, mixer, IF filter, IF amplifier and IF processor.

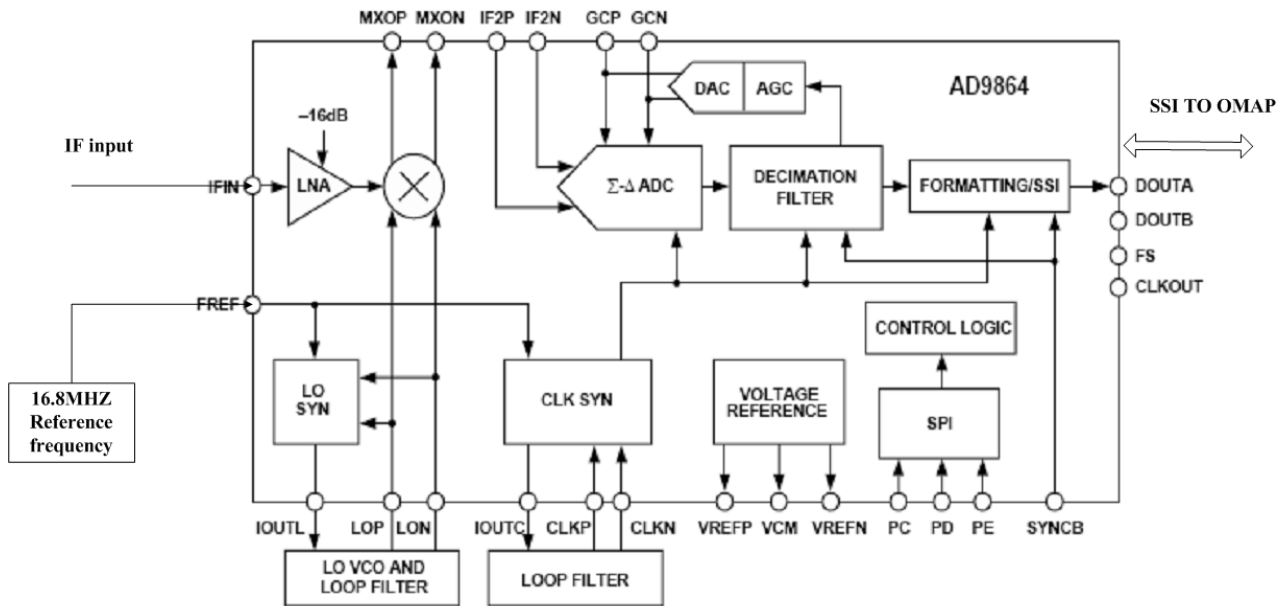


Receiver Front-end

The HF signal from the low-pass filter passes through the electrically tunable first-stage band-pass filter controlled via APC/TV1 level, to remove out-of-band interference signal and to send wanted band-pass signal to the low-noise amplifier (Q6005). The amplified signal goes to a second-stage band-pass filter which is also controlled via APC/TV1 level, to remove out-of-band interference signal generated during amplification, and to send wanted HF signal to the mixer.

The wanted signal passes through the RF band-pass filter and low-noise amplifier and goes to the mixer (D6009). Meanwhile, the first local oscillator (LO) signal generated by VCO passes through the low-pass filter and also goes to the mixer (D6009). In the mixer, the wanted signal and the first LO signal are mixed to generate the first IF signal (58.05MHz). Then the signal passes through the frequency selection network composed of LC, to suppress carriers other than the first IF signal, and to increase the isolation between the mixer and the IF filter. After that, the first IF signal is processed by the crystal filter (Z6001), and is sent to the two-stage IF amplifier circuit (composed of PBR941) for amplification. Then the amplified signal goes to the IF processor AD9864 (U6001) for processing.

Receiver Back-end



The first IF signal (58.05 MHz) output by the IF amplifier goes into AD9864 (U6001) via Pin 47, where the signal is converted to the second IF signal (2.25 MHz). Then the second IF signal is converted to digital signal via ADC sampling, and output via the SSI interface. Finally, the digital signal is sent to the DSP (OMAP5912) for demodulation.

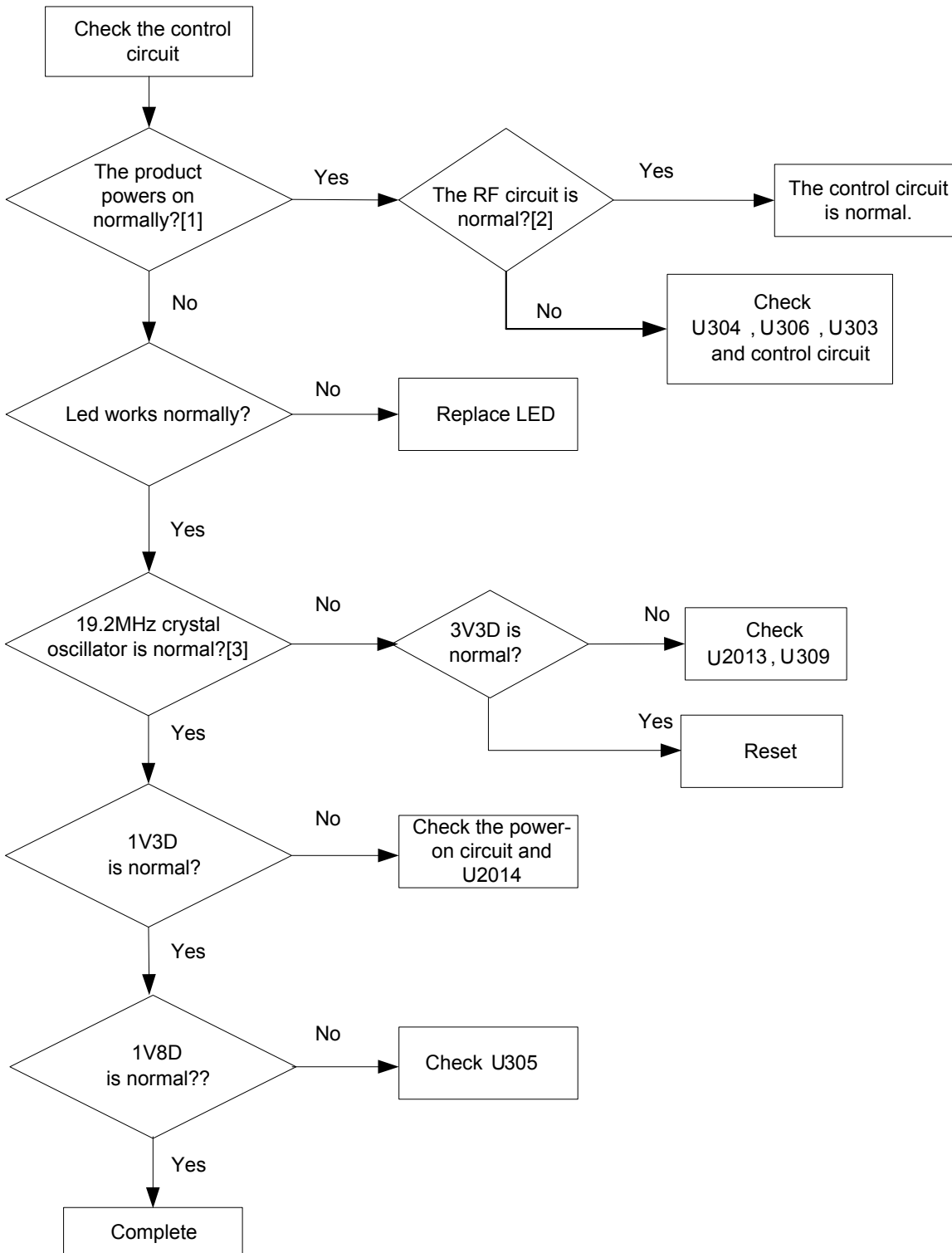
AD9864 employs reference frequency of 19.2 MHz and shares the crystal with OMAP. The second LO VCO comprises an oscillator, a varactor and some other components, to generate the LO signal (55.8/60.3 MHz). The 18MHz clock frequency is generated by the LC resonance loop.

5.2.3 FGU

The FGU is composed of VCO and PLL. It is the core module of the whole TX-RX system. This circuit provides accurate carrier frequency during transmission, and stable LO signal during reception. It plays a pivotal role and determines the performance of the system.

6. Troubleshooting Flow Chart

6.1 Control Circuit



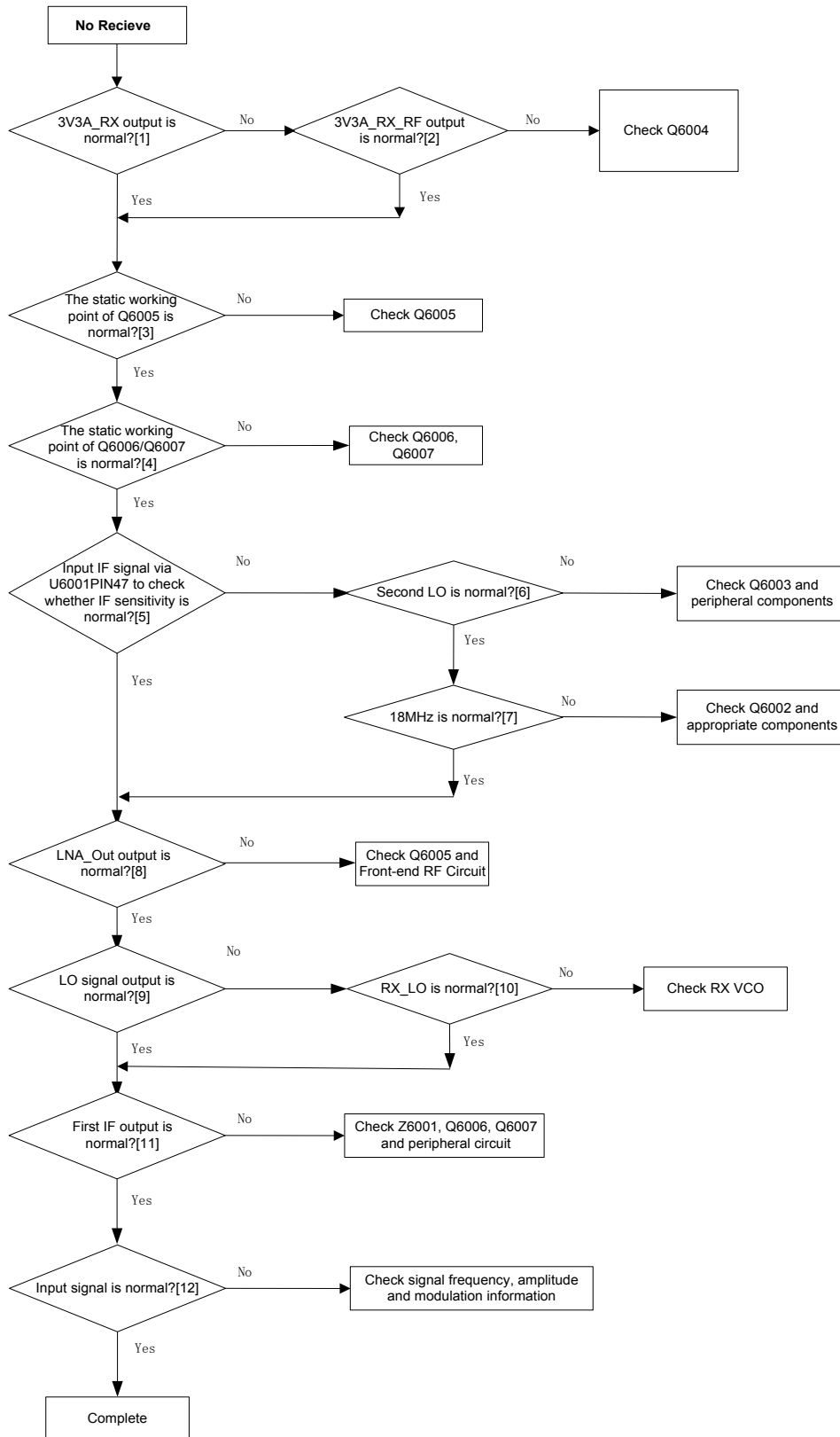
Description of Normal Situations:

[1] After the radio powers on, the LED indicator and alert tone works properly.

[2] The RF power supply outputs normally, and the RX channel is on.

[3] Output by the crystal oscillator: $V_{pp}=700-800$ mV, $F=19.2$ MHz.

6.2 Receiver Circuit



Description of Normal Situations:

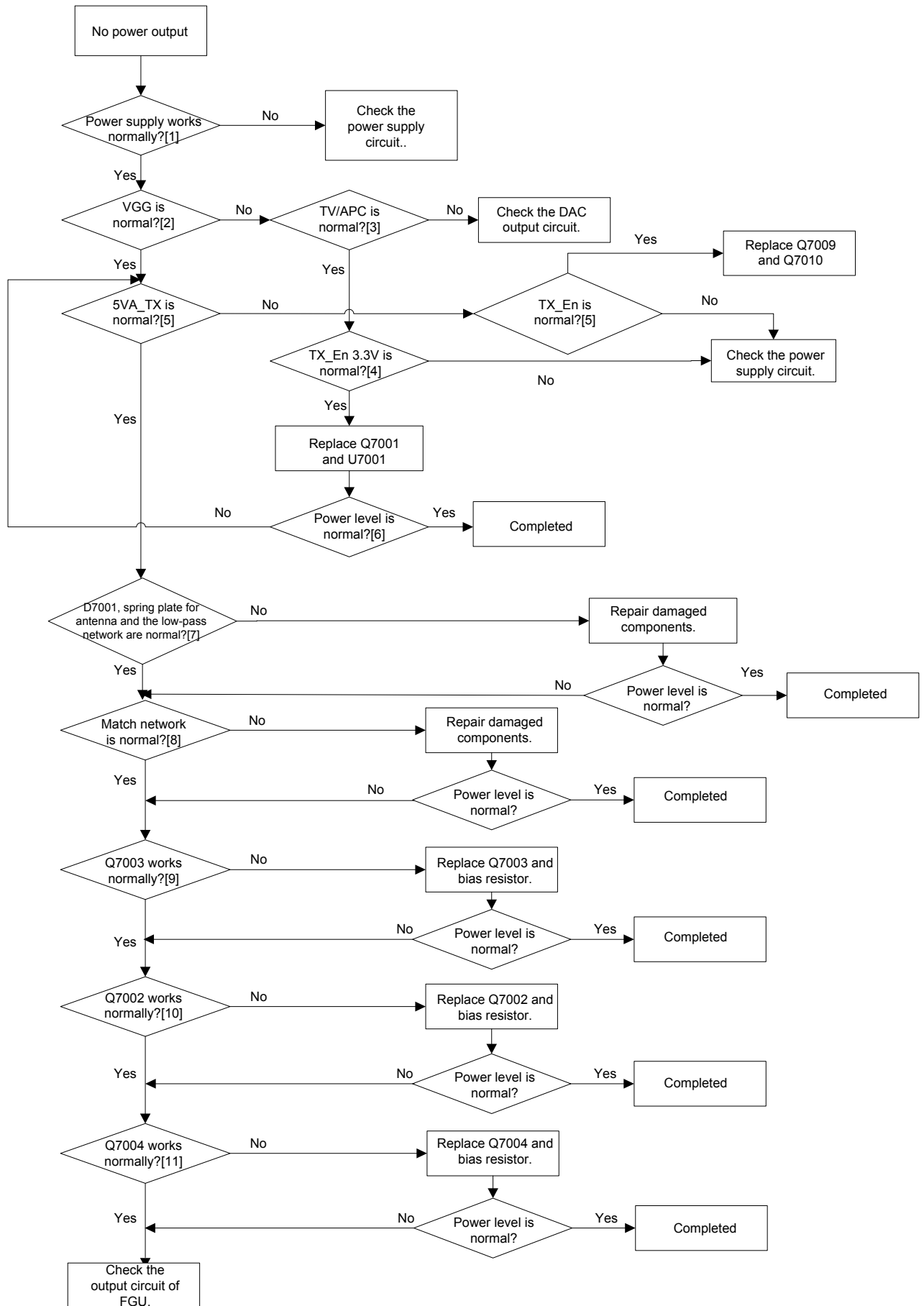
[1] Output voltage by Q6004 PIN3 is about 3.3 V.

- [2] Output voltage by U302 PIN5 or input voltage by Q6004 PIN4 is about 3.3 V.
- [3] Vgs: about 0.1 V; Vsd: about 3.3 V (in the case of no signal reception).
- [4] For Q6006, Vbe: about 0.76 V; Vce: about 0.95 V; for Q6007, Vbe: about 0.7 V; Vce: 0.85 V (in the case of no signal reception).
- [5] Cut off the front-end circuit, and input a 58.05 MHz IF signal at C6009 to test IF sensitivity. Normally, the IF sensitivity is -109 dBm.
- [6] Frequency of Q6003: 55.8 MHz.
- [7] Frequency of L6013: 18 MHz.
- [8] Input a -30 dBm RF signal in the antenna port and test at RP1. Normally, gain>10 dB, output signal>-20 dBm.
- [9] Input a -30 dBm RF signal in the antenna port and test at C6092 (do not cut off the back-end circuit). Normally, gain>1 dB, output signal>-29 dBm.
- [10] C6093 output signal frequency: RF-IF, signal amplitude>2 dBm.
- [11] For input of a -80 dBm signal from L6028, gain>25 dB, output signal>-55 dBm; for input of a -30 dBm signal, output signal>-20 dBm.
- [12] The input signal in the antenna port, with standard tuning information (AF=1 KHz, FM=3 KHz), is -47 dBm.

6.3 Transmitter Circuit

Caution

The following checks must be operated with a power supply of 7.4 V.



Description of Normal Situations:

[1] Voltage of the power supply: about 7.4 V.

[2] For low power, VGG: 1.8–2.1 V; for high power, VGG: 2.4–2.8 V.

[3] For low power, TV/APC: 1-1.3 V; for high power, TV/APC: 1.8-2.1 V.

[4] TX_En: about 3.3 V.

[5] 5VA_TX: about 5 V.

[6] High power: about 4.2 W; low power: about 1.2 W.

[7] Start-up voltage of D7001: about 0.7 V. The low-pass coil must be soldered appropriately and remain in good condition. The spring plate for the antenna must well fit the antenna connector.

[8] The match components must not be soldered inappropriately or damaged.

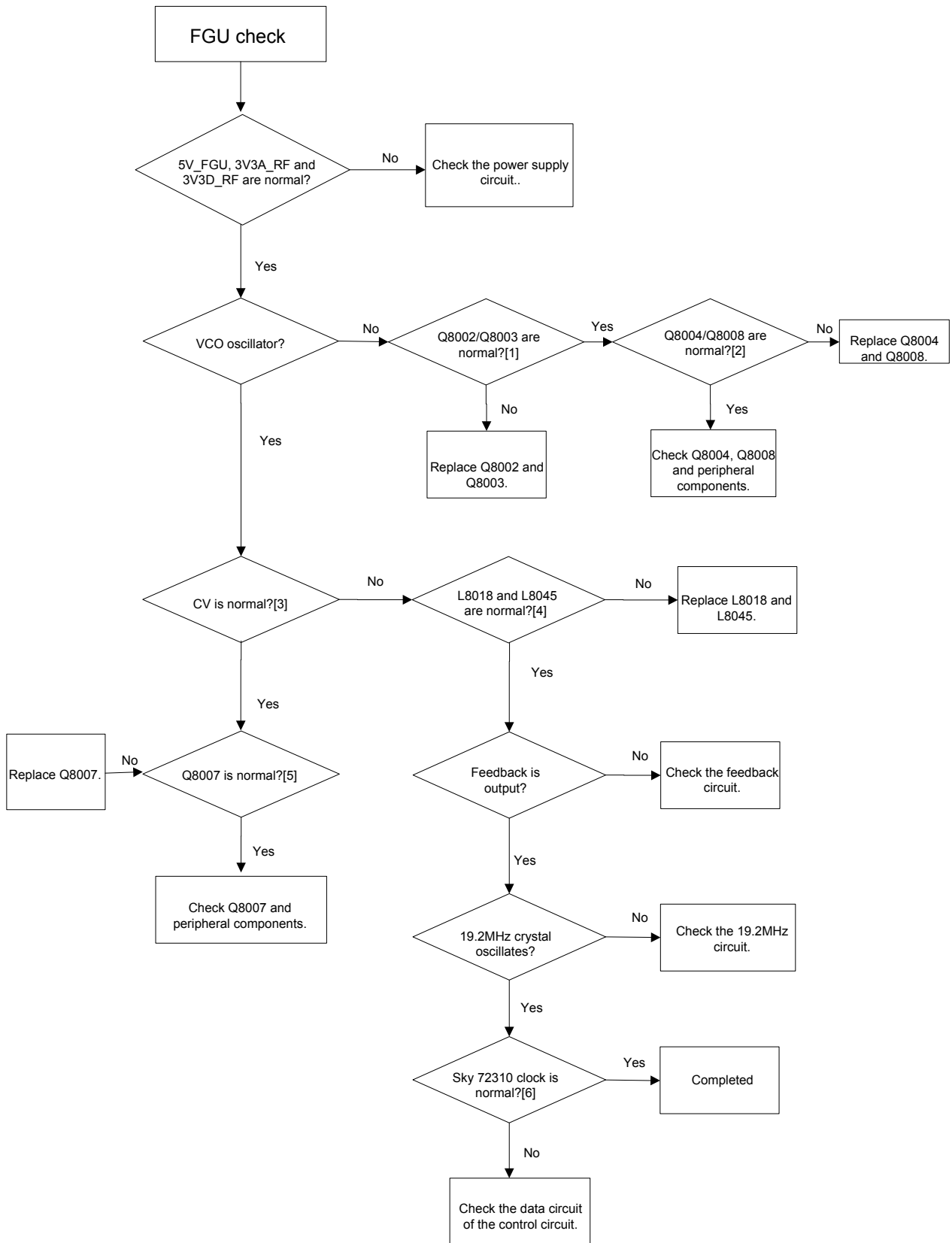
[9] Vdd: about 7.3 V; for low power, Vgg: 1-1.2 V; for high power, Vgg: 1.35-1.55 V.

[10] Vdd: about 7.3 V; for low power, Vgg: 1.8-2.1 V; for high power, Vgg: 2.4-2.8 V.

[11] Vc: about 4.8 V; Vb: about 1.4 V; Ve: about 1.1 V.

[12] Vc: about 4.7 V; Vb: about 0.7 V; Ve: 0 V. Start-up voltage of D9007: about 0.7 V.

6.4 FGU



Description of Normal Situations:

[1] During transmission, output voltage by Q8002 PIN3: about 4 V. During reception, output voltage by Q8003 PIN3: about 4 V.

[2] During transmission, voltage at Q8008 E: about 1.8 V. During reception, voltage at Q8004 E: about 1.8 V.

[3] The CV value varies with frequencies. Generally, it is within the range 0.5-4.5 V.

[4] L8018/L8045 is on.

[5] Voltage at Q8007 B: about 0.7 V.

[6] PLL_Clk outputs 960 KHz clock.

7. Interface Definition

7.1 Double-Pin Interface for Earpiece, Programming and Downloading

Pin	Pin No.	Signal	Function
J801	1	SPK-	<p>The diagram shows a 5-pin connector labeled J801. Pin 1 is labeled SPK-, pin 2 is labeled D+, and pin 3 is labeled SPK+. Pins 4 and 5 are not explicitly labeled in the diagram but correspond to the table entries.</p>
	2	USB+	
	3	SPK+	
	4	SPK+	
	5	SPK-	
J802	1	GND	<p>The diagram shows a 4-pin connector labeled J802. Pin 1 is labeled GND, pin 2 is labeled D-, and pin 3 is labeled MIC. Pin 4 is not explicitly labeled in the diagram but corresponds to the table entry.</p>
	2	MIC	
	3	USB-	
	4	OPTSEL1	

8. Tuning Description

8.1 Required Test Instruments

- Radio communication test sets: Aeroflex 3920 and HP8921
- 3A/10V power supply
- Multimeter
- Tuner software

8.2 Tuning Procedures

8.2.1 Tuning a Radio

After the radio is reassembled, it must be tuned via the Tuner software.

The specific operations are described in the table below.

Item	Method
TX Section	
Reference Oscillator Warp	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to TX test mode. 2. Open the Tuner software, go to "TUNE_DATA -> TX" and double click "Reference Oscillator Warp" from the navigation tree on the left. Then click the "Transmit On" button. 3. Observe the frequency displayed on HP8921, and adjust the vernier on Tuner until the frequency offset is less than or equals to 40 Hz. 4. Click the "Transmit Off" button. 5. Click the "Save" button to save your settings.
Transmit Power Calibration	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to TX test mode. 2. Open the Tuner software, go to "TUNE_DATA -> TX" and double click "Transmit Power Calibration" from the navigation tree on the left. Then select an appropriate channel. 3. Click the "Transmit On" button. 4. Adjust the power to the required level as described below: L: 1.2 ± 0.1 W H: 4.2 ± 0.1 W 5. Click the "Save" button to save your settings.
Transmit-to-Deviation	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to TX test mode. 2. Set the HP8921 parameters as follows: IF Filter: 230 kHz Filter 1: <20 Hz HPF Filter 2: <15 kHz LPF De-Emphasis: OFF 3. Open the Tuner software, go to "TUNE_DATA -> TX" and double click "Transmit-to-Deviation" from the navigation tree on the left. Then click the "Transmit On" button. 4. Observe the frequency deviation displayed on the screen and adjust the vernier on Tuner until the frequency deviation displayed on HP8921 is $5 \text{ k} \pm 50$ Hz. 5. Click the "Transmit Off" button.

	6. Click the "Save" button to save your settings.
Modulation Balance	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to TX test mode. 2. Set the HP8921 parameters as follows: IF Filter: 230 kHz Filter 1: <20 Hz HPF Filter 2: <15 kHz LPF De-Emphasis: OFF 3. Open the Tuner software, go to "TUNER_DATA -> TX" and double click "Modulation Balance" from the navigation tree on the left. Then select an appropriate channel. 4. Click the "Transmit On" button. 5. Adjust the value in the dialog box until the frequency deviation displayed on HP8921 is 5 k±50 Hz. 6. Press the Enter key on the keyboard to confirm your settings if the value is input via the keyboard. If the value is adjusted via the vernier, skip this step. 7. Click the "Transmit Off" button. 8. Click the "Save" button to save your settings.
Transmit Oscillator Voltage	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to TX test mode. 2. Open the Tuner software, go to "TUNER_DATA -> TX" and double click "Transmit Oscillator Voltage" from the navigation tree on the left. 3. Click the "Save" button to save the existing value to the radio.
RX Section	
Front-end Filter	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921. 2. Connect the Audio Out port of the radio with the Audio In port of the HP8921, and set the HP8921 to RX test mode. 3. Set the HP8921 as follows: Output RF signal: -118 dBm/Frequency (current channel frequency) Modulation frequency: 1 kHz Modulation deviation: 3 kHz De-Emphasis: 750 us 4. Observe the value displayed on the HP8921 and adjust the vernier until the SINAD value is more than 14 dB. 5. Set the HP8921 as follows: Output RF signal: -25 dBm/Frequency (current channel frequency: -36.675 MHz) 6. Observe the value displayed on the HP8921 and adjust the vernier until the SINAD value is less than 14 dB. 7. Press the Enter key on the keyboard to confirm your settings if the value is input via the keyboard. If the value is adjusted via the vernier, skip this step. 8. Click the "Save" button to save your settings.
Front-end Gain	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to RX test mode. 2. Set the HP8921 to output -70 dBm/Frequency (current channel frequency) unmodulated RF signals. 3. Press the Enter key on the keyboard to confirm your settings if the value is input via the keyboard. If the value is adjusted via the vernier, skip this step. 4. Click the "Save" button to save your settings.
Receive Oscillator Voltage	<ol style="list-style-type: none"> 1. Connect the antenna connector of the radio with the HP8921, and set the HP8921 to RX test mode. 2. Open the Tuner software, go to "TUNER_DATA -> RX" and double click "Receive Oscillator Voltage" from the navigation tree on the left. 3. Click the "Save" button to save the existing value to the radio.

Mandown Calibration	<ol style="list-style-type: none"> 1. Keep the radio in a vertical position. 2. Open the Tuner software, go to "TUNE_DATA -> RX" and double click "Mandown Calibration" from the navigation tree on the left. 3. Click the "Read" button to read the calibration data. 4. Click the "Save" button to save the calibration data.
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8.2.2 Test a Radio

After tuning the radio, it is required to test the digital RF signal.

Transmitting

Step 1 Open the Tuner software and go to "TEST -> TX", and double click "Transmit BER (0.153)" from the navigation tree on the left to open Transmit BER (0.153) interface.

Step 2 Select the channel to be tested and select "High Power" in the "Parameter".

Step 3 Set the Aeroflex 3920 as follows:

- Freq: be consistent with the frequency to be tested.
- STD IB 511(153)

Step 4 Click the "Transmit On" button.

Step 5 View all items on the Aeroflex 3920.

- Frequency Error ≤ 100 Hz
- Transmit Power: 4.2 ± 0.3 W
- FSK Error $\leq 5\%$
- Magnitude Error $\leq 1\%$

Receiving

Step 1 Open the Tuner software and go to "TEST -> RX", and double click "Receiver BER (0.153)" from the navigation tree on the left to open Receiver BER (0.153) interface.

Step 2 Select the frequency to be tested.

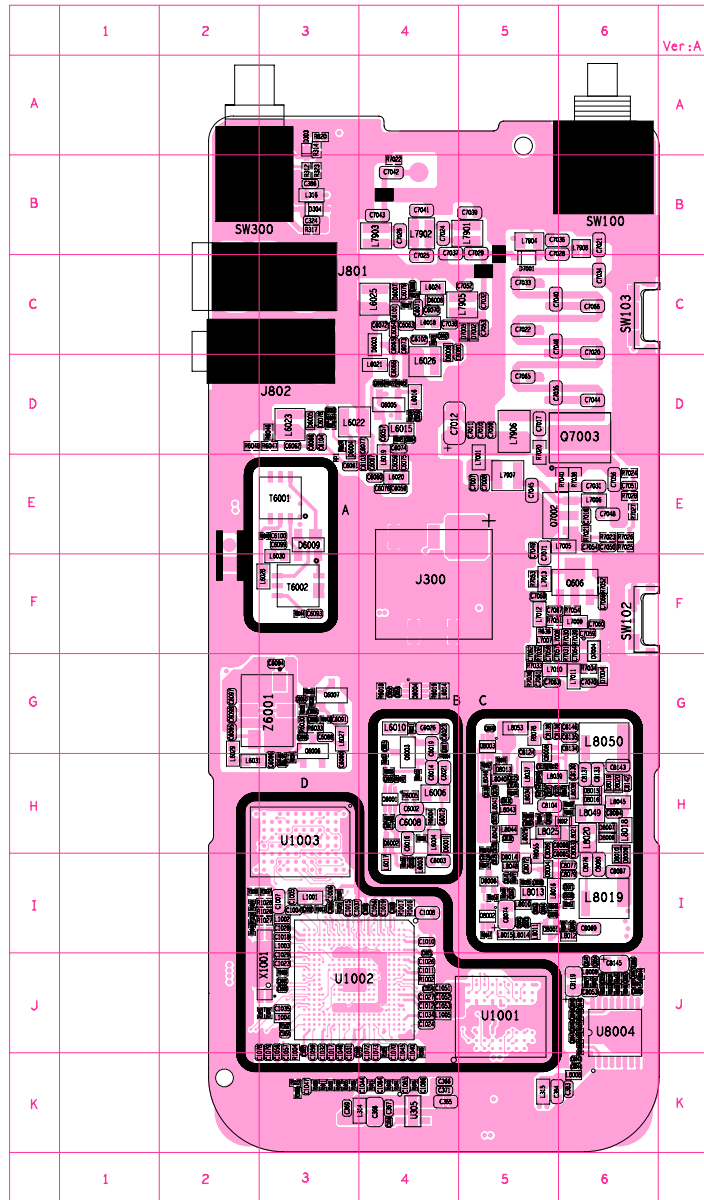
Step 3 Set the Aeroflex 3920 as follows:

- Freq: be consistent with the frequency to be tested.
- STD IB 511(.153)
- Lvl: -116.0 dBm

Step 4 Click the "Start" button.

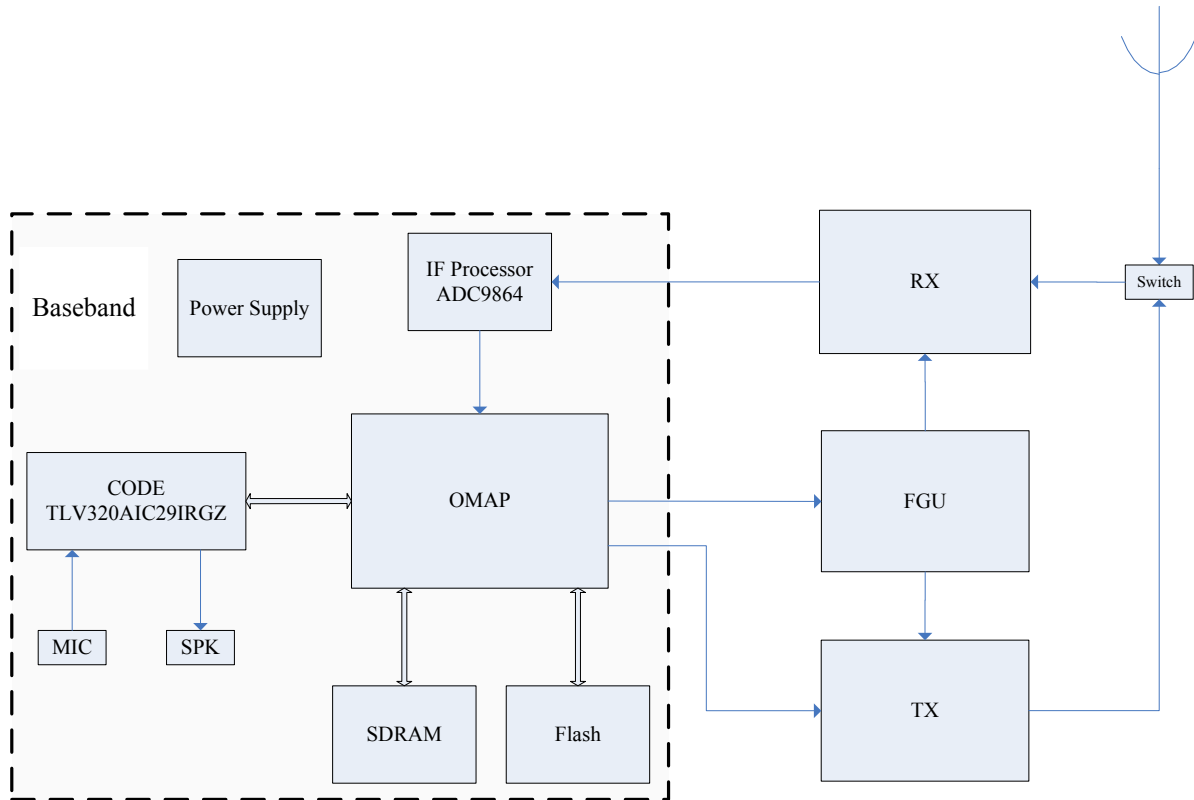
Step 5 The average error rate is less than or equal to 5%.

9. PCB



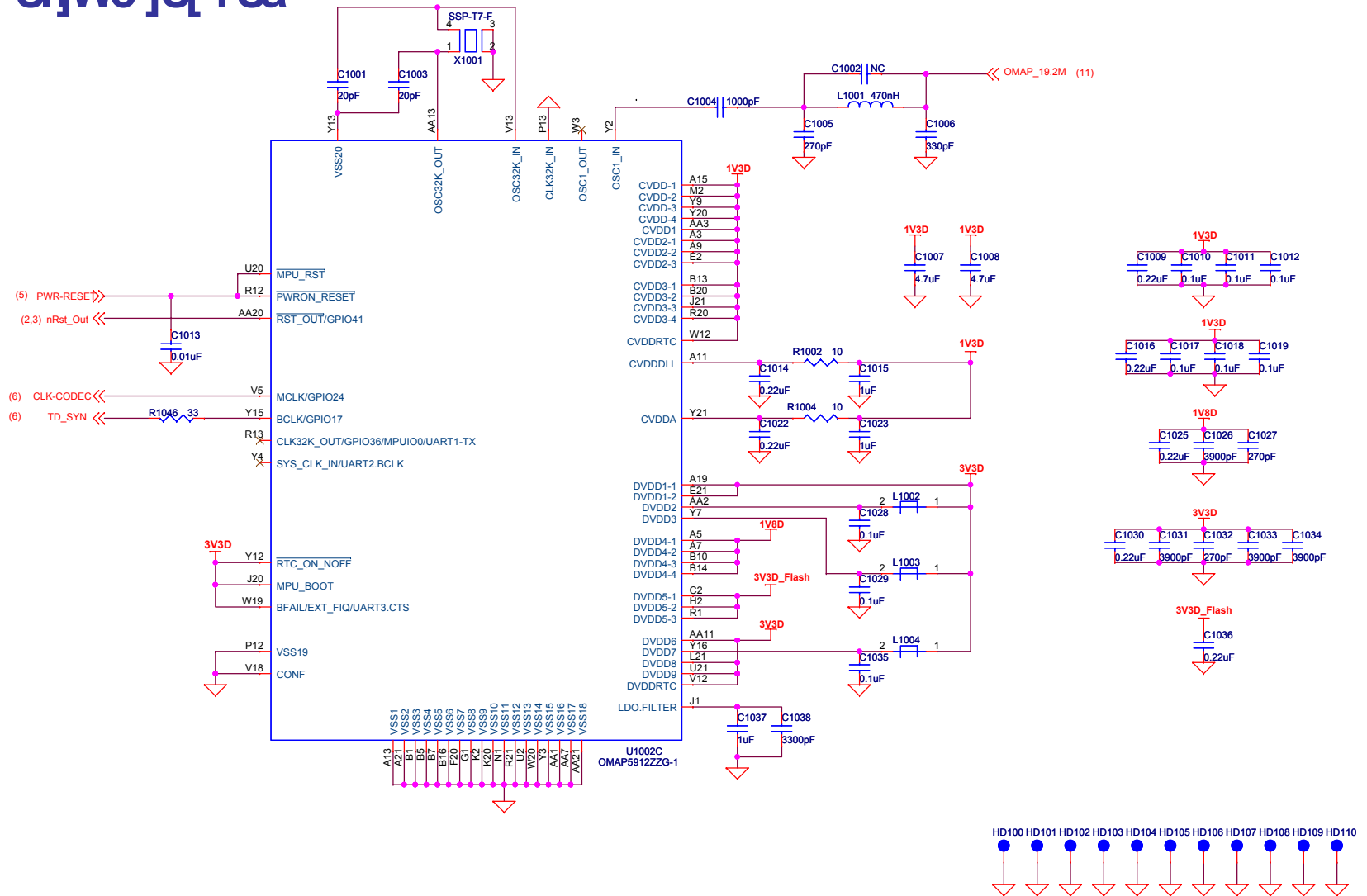
10. Block Diagram

Radio General Diagram

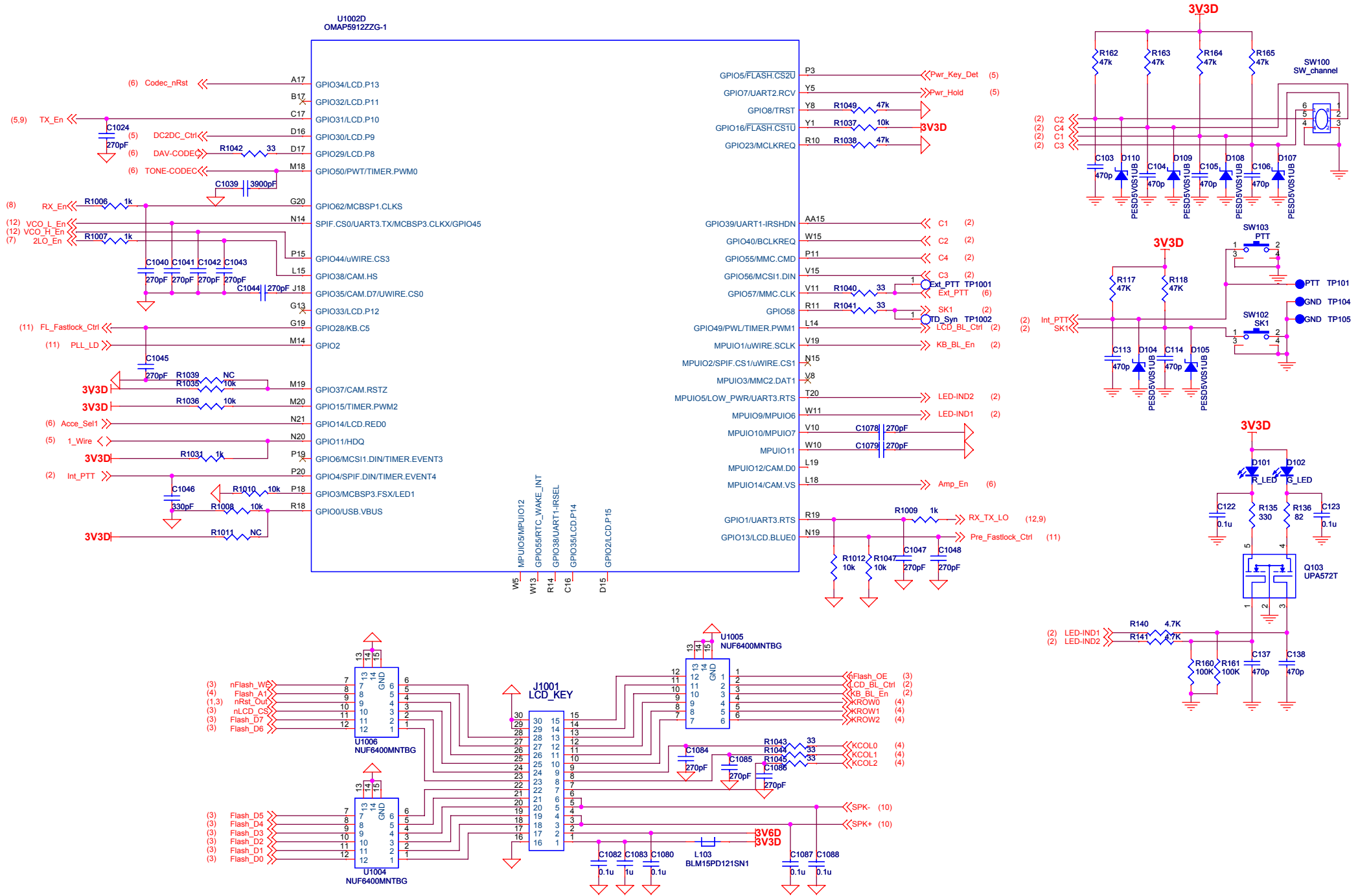


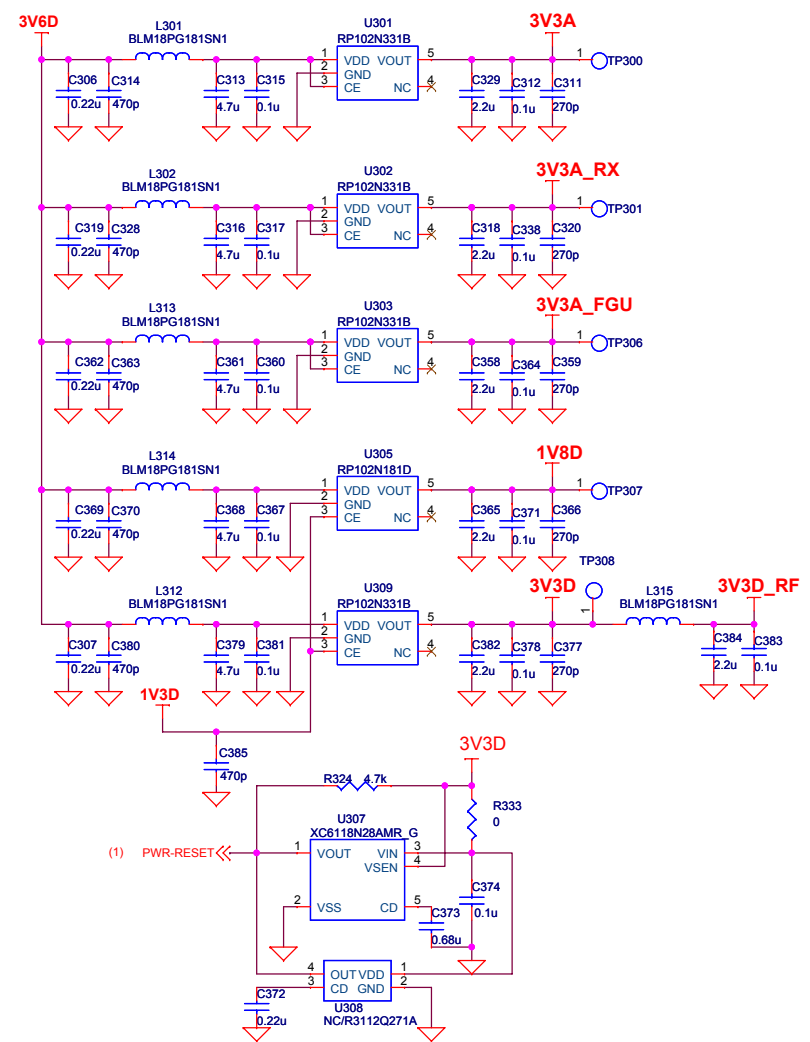
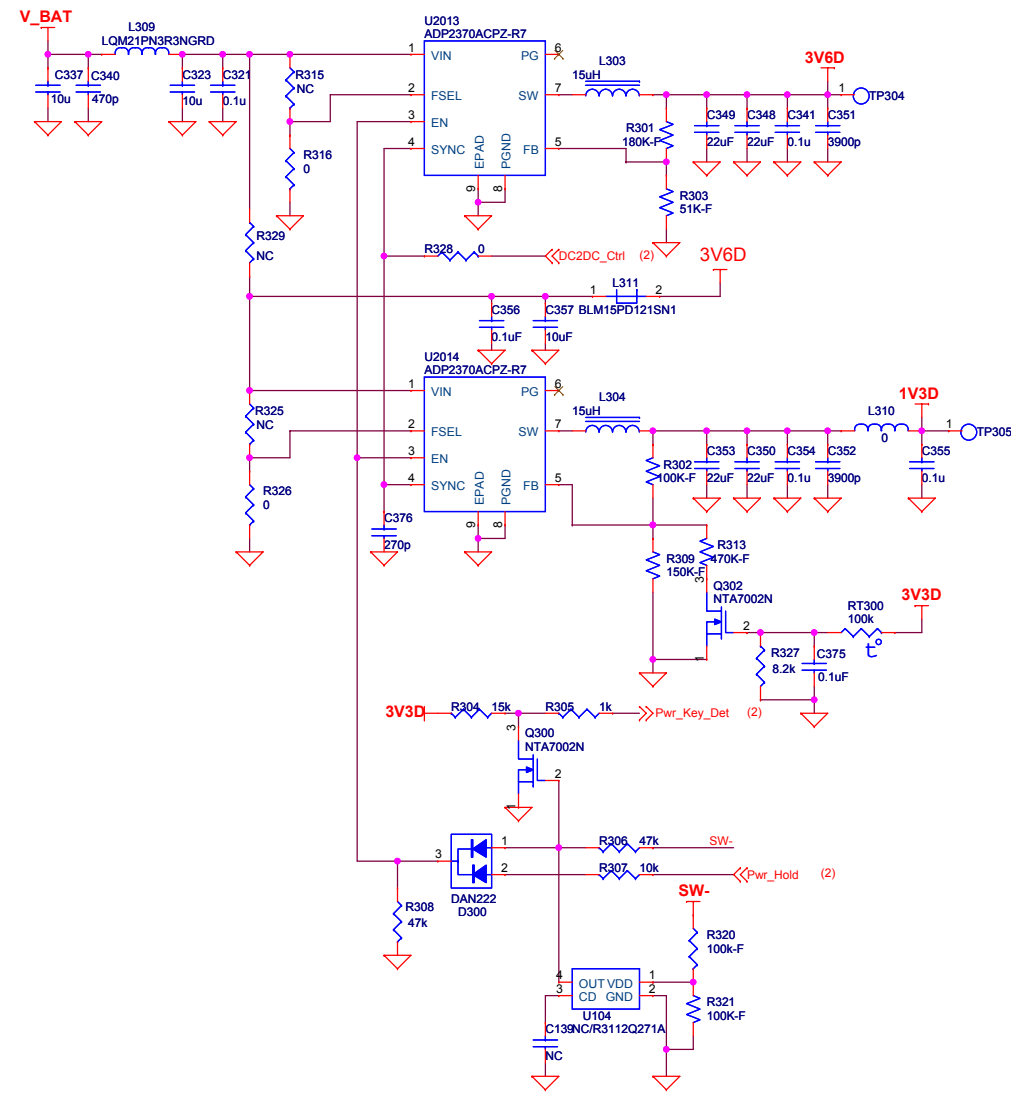
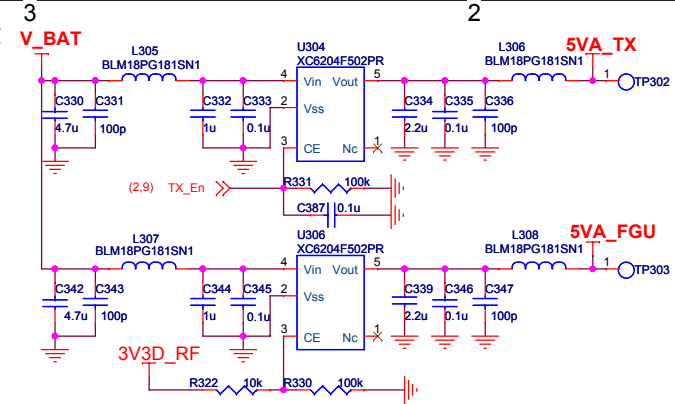
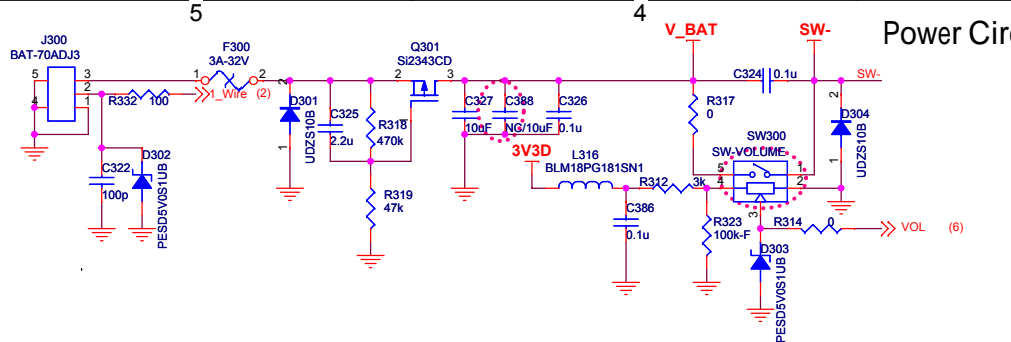
11.GW Ya UjW8 Ju fUa

OMAP-CORE

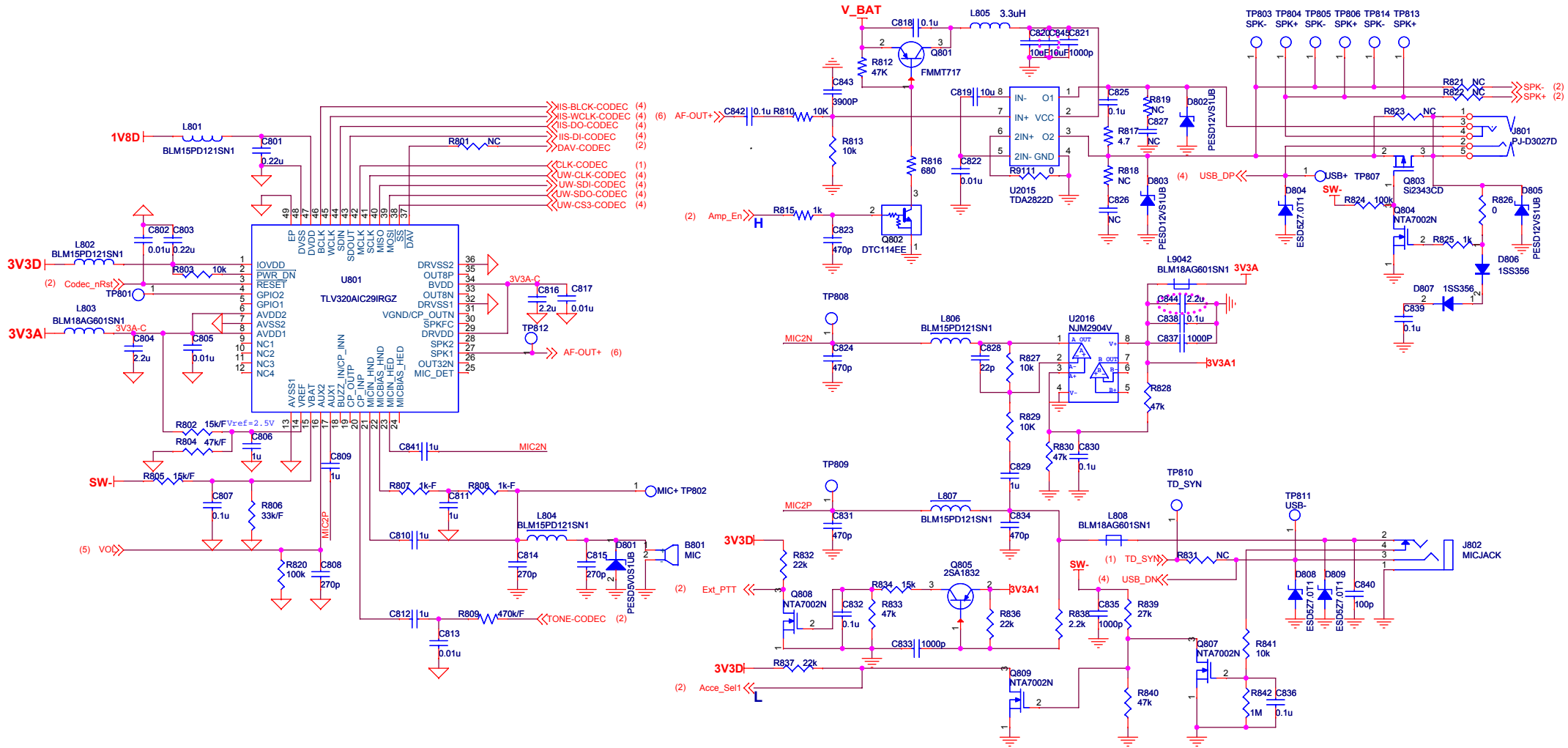


OMAP-IO

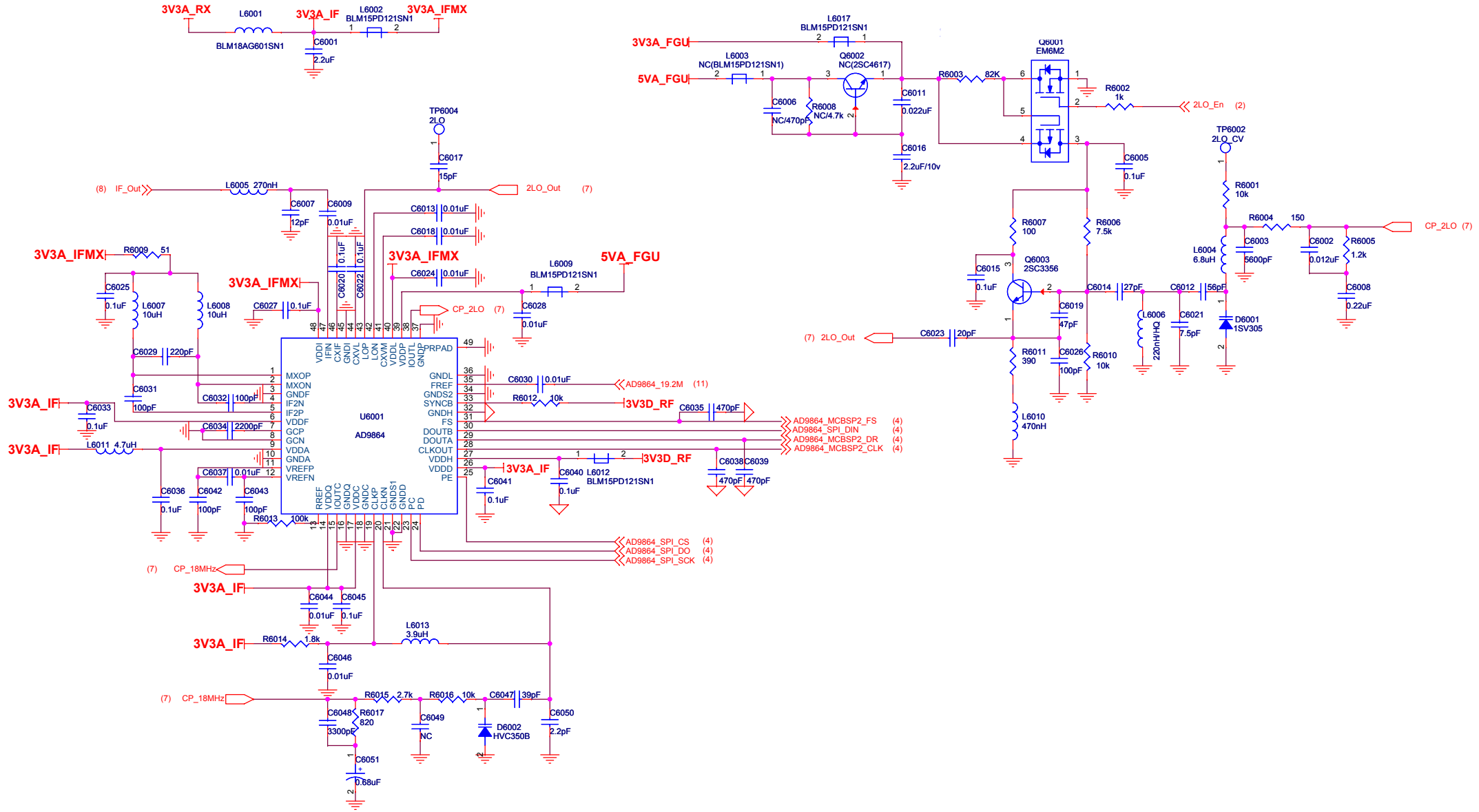




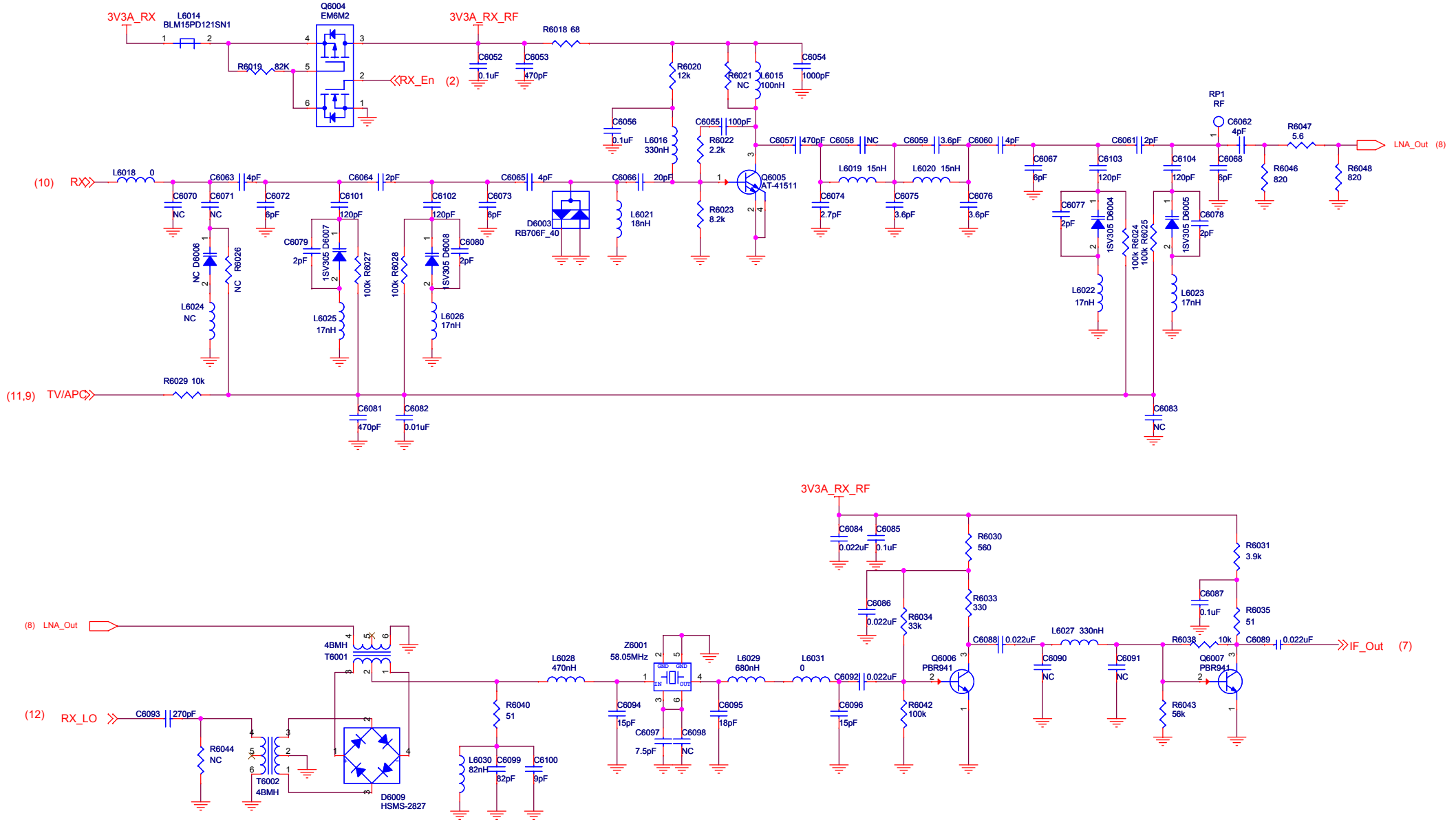
Audio Processing Circuit



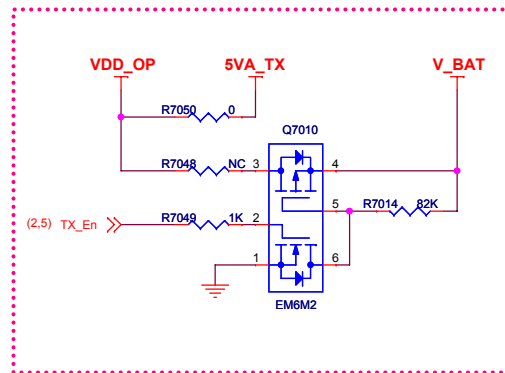
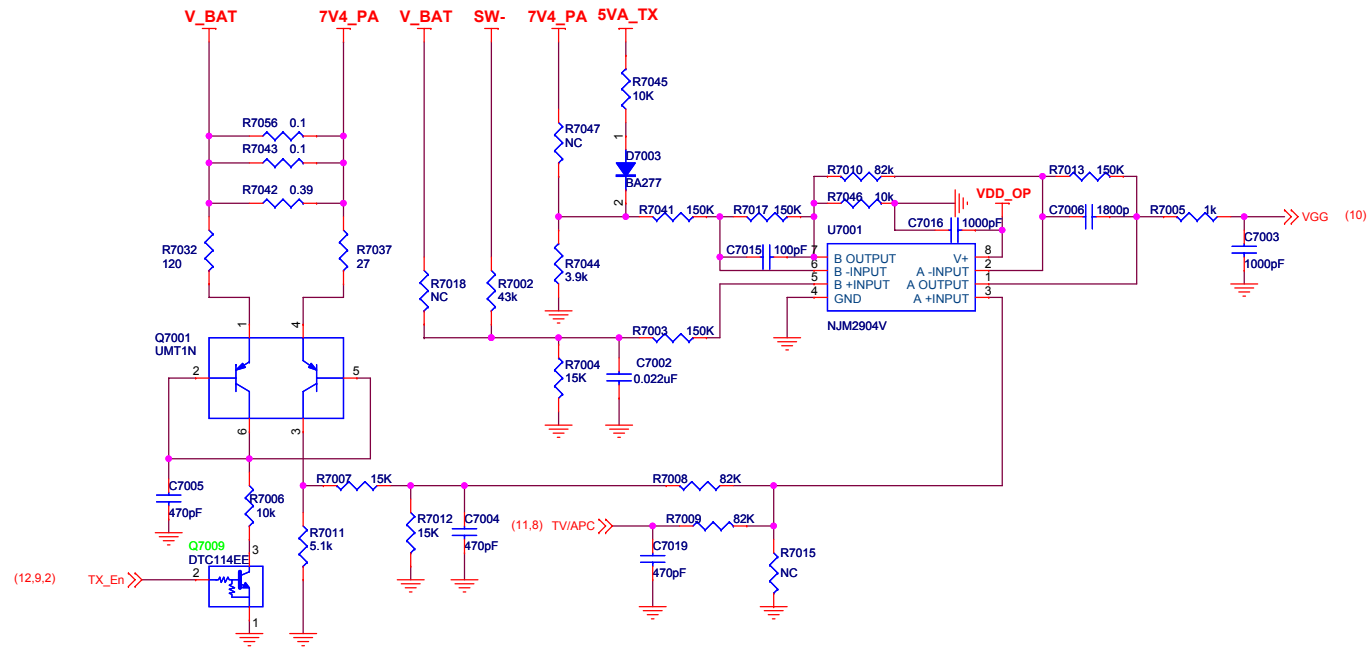
AD9864



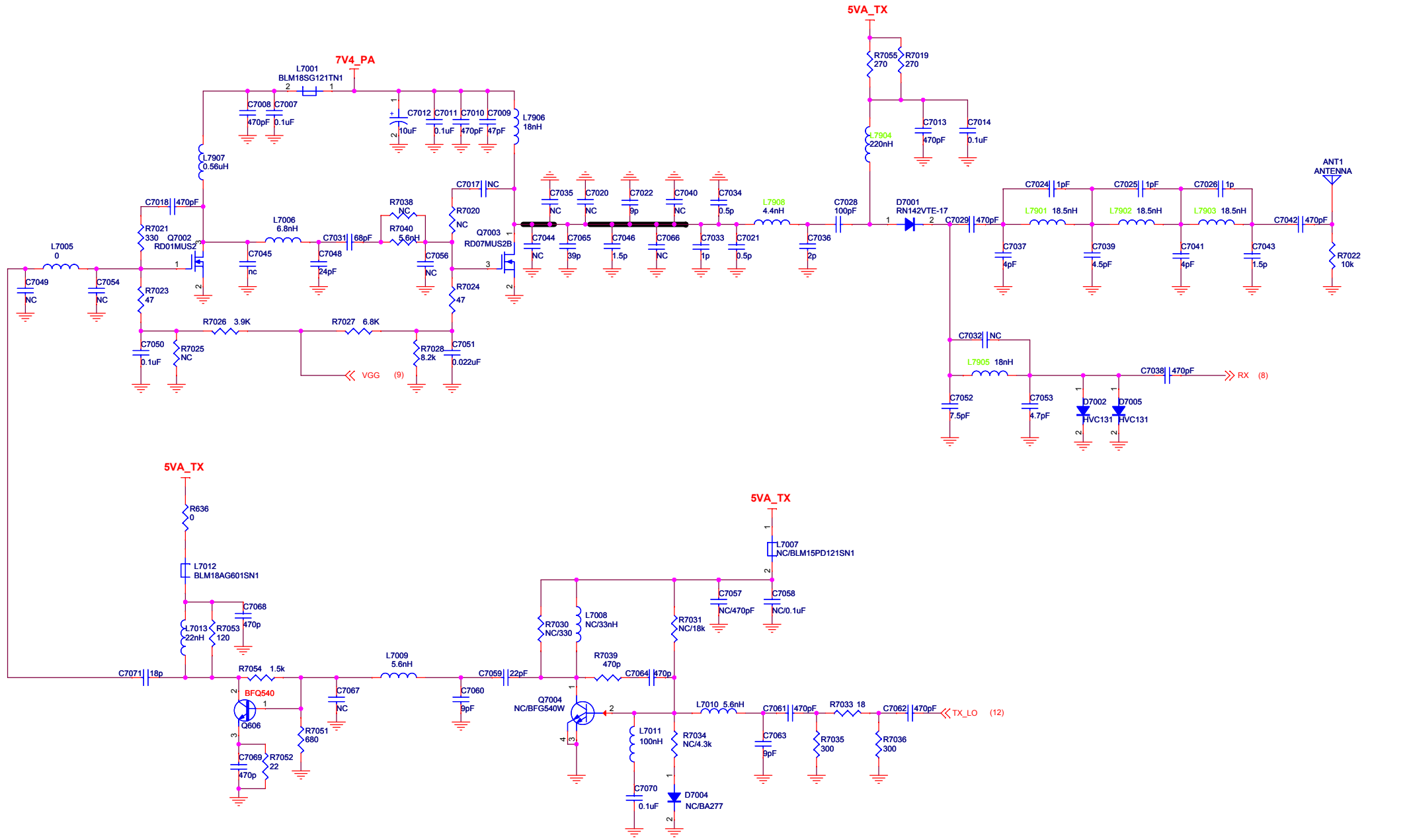
RX-FRONT-END



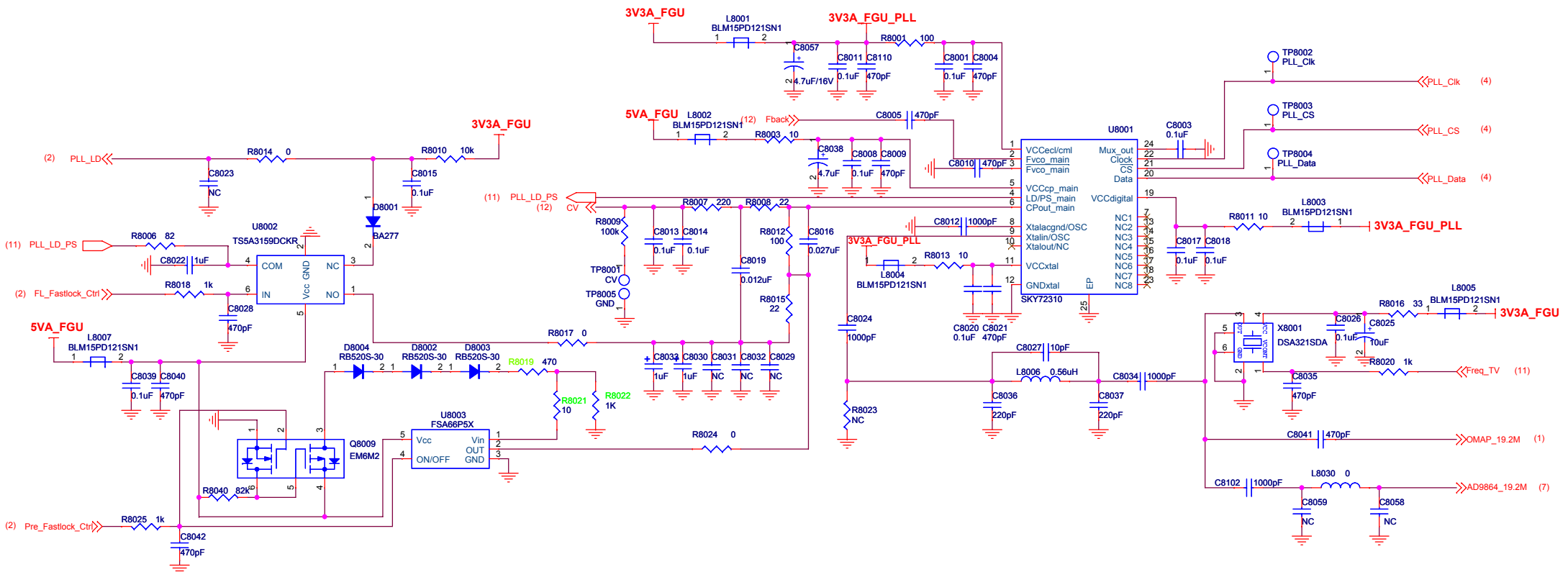
TX-CTRL



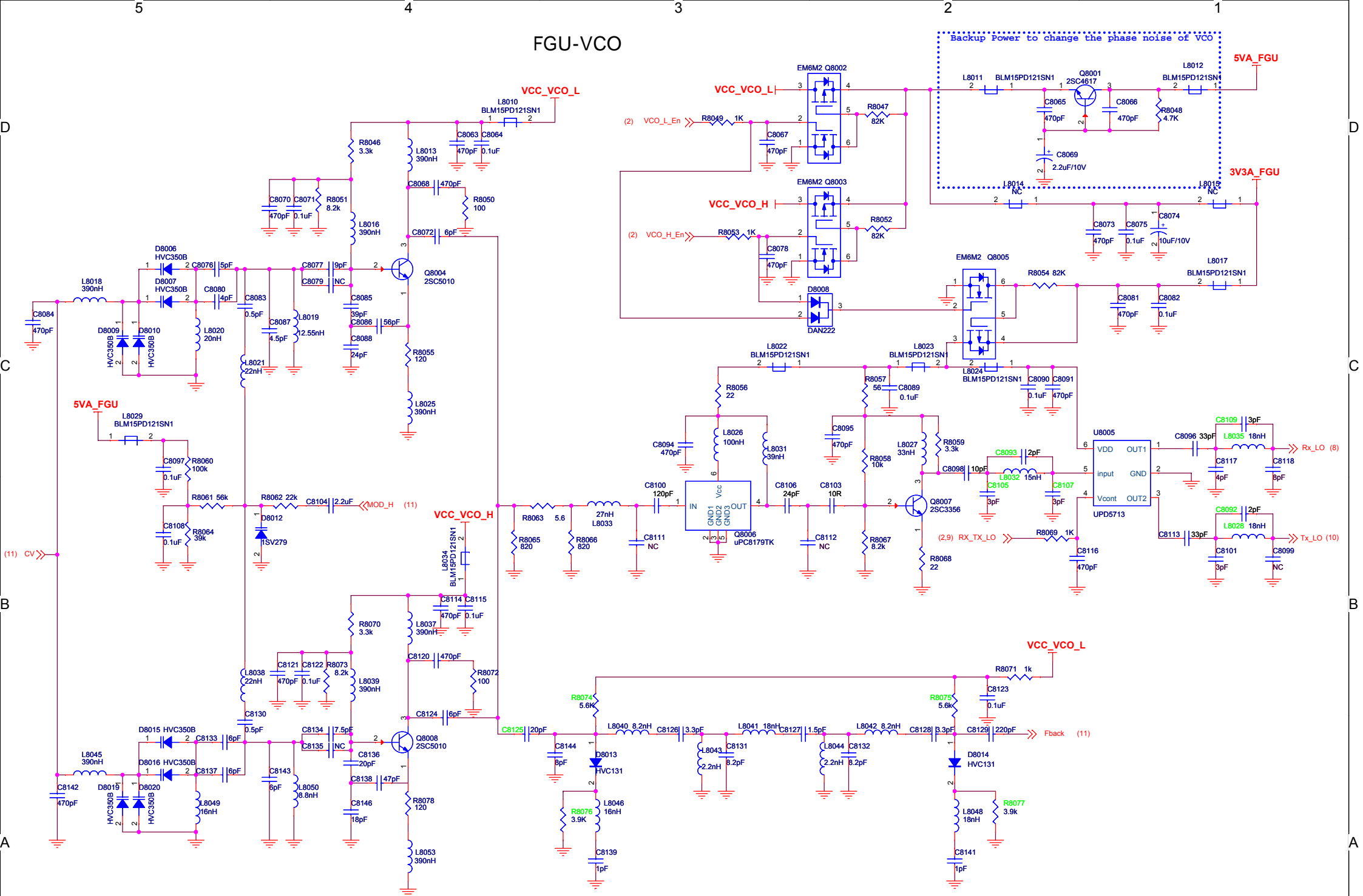
TX-PA-LINEUP



FGU-PLL/DAC



FGU-VCO



12. Parts List

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
1	A	/	6203391000000	Shielding cover	503	D6003	T4C	3303030300000	Schottky barrier diode
2	B	/	6203391000000	Shielding cover	504	D6004	T3D	3304010100220	Varactor
3	C	/	6203392000010	Shielding cover	505	D6005	T3D	3304010100220	Varactor
4	C1001	T3J	3101012000000	20PF	506	D6007	T4C	3304010100220	Varactor
5	C1003	T3J	3101012000000	20PF	507	D6008	T4C	3304010100220	Varactor
6	C1004	T3I	3101051020010	1000PF	508	D6009	T3E	3301250300000	Schottky barrier diode
7	C1005	T3I	3101052710000	270PF	509	D7001	T5C	3305030000000	Varactor
8	C1006	T3I	3101053310030	330PF	510	D7002	T5C	3399030000010	PIN diode
9	C1007	T3I	3101064750010	4.7UF	511	D7003	B6E	3303030800020	Switching diode
10	C1008	T4I	3101064750010	4.7UF	512	D7005	T5C	3399030000010	PIN diode
11	C1009	T3J	3101012240010	0.22uF	513	D8001	B5H	3303030800020	Switching diode
12	C1010	T4I	3101051040060	0.1UF	514	D8002	B6H	3301990000030	Schottky barrier diode
13	C1011	T4J	3101051040060	0.1UF	515	D8003	B6G	3301990000030	Schottky barrier diode
14	C1012	T4J	3101051040060	0.1UF	516	D8004	B6H	3301990000030	Schottky barrier diode
15	C1013	B3K	3101011030050	0.01uF	517	D8006	T6H	3304010100220	Varactor
16	C1014	T4J	3101012240010	0.22uF	518	D8007	T6H	3304010100220	Varactor
17	C1015	T3I	3101051050160	1uF	519	D8008	T5I	3303030100010	Switching diode
18	C1016	T4K	3101012240010	0.22uF	520	D8009	T6I	3304010100220	Varactor
19	C1017	T3J	3101051040060	0.1UF	521	D801	B2F	3399040600000	PESD5V0S1UB
20	C1018	T3I	3101051040060	0.1UF	522	D8010	T6I	3304010100220	Varactor
21	C1019	T4I	3101051040060	0.1UF	523	D8012	T6H	3304010100890	Varactor
22	C1022	T3J	3101012240010	0.22uF	524	D8013	T5H	3399030000010	PIN diode
23	C1023	T3J	3101051050160	1uF	525	D8014	T5I	3399030000010	PIN diode
24	C1024	T4J	3101052710000	270PF	526	D8015	T6H	3304010100220	Varactor
25	C1025	T4J	3101012240010	0.22uF	527	D8016	T6H	3304010100220	Varactor
26	C1026	T4J	3101053920000	3900PF	528	D8019	T6H	3304010100220	Varactor
27	C1027	T4J	3101052710000	270PF	529	D802	B3C	3399040600020	PESD12VS1UB
28	C1028	T3I	3101051040060	0.1UF	530	D8020	T6H	3304010100220	Varactor
29	C1029	T3J	3101051040060	0.1UF	531	D803	B4C	3399040600020	PESD12VS1UB
30	C103	B6A	3101054710010	470PF	532	D804	B3C	3310249900000	ESD protection diode
31	C1030	B3K	3101012240010	0.22uF	533	D805	B3C	3399040600020	PESD12VS1UB
32	C1031	T3J	3101053920000	3900PF	534	D806	B3D	3303030800040	Switching diode
33	C1032	T3J	3101052710000	270PF	535	D807	B3D	3303030800040	Switching diode
34	C1033	B3J	3101053920000	3900PF	536	D808	B3C	3310249900000	ESD protection diode
35	C1034	T4J	3101053920000	3900PF	537	D809	B3D	3310249900000	ESD protection diode
36	C1035	T3J	3101051040060	0.1UF	538	E	/	6203391000000	Shielding cover
37	C1036	T4I	3101012240010	0.22uF	539	F	/	6203394000000	DC-DC Shielding cover
38	C1037	T3I	3101051050160	1uF	540	F300	B4E	4002000000320	Fuse
39	C1038	T4I	3101013320000	3300pF	541	G	/	6203395000000	RX-IF Shielding cover
40	C1039	B3J	3101053920000	3900PF	542	H	/	6203396000000	PLL Shielding cover
41	C104	B6B	3101054710010	470PF	543	I	/	6203397000000	CODEC Shielding cover
42	C1040	T4J	3101052710000	270PF	544	J300	T4F	5205003100020	Battery connector
43	C1041	B3J	3101052710000	270PF	544	L1001	T3I	3210406471000	470nH
44	C1042	B3J	3101052710000	270PF	545	L1002	T3I	3221505121010	Ferrite bead
45	C1043	B3J	3101052710000	270PF	546	L1003	T3I	3221505121010	Ferrite bead
46	C1044	T4K	3101052710000	270PF	547	L1004	T3J	3221505121010	Ferrite bead

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
47	C1045	T4J	3101052710000	270PF	548	L1005	T4J	3221505121010	Ferrite bead
48	C1046	T3J	3101053310030	330PF	549	L103	B5K	3221505121010	Ferrite bead
49	C1047	T3K	3101052710000	270PF	550	L301	B5K	3221506181000	Ferrite bead
50	C1048	B3J	3101052710000	270PF	551	L302	B3G	3221506181000	Ferrite bead
51	C1049	B5J	3101051040060	0.1UF	552	L303	B3H	3217099153000	15uH
52	C105	B6A	3101054710010	470PF	553	L304	B3I	3217099153000	15uH
53	C1050	B5J	3101051040060	0.1UF	554	L305	B4E	3221506181000	Ferrite bead
54	C1051	T4J	3101052710000	270PF	555	L306	B5E	3221506181000	Ferrite bead
55	C1052	T4J	3101052710000	270PF	556	L307	B6F	3221506181000	Ferrite bead
56	C1053	T4J	3101051050160	1uF	557	L308	B6G	3221506181000	Ferrite bead
57	C1054	T3J	3101011030050	0.01uF	558	L309	B3G	3210107332000	3.3uH
58	C1055	T3I	3101012240010	0.22uF	559	L310	B3I	3001080000000	Chip resistor
59	C1056	T4I	3101051050160	1uF	560	L311	B3H	3221505121010	Ferrite bead
60	C1057	T3J	3101052710000	270PF	561	L312	B2J	3221506181000	Ferrite bead
61	C1058	T3J	3101052710000	270PF	562	L313	B3F	3221506181000	Ferrite bead
62	C1059	T3J	3101052710000	270PF	563	L314	T4K	3221506181000	Ferrite bead
63	C106	B6B	3101054710010	470PF	564	L315	T5K	3221506181000	Ferrite bead
64	C1060	B3J	3101052710000	270PF	565	L316	T3B	3221506181000	Ferrite bead
65	C1061	B3J	3101055610040	560PF	566	L6001	B4G	3221506601000	Ferrite bead
66	C1062	B3J	3101055610040	560PF	567	L6002	B5G	3221505121010	Ferrite bead
67	C1063	B4J	3101051010030	100PF	568	L6004	T4H	3213306682000	6.8uH
68	C1064	B5J	3101052710000	270PF	569	L6005	B4G	3210406271000	270nH
69	C1065	B4J	3101052710000	270PF	570	L6006	T4H	3217107221020	220nH
70	C1066	B4J	3101052710000	270PF	571	L6007	B5G	3215099103000	10uH
71	C1067	B3J	3101052710000	270PF	572	L6008	B5H	3215099103000	10uH
72	C1068	B3J	3101052710000	270PF	573	L6009	B4G	3221505121010	Ferrite bead
73	C1069	B4J	3101052710000	270PF	574	L6010	T4G	3210406471000	470nH
74	C1070	T4J	3101052710000	270PF	575	L6011	B5H	3210407472000	4.7uH
75	C1071	B4J	3101052710000	270PF	576	L6012	B4H	3221505121010	Ferrite bead
76	C1072	T4J	3101052710000	270PF	577	L6013	B4H	3217107392000	3.9uH
77	C1073	T4J	3101052710000	270PF	578	L6014	T4G	3221505121010	Ferrite bead
78	C1074	B6J	3101014700000	47PF	579	L6015	T4D	3210106101000	100nH
79	C1075	B6J	3101014700000	47PF	580	L6016	T4D	3210406331000	330nH
80	C1076	B6J	3101014700000	47PF	581	L6017	T4I	3221505121010	Ferrite bead
81	C1077	B6J	3101014700000	47PF	582	L6018	T4C	3001060000000	Resistor
82	C1078	T3J	3101052710000	270PF	583	L6019	T4E	3210306150000	15nH
83	C1079	T3J	3101052710000	270PF	584	L6020	T4E	3210306150000	15nH
84	C1080	B4K	3101051040060	0.1UF	585	L6021	T4D	3210306180000	18nH
85	C1081	B3H	3101012240010	0.22uF	586	L6022	T3D	3233099170000	17nH
86	C1082	B5K	3101051040060	0.1UF	587	L6023	T3D	3233099170000	17nH
87	C1083	B5K	3101051050160	1uF	588	L6025	T4C	3233099170000	17nH
88	C1084	T4K	3101052710000	270PF	589	L6026	T4D	3233099170000	17nH
89	C1085	T4K	3101052710000	270PF	590	L6027	T3G	3210406331000	330nH
90	C1086	T4K	3101052710000	270PF	591	L6028	T3F	3217106471000	470nH
91	C1087	B5C	3101051040060	0.1UF	592	L6029	T2G	3213306681010	0.68uH
92	C1088	B4C	3101051040060	0.1UF	593	L6030	T3F	3210306820000	82nH
93	C113	B6D	3101054710010	470PF	594	L6031	T2H	3001060000000	Resistor
94	C114	B6F	3101054710010	470PF	595	L7001	T5E	3221506181000	Ferrite bead
95	C122	B3A	3101051040060	0.1UF	596	L7005	T6E	3001060000000	Resistor
96	C123	B4A	3101051040060	0.1UF	597	L7006	T6E	3212106689000	6.8nH
97	C137	B3B	3101054710010	470PF	598	L7009	T6F	3101064710000	470PF
98	C138	B3B	3101054710010	470PF	599	L7010	T5G	3101062700010	27PF
99	C306	B5K	3101052240010	0.22UF	600	L7012	T5F	3221506601000	Ferrite bead
100	C307	B2J	3101052240010	0.22UF	601	L7013	T5F	3210306220000	22nH
101	C311	B5K	3101052710000	270PF	602	L7901	T5B	3233099185900	18.5nH
102	C312	B5K	3101051040060	0.1UF	603	L7902	T4B	3233099185900	18.5nH
103	C313	B5K	3101074750000	4.7UF	604	L7903	T4B	3233099185900	18.5nH
104	C314	B5K	3101054710010	470PF	605	L7904	T5B	3217107221020	220nH
105	C315	B5K	3101051040060	0.1UF	606	L7905	T5C	3233099185900	18.5nH
106	C316	B3G	3101074750000	4.7UF	607	L7906	T5D	3233099470000	47nH

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
107	C317	B3G	3101051040060	0.1UF	608	L7907	T5E	3213212561000	0.56uH
108	C318	B3G	3101062250000	2.2UF	609	L7908	T6B	3233099449000	4.4nH
109	C319	B2G	3101052240010	0.22UF	610	L8001	B5H	3221505121010	Ferrite bead
110	C320	B3G	3101052710000	270PF	611	L8002	B6I	3221505121010	Ferrite bead
111	C321	B3H	3101051040060	0.1UF	612	L8003	B6J	3221505121010	Ferrite bead
112	C322	B3F	3101051010030	100PF	613	L8004	B6J	3221505121010	Ferrite bead
113	C323	B3H	3101071060280	10UF	614	L8005	B6J	3221505121010	Ferrite bead
114	C324	T3B	3101051040060	0.1UF	615	L8006	B6J	3213306561000	0.56uH
115	C325	B4F	3101072250100	2.2uF	615	L8007	B6H	3221505121010	Ferrite bead
116	C326	B4E	3101051040060	0.1UF	616	L8008	T6K	3221505121010	Ferrite bead
117	C327	B4E	3101071060280	10UF	617	L8009	T6J	3221505121010	Ferrite bead
118	C328	B2G	3101054710010	470PF	618	L801	B4J	3221505121010	Ferrite bead
119	C329	B5J	3101062250000	2.2UF	619	L8010	T5I	3221505121010	Ferrite bead
120	C330	B4F	3101074750000	4.7UF	620	L8011	T5I	3221505121010	Ferrite bead
121	C331	B4F	3101051010030	100PF	621	L8012	T6I	3221505121010	Ferrite bead
122	C332	B4E	3101061050020	1UF	622	L8013	T5I	3210106391000	390nH
123	C333	B5E	3101051040060	0.1UF	623	L8016	T5I	3210106391000	390nH
124	C334	B5E	3101062250000	2.2UF	624	L8017	B4G	3221505121010	Ferrite bead
125	C335	B5E	3101051040060	0.1UF	625	L8018	T6H	3210106391000	390nH
126	C336	B5E	3101051010030	100PF	626	L8019	T6I	3237138120010	12.55nH
127	C337	B2H	3101071060280	10UF	627	L802	B4J	3221505121010	Ferrite bead
128	C338	B3G	3101051040060	0.1UF	628	L8020	T6H	3217107200000	20nH
129	C339	B6G	3101062250000	2.2UF	629	L8021	T6H	3217105220000	22nH
130	C340	B2G	3101054710010	470PF	630	L8022	B5F	3221505121010	Ferrite bead
131	C341	B3H	3101051040060	0.1UF	631	L8023	B4G	3221505121010	Ferrite bead
132	C342	B5F	3101074750000	4.7UF	632	L8024	B4G	3221505121010	Ferrite bead
133	C343	B6F	3101051010030	100PF	633	L8025	T5H	3210106391000	390nH
134	C344	B6F	3101061050020	1UF	634	L8026	B5F	3210106101000	100nH
135	C345	B6F	3101051040060	0.1UF	635	L8027	B4G	3217106330000	33nH
136	C346	B6G	3101051040060	0.1UF	636	L8028	B5F	3217105180000	18nH
137	C347	B6G	3101051010030	100PF	637	L8029	T5H	3221505121010	Ferrite bead
138	C348	B3H	3101082260120	22UF	638	L803	B5J	3221506601000	Ferrite bead
139	C349	B3H	3101082260120	22UF	639	L8030	B5J	3001060000000	Resistor
140	C350	B2I	3101072260000	22UF	640	L8031	B5F	3210306390000	39nH
141	C351	B3H	3101053920000	3900PF	641	L8032	B4G	3217105150000	15nH
142	C352	B2I	3101053920000	3900PF	642	L8033	B5G	3210305270000	27nH
143	C353	B2I	3101072260000	22UF	643	L8034	T5H	3221505121010	Ferrite bead
144	C354	B2I	3101051040060	0.1UF	644	L8035	B4F	3217105180000	18nH
145	C355	B3I	3101051040060	0.1UF	645	L8037	T5H	3210106391000	390nH
146	C356	B3I	3101061040010	0.1UF	646	L8038	T6H	3217105220000	22nH
147	C357	B3I	3101071060280	10UF	647	L8039	T5H	3210106391000	390nH
148	C358	B4F	3101062250000	2.2UF	648	L804	B3F	3221505121010	Ferrite bead
149	C359	B4F	3101052710000	270PF	649	L8040	T5H	3210305120000	12nH
150	C360	B3F	3101051040060	0.1UF	650	L8041	T5H	3217105180000	18nH
151	C361	B3F	3101074750000	4.7UF	651	L8042	T5H	3210305829000	8.2nH
152	C362	B3G	3101052240010	0.22UF	652	L8043	T5H	3217105229000	2.2nH
153	C363	B3G	3101054710010	470PF	653	L8044	T5H	3217105229000	2.2nH
154	C364	B4F	3101051040060	0.1UF	654	L8045	T6H	3210106391000	390nH
155	C365	T4K	3101062250000	2.2UF	655	L8046	T5H	3217105160000	16nH
156	C366	T4K	3101052710000	270PF	656	L8048	T5I	3217105180000	18nH
157	C367	T4K	3101051040060	0.1UF	657	L8049	T6H	3247107160000	16nH
158	C368	T4K	3101074750000	4.7UF	658	L805	B3B	3210107332000	3.3uH
159	C369	T3K	3101052240010	0.22UF	659	L8050	T6G	3237138889000	8.8nH
160	C370	B4K	3101054710010	470PF	660	L8053	T5G	3210106391000	390nH
161	C371	T4K	3101051040060	0.1UF	661	L806	B3E	3221505121010	Ferrite bead
162	C372	B3K	3101052240010	0.22UF	662	L807	B3D	3221505121010	Ferrite bead
163	C373	B3J	3101056840010	0.68UF	663	L808	B3D	3221506601000	Ferrite bead
164	C374	B3K	3101051040060	0.1UF	664	L9042	B2D	3221506601000	Ferrite bead
165	C375	B3I	3101051040060	0.1UF	665	Q103	B3A	3503040000000	Compound transistor

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
166	C376	B3H	3101052710000	270PF	666	Q300	B3F	3599990000610	N-MOSFET NTA7002NT1G
167	C377	B3K	3101052710000	270PF	667	Q301	B4E	3505990000040	P-MOSFET SI2343CDS
168	C378	B3J	3101051040060	0.1UF	668	Q302	B3I	3599990000610	N-MOSFET NTA7002NT1G
169	C379	B2J	3101074750000	4.7UF	669	Q6001	T4H	3403999000070	Compound transistor
170	C380	B2J	3101054710010	470PF	670	Q6003	T4G	3408002000000	2SC3356-T1B-A- R24
171	C381	B2J	3101051040060	0.1UF	671	Q6004	T4G	3403999000070	Compound transistor
172	C382	B3J	3101062250000	2.2UF	672	Q6005	T4D	3418001000010	AT-41511-TR1G
173	C383	T6K	3101051040060	0.1UF	673	Q6006	T3G	3404006000000	PBR941
174	C384	T5K	3101062250000	2.2UF	674	Q6007	T3G	3404006000000	PBR941
175	C385	B3J	3101054710010	470PF	675	Q606	T6F	3420999000060	NPN transistor
176	C386	T3B	3101051040060	0.1UF	676	Q7001	B5F	3403014000020	UMT1NTR
177	C387	B4F	3101051040060	0.1UF	677	Q7002	T6E	3504990000010	RD01MUS2-T113
178	C6001	B4G	3101062250000	2.2UF	678	Q7003	T6D	3504990000040	RD07MUS2B
179	C6002	T4H	3101061230000	0.012UF	679	Q7009	B5F	3403008000010	DTC114EE(TL)
180	C6003	T4I	3101065620010	5600PF	680	Q7010	B5F	3403999000070	Compound transistor
181	C6005	T4H	3101011040080	0.1uF	681	Q8001	T5I	3403003000060	2SC4617TLS
182	C6007	B5G	3101051200020	12PF	682	Q8002	T5I	3403999000070	Compound transistor
183	C6008	T4H	3101072240000	0.22UF	683	Q8003	T5G	3403999000070	Compound transistor
184	C6009	B4G	3101011030050	0.01uF	684	Q8004	T5I	3408002000080	2SC5010
185	C6011	T4H	3101012230010	0.022uF	685	Q8005	B4G	3403999000070	Compound transistor
186	C6012	T4H	3101055600000	56PF	686	Q8006	B5G	3609003999000	UPC8179TK
187	C6013	B4G	3101011030050	0.01uF	687	Q8007	B5G	3408002000000	2SC3356-T1B-A- R24
188	C6014	T4H	3101062700010	27PF	688	Q8008	T5G	3408002000080	2SC5010
189	C6015	T4G	3101011040080	0.1uF	689	Q8009	B6G	3403999000070	Compound transistor
190	C6016	T4H	3101062250000	2.2UF	690	Q801	B3B	3499000000180	PNP transistor
191	C6017	T4G	3101011500020	15PF	691	Q802	B3B	3403008000010	DTC114EE(TL)
192	C6018	B4G	3101011030050	0.01uF	692	Q803	B3C	3505990000040	P-MOSFET SI2343CDS
193	C6019	T4G	3101064700000	47PF	693	Q804	B3C	3599990000610	N-MOSFET NTA7002NT1G
194	C6020	B4G	3101011040080	0.1uF	694	Q805	B3E	3401001000490	2SA1832-GR(TE8 5L.F)
195	C6021	T4H	3101067590010	7.5PF	695	Q807	B3D	3512990000000	N-MOSFET 2SK3019
196	C6022	B4G	3101011040080	0.1uF	696	Q808	B3E	3512990000000	N-MOSFET 2SK3019
197	C6023	T4G	3101052000020	20PF	697	Q809	B3D	3512990000000	N-MOSFET 2SK3019
198	C6024	B5G	3101011030050	0.01uF	698	R1002	T4J	3001051000000	10 Ω
199	C6025	B5G	3101011040080	0.1uF	699	R1004	T3J	3001051000000	10 Ω
200	C6026	T4G	3101061010150	100PF	700	R1006	T4J	3001011020060	1K Ω
201	C6027	B4G	3101011040080	0.1uF	701	R1007	B3J	3001011020060	1K Ω
202	C6028	B4G	3101011030050	0.01uF	702	R1008	T3K	3001011030080	10K Ω
203	C6029	B5H	3101012210010	220PF	703	R1009	T3K	3001011020060	1K Ω
204	C6030	B4H	3101011030050	0.01uF	704	R1010	B3J	3001011030080	10K Ω
205	C6031	B5H	3101011010040	100pF	705	R1012	T3K	3001011030080	10K Ω
206	C6032	B5H	3101011010040	100pF	706	R1013	T3I	3001011030080	10K Ω
207	C6033	B5H	3101051040060	0.1UF	707	R1014	B4J	3001011030080	10K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
208	C6034	B5H	3101012220000	2200pF	708	R1015	T4K	3001011030080	10K Ω
209	C6035	B4H	3101014710010	470PF	709	R1017	T4I	3001050000000	0 Ω
210	C6036	B5H	3101011040080	0.1uF	710	R1018	B4J	3001011030080	10K Ω
211	C6037	B5H	3101011030050	0.01uF	711	R1019	B3J	3001011010080	100 Ω
212	C6038	B4H	3101014710010	470PF	712	R1020	B3J	3001011010080	100 Ω
213	C6039	B4H	3101014710010	470PF	713	R1021	B3J	3001011010080	100 Ω
214	C6040	B4H	3101011040080	0.1uF	714	R1022	B4J	3001053300000	33 Ω
215	C6041	B4H	3101011040080	0.1uF	715	R1023	T4J	3001011010080	100 Ω
216	C6042	B5H	3101011010040	100pF	716	R1024	B6J	3001011010080	100 Ω
217	C6043	B5H	3101011010040	100pF	717	R1026	T3I	3001053300000	33 Ω
218	C6044	B4H	3101011030050	0.01uF	718	R1027	T3I	3001053300000	33 Ω
219	C6045	B4H	3101011040080	0.1uF	719	R1028	T3I	3001051520010	1.5K Ω
220	C6046	B4I	3101011030050	0.01uF	720	R1029	T2I	3001011530010	15K Ω
221	C6047	B4I	3101063900060	39PF	721	R1030	T2I	3001011530010	15K Ω
222	C6048	B5H	3101063320000	3300PF	722	R1031	T3K	3001011020060	1K Ω
223	C6050	B4I	3101065690090	5.6pF	723	R1032	T3J	3001011030080	10K Ω
224	C6051	B5H	3101076840020	0.68uF	724	R1033	T3J	3001011010080	100 Ω
225	C6052	T4G	3101011040080	0.1uF	725	R1034	T3I	3001011040030	100K Ω
226	C6053	T4G	3101014710010	470PF	726	R1035	T3K	3001011030080	10K Ω
227	C6054	T4D	3101011020060	1000pF	727	R1036	T3K	3001011030080	10K Ω
228	C6055	T4D	3101011010040	100pF	728	R1037	T3I	3001011030080	10K Ω
229	C6056	T4D	3101011040080	0.1uF	729	R1038	T2I	3001014730010	47K Ω
230	C6057	T4D	3101054710010	470PF	730	R1040	B3E	3001013300000	33 Ω
231	C6059	T4E	3101053690000	3.6PF	731	R1041	B6F	3001013300000	33 Ω
232	C6060	T4E	3101050400010	4PF	732	R1042	B5J	3001013300000	33 Ω
233	C6061	T3E	3101050200010	2PF	733	R1043	T4K	3001013300000	33 Ω
234	C6062	T3D	3101050400010	4PF	734	R1044	T4K	3001013300000	33 Ω
235	C6063	T4C	3101050400010	4PF	735	R1045	T4K	3001013300000	33 Ω
236	C6064	T4C	3101050200010	2PF	736	R1046	B3D	3001053300000	33 Ω
237	C6065	T4C	3101050400010	4PF	737	R1047	B3J	3001011030080	10K Ω
238	C6066	T4D	3101052000020	20PF	738	R1048	T3J	3001011010080	100 Ω
239	C6067	T4E	3101050600010	6PF	739	R1049	T2I	3001014730010	47K Ω
240	C6068	T3D	3101050600010	6PF	740	R1050	T3J	3001011010080	100 Ω
241	C6072	T4C	3101050600010	6PF	741	R117	B6D	3001054730010	47K Ω
242	C6073	T4C	3101050500010	5PF	742	R118	B6F	3001054730010	47K Ω
243	C6074	T4D	3101052790060	2.7PF	743	R135	B3A	3001053310000	330 Ω
244	C6075	T4E	3101053690000	3.6PF	744	R136	B3A	3001058200000	82 Ω
245	C6076	T4E	3101053690000	3.6PF	745	R140	B3B	3001054720000	4.7K Ω
246	C6077	T4D	3101050200010	2PF	746	R141	B3B	3001054720000	4.7K Ω
247	C6078	T3D	3101050200010	2PF	747	R160	B3B	3001051040000	100K Ω
248	C6079	T4C	3101050200010	2PF	748	R161	B3B	3001051040000	100K Ω
249	C6080	T5C	3101050200010	2PF	749	R162	B6B	3001054730010	47K Ω
250	C6081	T4C	3101014710010	470PF	750	R163	B6B	3001054730010	47K Ω
251	C6082	T4C	3101011030050	0.01uF	751	R164	B6B	3001054730010	47K Ω
252	C6084	T3G	3101012230010	0.022uF	752	R165	B6B	3001054730010	47K Ω
253	C6085	T3G	3101011040080	0.1uF	753	R301	B3H	3001051840010	180K Ω
254	C6086	T3G	3101012230010	0.022uF	754	R302	B3I	3001051040000	100K Ω
255	C6087	T3G	3101011040080	0.1uF	755	R303	B3H	3001055130000	51K Ω
256	C6088	T3G	3101052230000	0.022UF	756	R304	B3G	3001051530010	15K Ω
257	C6089	B4G	3101052230000	0.022UF	757	R305	B3G	3001051020000	1K Ω
258	C6092	T3H	3101012230010	0.022uF	758	R306	B3F	3001054730010	47K Ω
259	C6093	T3F	3101052710000	270PF	759	R307	B3F	3001051030050	10K Ω
260	C6094	T3G	3101051100010	11PF	760	R308	B3G	3001054730010	47K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
261	C6095	T2G	3101051800010	18PF	761	R309	B3I	3001051540000	150K Ω
262	C6096	T3H	3101051500020	15PF	762	R312	T3B	3001052720010	2.7K Ω
263	C6097	T2G	3101057590000	7.5PF	763	R313	B3I	3001054740010	470K Ω
264	C6099	T3E	3101058200000	82PF	764	R314	T3A	3001050000000	0 Ω
265	C6100	T3E	3101050900000	9PF	765	R316	B3G	3001050000000	0 Ω
266	C6101	T4C	3101051210000	120PF	766	R317	T3B	3001050000000	0 Ω
267	C6102	T4C	3101051210000	120PF	767	R318	B4E	3001054740010	470K Ω
268	C6103	T4E	3101051210000	120PF	768	R319	B4E	3001054730010	47K Ω
269	C6104	T3D	3101051210000	120PF	769	R320	B3F	3001051040000	100K Ω
270	C7002	B5E	3101054710010	470PF	770	R321	B3F	3001051040000	100K Ω
271	C7003	B6F	3101062230020	0.022UF	771	R322	B5G	3001051030050	10K Ω
272	C7004	B6F	3101054710010	470PF	772	R323	T3B	3001051040000	100K Ω
273	C7005	B5F	3101054710010	470PF	773	R324	B3K	3001054720000	4.7K Ω
274	C7006	B6F	3101051820000	1800PF	774	R326	B3H	3001050000000	0 Ω
275	C7007	T5E	3101051040060	0.1UF	775	R327	B3I	3001058220010	8.2K Ω
276	C7008	T5E	3101054710010	470PF	776	R328	B3H	3001050000000	0 Ω
277	C7009	T5D	3101054700010	47PF	777	R330	B5F	3001051040000	100K Ω
278	C7010	T5D	3101054710010	470PF	778	R331	B5F	3001051040000	100K Ω
279	C7011	T5D	3101051040060	0.1UF	779	R332	B3F	3001051010040	100 Ω
280	C7012	T4D	3101081060010	10UF	780	R333	B3K	3001050000000	0 Ω
281	C7013	B5B	3101054710010	470PF	781	R6001	T4H	3001011030080	10K Ω
282	C7014	B5B	3101051040060	0.1UF	782	R6002	T4H	3001011020060	1K Ω
283	C7015	B6E	3101051010030	100PF	783	R6003	T4H	3001018230000	82K Ω
284	C7016	B6E	3101061020000	1000PF	784	R6004	T4H	3001051510000	150 Ω
285	C7018	T6E	3101053320010	3300PF	785	R6005	T4H	3001051220090	1.2K Ω
286	C7019	B5F	3101054710010	470PF	786	R6006	T4H	3001017520020	7.5K Ω
287	C7021	T6B	3101060590010	0.5PF	787	R6007	T4H	3001011010080	100 Ω
288	C7022	T5C	3101060900010	9PF	788	R6009	B5G	3001015100060	51 Ω
289	C7024	T4B	3101060100010	1PF	789	R6010	T4H	3001011030080	10K Ω
290	C7025	T4C	3101060100010	1PF	790	R6011	T4G	3001013910000	390 Ω
291	C7026	T4B	3101060100010	1PF	791	R6012	B4H	3001011030080	10K Ω
292	C7028	T5B	3101061010010	100PF	792	R6013	B5I	3001011040030	100K Ω
293	C7029	T5B	3101064710000	470PF	793	R6014	B4I	3001011820000	1.8K Ω
294	C7031	T6E	3101066800000	68PF	794	R6015	B5H	3001052720010	2.7K Ω
295	C7033	T5C	3101060100010	1PF	795	R6016	B4I	3001061030010	10K Ω
296	C7034	T6C	3101060590010	0.5PF	796	R6017	B5H	3001058210000	820 Ω
297	C7036	T5B	3101060200010	2PF	797	R6018	T4G	3001056800010	68 Ω
298	C7037	T4B	3101060400010	4PF	798	R6019	T4G	3001058230000	82K Ω
299	C7038	T4C	3101054710010	470PF	799	R6020	T4D	3001011230010	12K Ω
300	C7039	T5B	3101064590010	4.5PF	800	R6022	T4D	3001011520010	1.5K Ω
301	C7041	T4B	3101060400010	4PF	801	R6023	T4D	3001018220020	8.2K Ω
302	C7042	T4B	3101064710000	470PF	802	R6024	T3D	3001011040030	100K Ω
303	C7043	T4B	3101061590010	1.5PF	803	R6025	T3D	3001011040030	100K Ω
304	C7048	T6E	3101062400010	24PF	804	R6027	T4C	3001011040030	100K Ω
305	C7050	T6E	3101051040060	0.1UF	805	R6028	T4C	3001011040030	100K Ω
306	C7051	T6E	3101052230000	0.022UF	806	R6029	T3D	3001011030080	10K Ω
307	C7052	T5C	3101057590000	7.5PF	807	R6030	T3G	3001055610000	560 Ω
308	C7053	T5C	3101050600010	6PF	808	R6031	T3G	3001013920030	3.9K Ω
309	C7059	T6F	3101052200010	22PF	809	R6033	T3G	3001053310000	330 Ω
310	C7061	T5G	3217105100000	10nH	810	R6034	T3H	3001013330010	33K Ω
311	C7062	T5F	3101054710010	470PF	811	R6035	T3G	3001015100060	51 Ω
312	C7064	T6F	3101054710010	470PF	812	R6038	T3G	3001011030080	10K Ω
313	C7065	T5D	3101063300000	33PF	813	R6040	T3E	3001015100060	51 Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
314	C7068	T5F	3101054710010	470PF	814	R6042	T3H	3001011040030	100K Ω
315	C7069	T6F	3101054710010	470PF	815	R6043	T3G	3001015630000	56K Ω
316	C7071	T5E	3101061300000	13PF	816	R6046	T3D	3001058210000	820 Ω
317	C8001	B5I	3101011040080	0.1uF	817	R6047	T3D	3001055690000	5.6 Ω
318	C8003	B5I	3101011040080	0.1uF	818	R6048	T2D	3001058210000	820 Ω
319	C8004	B6I	3101014710010	470PF	819	R636	T5F	3001050000000	0 Ω
320	C8005	B6I	3101014710010	470PF	820	R7002	B5F	3001054330000	43K Ω
321	C8008	B6I	3101011040080	0.1uF	821	R7003	B6E	3001051540000	150K Ω
322	C8009	B6I	3101014710010	470PF	822	R7004	B5F	3001051530010	15K Ω
323	C801	B4J	3101052240010	0.22UF	823	R7005	B6F	3001051020000	1K Ω
324	C8010	B6I	3101014710010	470PF	824	R7006	B5F	3001051030050	10K Ω
325	C8011	B5I	3101011040080	0.1uF	825	R7007	B5F	3001051530010	15K Ω
326	C8012	B6I	3101011020060	1000pF	826	R7008	B6F	3001058230000	82K Ω
327	C8013	B6H	3101061040010	0.1UF	827	R7009	B6F	3001058230000	82K Ω
328	C8014	B6H	3101061040010	0.1UF	828	R7010	B6E	3001058230000	82K Ω
329	C8015	B5H	3101011040080	0.1uF	829	R7011	B5F	3001055120030	5.1K
330	C8016	B6I	3101052730000	0.027UF	830	R7012	B5F	3001051530010	15K Ω
331	C8017	B5J	3101011040080	0.1uF	831	R7013	B6F	3001051540000	150K Ω
332	C8018	B5J	3101011040080	0.1uF	832	R7014	B5F	3001058230000	82K Ω
333	C8019	B6I	3101061230000	0.012UF	833	R7017	B6E	3001051540000	150K Ω
334	C802	B4J	3101051030020	0.01UF	834	R7019	B5C	3001062710000	270 Ω
335	C8020	B6I	3101011040080	0.1uF	835	R7021	T6E	3001053310000	330 Ω
336	C8021	B6I	3101014710010	470PF	836	R7022	T4B	3001051030050	10K Ω
337	C8022	B5H	3101051050160	1uF	837	R7023	T6E	3001054700000	47 Ω
338	C8024	B6I	3101011020060	1000pF	838	R7024	T6E	3001054700000	47 Ω
339	C8025	B6J	3101071060280	10UF	839	R7026	T6E	3001053920010	3.9K Ω
340	C8026	B6J	3101011040080	0.1uF	840	R7027	T6E	3001056820010	6.8K Ω
341	C8027	B6J	3101051000020	10PF	841	R7028	T6E	3001058220010	8.2K Ω
342	C8028	B6H	3101014710010	470PF	842	R7032	B5F	3001051210010	120 Ω
343	C803	B4J	3101052240010	0.22UF	843	R7033	T5G	3001051800010	18 Ω
344	C8030	B6H	3101071050010	1UF	844	R7035	T5F	3001053010010	300 Ω
345	C8033	B6I	3101071050010	1UF	845	R7036	T5G	3001053010010	300 Ω
346	C8034	B6J	3101011020060	1000pF	846	R7037	B5F	3001052700000	27 Ω
347	C8035	B6J	3101014710010	470PF	847	R7039	T6F	3101054710010	470PF
348	C8036	B6I	3101012210010	220PF	848	R7040	T6E	3210306569000	5.6nH
349	C8037	B6J	3101012210010	220PF	849	R7041	B6E	3001051540000	150K Ω
350	C8038	B6I	3101074750000	4.7UF	850	R7042	B4E	3099080398000	0.39 Ω
351	C8039	B6H	3101011040080	0.1uF	851	R7043	B4E	3001080190000	0.1 Ω
352	C804	B5J	3101062250000	2.2UF	852	R7044	B6E	3001053920000	3.9K Ω
353	C8040	B6H	3101014710010	470PF	853	R7045	B5E	3001051030050	10K Ω
354	C8041	B5J	3101054710010	470PF	854	R7046	B6E	3001051030050	10K Ω
355	C8042	B6H	3101014710010	470PF	855	R7049	B5F	3001051020000	1K Ω
356	C8043	T6K	3101011020060	1000pF	856	R7050	B6E	3001050000000	0 Ω
357	C8044	T6K	3101011050000	1uF	857	R7051	T5F	3001056810000	680 Ω
358	C8048	T6J	3101011040080	0.1uF	858	R7052	T6F	3001052200000	22 Ω
359	C8049	B6J	3101014700000	47PF	859	R7053	T5F	3001051210010	120 Ω
360	C805	B4J	3101051030020	0.01UF	860	R7054	T6F	3001051520000	1.5K Ω
361	C8050	T6J	3101013320000	3300pF	861	R7055	B5C	3001062710000	270 Ω
362	C8051	T6J	3101013310020	330PF	862	R7056	B4E	3001080190000	0.1 Ω
363	C8052	T6J	3101013300010	33PF	863	R8001	B5I	3001051010040	100 Ω
364	C8053	T6J	3101051050160	1uF	864	R8003	B6I	3001011000050	10 Ω
365	C8054	T6J	3101011040080	0.1uF	865	R8006	B5H	3001058200000	82 Ω
366	C8056	B6K	3101014700000	47PF	866	R8007	B6H	3001052210000	220 Ω
367	C8057	B5I	3101074750000	4.7UF	867	R8008	B6I	3001052200010	22 Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
368	C806	B4I	3101051050160	1uF	868	R8009	B6H	3001011040030	100K Ω
369	C8060	T6J	3101011050000	1uF	869	R8010	B5H	3001011030080	10K Ω
370	C8061	B6J	3101014700000	47PF	870	R8011	B5J	3001011000050	10 Ω
371	C8063	T5I	3101014710010	470PF	871	R8012	B6I	3001051010040	100 Ω
372	C8064	T5I	3101011040080	0.1uF	872	R8013	B6J	3001011000050	10 Ω
373	C8065	T5I	3101014710010	470PF	873	R8014	B5H	3001010000050	0Ω
374	C8066	T6I	3101014710010	470PF	874	R8015	B6I	3001052200010	22 Ω
375	C8067	T5I	3101014710010	470PF	875	R8016	B6J	3001013300000	33 Ω
376	C8068	T5I	3101014710010	470PF	876	R8017	B5H	3001010000050	0Ω
377	C8069	T6I	3101062250000	2.2UF	877	R8018	B6H	3001011020060	1K Ω
378	C807	B4I	3101051040060	0.1UF	878	R8019	B6G	3001014710000	470 Ω
379	C8070	T6I	3101014710010	470PF	879	R802	B4I	3001051530010	15K Ω
380	C8071	T6I	3101011040080	0.1uF	880	R8020	B6J	3001011020060	1K Ω
381	C8072	T5I	3101050600010	6PF	881	R8021	B6H	3001011000050	10 Ω
382	C8073	T5I	3101014710010	470PF	882	R8022	B6H	3001011020060	1K Ω
383	C8074	T5T	3101071060280	10UF	883	R8024	B6H	3001010000050	0Ω
384	C8075	T5I	3101011040080	0.1uF	884	R8025	B6H	3001011020060	1K Ω
385	C8076	T6I	3101060500010	5PF	885	R8026	T6J	3001011030080	10K Ω
386	C8077	T6I	3101050900000	9PF	886	R8027	T6J	3001011000050	10 Ω
387	C8078	T5G	3101014710010	470PF	887	R8028	T6J	3001010000050	0Ω
388	C808	B4I	3101052710000	270PF	888	R8029	T6J	3001011030080	10K Ω
389	C8080	T6I	3101060400010	4PF	889	R803	B4J	3001051030050	10K Ω
390	C8081	B4G	3101014710010	470PF	890	R8030	T6J	3001011030080	10K Ω
391	C8082	B4G	3101011040080	0.1uF	891	R8031	B6K	3001011030080	10K Ω
392	C8083	T6H	3101050590020	0.5PF	892	R8032	T6J	3001016830000	68K Ω
393	C8084	T6H	3101054710010	470PF	893	R8033	T6J	3001011020060	1K Ω
394	C8085	T6I	3101053900000	39PF	894	R8034	T6J	3001011030080	10K Ω
395	C8086	T5H	3101055600000	56PF	895	R8035	T6J	3001011040030	100K Ω
396	C8087	T6I	3101064590010	4.5PF	896	R8036	B6J	3001013300000	33 Ω
397	C8088	T6H	3101052400010	24PF	897	R8037	T6J	3001013330010	33K Ω
398	C8089	B4G	3101011040080	0.1uF	898	R8038	B6J	3001013300000	33 Ω
399	C809	B4I	3101051050160	1uF	899	R8039	T6J	3001011030080	10K Ω
400	C8090	B4G	3101011040080	0.1uF	900	R804	B4I	3001054730010	47K Ω
401	C8091	B4G	3101014710010	470PF	901	R8040	B5G	3001018230000	82K Ω
402	C8092	B5F	3101050200010	2PF	902	R8042	T6J	3001011040030	100K Ω
403	C8093	B4G	3101050200010	2PF	903	R8043	B6J	3001013300000	33 Ω
404	C8094	B5F	3101014710010	470PF	904	R8044	T6J	3001011040030	100K Ω
405	C8095	B4G	3101014710010	470PF	905	R8045	T6J	3001010000050	0Ω
406	C8096	B4F	3101053300000	33PF	906	R8046	T5I	3001013320000	3.3K Ω
407	C8097	T5H	3101011040080	0.1uF	907	R8047	T5I	3001018230000	82K Ω
408	C8098	B4G	3101051000020	10PF	908	R8048	T6I	3001014720050	4.7K Ω
409	C810	B4I	3101051050160	1uF	909	R8049	T5I	3001011020060	1K Ω
410	C8100	B5G	3101051210000	120PF	910	R805	B3F	3001051530010	15K Ω
411	C8101	B4F	3101050300000	3PF	911	R8050	T5I	3001011010080	100 Ω
412	C8102	B6J	3101011020060	1000pF	912	R8051	T6I	3001018220020	8.2K Ω
413	C8103	B5G	3001051000000	10 Ω	913	R8052	T5H	3001018230000	82K Ω
414	C8104	T5H	3101062250000	2.2UF	914	R8053	T5I	3001011020060	1K Ω
415	C8105	B4G	3101050300000	3PF	915	R8054	B4G	3001018230000	82K Ω
416	C8106	B5G	3101052400010	24PF	916	R8055	T5H	3001061810000	180 Ω
417	C8107	B4G	3101050300000	3PF	917	R8056	B5F	3001052200010	22 Ω
418	C8108	T5H	3101011040080	0.1uF	918	R8057	B4G	3001065600000	56 Ω
419	C8109	B4F	3101050300000	3PF	919	R8058	B4G	3001011030080	10K Ω
420	C811	B5I	3101051050160	1uF	920	R8059	B4G	3001053320000	3.3K Ω
421	C8110	B5I	3101014710010	470PF	921	R806	B4I	3001053330000	33K Ω

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
422	C8113	B4F	3101053300000	33PF	922	R8060	T5H	3001011040030	100K Ω
423	C8114	T5H	3101014710010	470PF	923	R8061	T6H	3001015630000	56K Ω
424	C8115	T5H	3101011040080	0.1uF	924	R8062	T6H	3001011840000	180K Ω
425	C8116	B4F	3101014710010	470PF	925	R8063	B5G	3001055690000	5.6 Ω
426	C8117	B4F	3101050400010	4PF	926	R8064	T5H	3001013930000	39K Ω
427	C8118	B4F	3101050800000	8PF	927	R8065	B5G	3001018210040	820 Ω
428	C8119	T6J	3101074750000	4.7UF	928	R8066	B5G	3001018210040	820 Ω
429	C812	B4I	3101051050160	1uF	929	R8067	B4F	3001018220020	8.2K Ω
430	C8120	T5H	3101014710010	470PF	930	R8068	B5G	3001062200000	22 Ω
431	C8121	T5H	3101014710010	470PF	931	R8069	B4F	3001011020060	1K Ω
432	C8122	T5H	3101011040080	0.1uF	932	R807	B5I	3001051020000	1K Ω
433	C8123	T5I	3101011040080	0.1uF	933	R8070	T5H	3001013320000	3.3K Ω
434	C8124	T5G	3101050600010	6PF	934	R8071	T5I	3001011020060	1K Ω
435	C8125	T5H	3101012000000	20PF	935	R8072	T5H	3001011010080	100 Ω
436	C8126	T5H	3101014390000	4.3PF	936	R8073	T6H	3001018220020	8.2K Ω
437	C8127	T5H	3101011590010	1.5PF	937	R8074	T5H	3001015620030	5.6K Ω
438	C8128	T5H	3101014390000	4.3PF	938	R8075	T5H	3001015620030	5.6K Ω
439	C8129	T5I	3101012210010	220PF	939	R8076	T5H	3001013920030	3.9K Ω
440	C813	B3J	3101051030020	0.01UF	940	R8077	T5I	3001013920030	3.9K Ω
441	C8130	T6H	3101050590020	0.5PF	941	R8078	T5G	3001061210000	120 Ω
442	C8131	T5H	3101011300000	13PF	942	R808	B5I	3001011020060	1K Ω
443	C8132	T5H	3101011300000	13PF	943	R809	B3J	3001054740010	470K Ω
444	C8133	T6H	3101060600010	6PF	944	R810	B5B	3001051030050	10K Ω
445	C8134	T6G	3101057590000	7.5PF	945	R812	B3B	3001054730010	47K Ω
446	C8136	T5G	3101052000020	20PF	946	R813	B5B	3001051030050	10K Ω
447	C8137	T6H	3101060600010	6PF	947	R815	B3B	3001051020000	1K Ω
448	C8138	T5G	3101054700010	47PF	948	R816	B3B	3001076810000	680 Ω
449	C8139	T5H	3101010100030	1.0PF	949	R817	B4C	3001064790000	4.7 Ω
450	C814	B2F	3101052710000	270PF	950	R820	T3A	3001051040000	100K Ω
451	C8140	T6J	3101014710010	470PF	951	R824	B3C	3001051040000	100K Ω
452	C8141	T5I	3101010100030	1.0PF	952	R825	B3D	3001051020000	1K Ω
453	C8142	T6H	3101054710010	470PF	953	R826	B3D	3001050000000	0 Ω
454	C8143	T6H	3101060600010	6PF	954	R827	B3E	3001051030050	10K Ω
455	C8145	T6J	3101074750000	4.7UF	955	R828	B2E	3001054730010	47K Ω
456	C8146	T6G	3101051800010	18PF	956	R829	B3E	3001051030050	10K Ω
457	C8147	T6J	3101014710010	470PF	957	R830	B3E	3001054730010	47K Ω
458	C815	B2F	3101052710000	270PF	958	R832	B3E	3001012230000	22K Ω
459	C816	B4J	3101062250000	2.2UF	959	R833	B3E	3001054730010	47K Ω
460	C817	B5J	3101051030020	0.01UF	960	R834	B3E	3001051530010	15K Ω
461	C818	B3B	3101051040060	0.1UF	961	R836	B3E	3001012230000	22K Ω
462	C819	B5B	3101071060280	10UF	962	R837	B3D	3001012230000	22K Ω
463	C820	B4C	3101081060010	10UF	963	R838	B3E	3001052220000	2.2K Ω
464	C821	B4B	3101051020010	1000PF	964	R839	B3D	3001052730000	27K Ω
465	C822	B5B	3101051030020	0.01UF	965	R840	B3D	3001054730010	47K Ω
466	C823	B3B	3101054710010	470PF	966	R841	B3D	3001051030050	10K Ω
467	C824	B3E	3101054710010	470PF	967	R842	B3D	3001051050000	1M Ω
468	C825	B4B	3101051040060	0.1UF	968	R9111	B5B	3001050000000	0 Ω
469	C828	B3E	3101052200010	22PF	969	RT300	B3I	3003061040000	Thermistor
470	C829	B3E	3101051050160	1uF	970	SW10 2	T6F	4318080000000	Momentary contact switch
471	C830	B3E	3101051040060	0.1UF	971	SW10 3	T6C	4318080000000	Momentary contact switch
472	C831	B3D	3101054710010	470PF	972	T6001	T3E	5406000000200	Transformer
473	C832	B3E	3101051040060	0.1UF	973	T6002	T3F	5406000000200	Transformer

No.	Ref No.	Print No.	Part No.	Description	No.	Ref No.	Print No.	Part No.	Description
474	C833	B3E	3101051020010	1000PF	974	TP803	B4C	6203354000000	BT antenna spring plate
475	C834	B3D	3101054710010	470PF	975	TP804	B5C	6203354000000	BT antenna spring plate
476	C835	B3D	3101051020010	1000PF	976	U1001	T5J	3612024000020	Memory
477	C836	B3D	3101051040060	0.1UF	977	U1002	T4I	3610010000010	MCU
478	C837	B2D	3101051020010	1000PF	978	U1003	T3H	3612016000000	Memory
479	C838	B2D	3101051040060	0.1UF	979	U2013	B3H	3608025000010	Power management IC
480	C839	B3D	3101051040060	0.1UF	980	U2014	B3I	3608025000010	Power management IC
481	C840	B3D	3101051010030	100PF	981	U2015	B4B	3605017005540	Operational amplifier
482	C841	B5I	3101051050160	1uF	982	U2016	B2E	3605008005070	Operational amplifier
483	C842	B5B	3101051050160	1uF	983	U301	B5K	3608006000000	Power management IC
484	C843	B5B	3101053920000	3900PF	984	U302	B3G	3608006000000	Power management IC
485	C844	B2D	3101072250100	2.2uF	985	U303	B3F	3608006000000	Power management IC
486	C845	B4C	3101081060010	10UF	986	U304	B5F	3608015000270	Power management IC
487	D		6203393000000	Baseband shielding cover	987	U305	T4K	3608006000030	Power management IC
488	D101	B3A	3307110100070	LED	988	U306	B6G	3608015000270	Power management IC
489	D102	B4A	3307110100080	LED	989	U307	B3J	3626015000010	Reset IC
490	D104	B6D	3399040600000	PESD5V0S1UB	990	U309	B3J	3608006000000	Power management IC
491	D105	B6F	3399040600000	PESD5V0S1UB	991	U6001	B4H	3603999000000	IF processor
492	D107	B6B	3399040600000	PESD5V0S1UB	992	U7001	B6E	3605008005070	Operational amplifier
493	D108	B6A	3399040600000	PESD5V0S1UB	993	U8001	B6I	3604019000000	PLL IC
494	D109	B6B	3399040600000	PESD5V0S1UB	994	U8002	B6H	3616010000000	Switch IC
495	D110	B6A	3399040600000	PESD5V0S1UB	995	U8003	B6H	3616059000000	Switch IC
496	D300	B3F	3303030100010	Switching diode	996	U8004	T6J	3606010000010	D/A converter IC
497	D301	B4F	3302030000030	Zener diode	997	U8005	B4F	4399990000780	RF switch
498	D302	B3F	3399040600000	PESD5V0S1UB	998	U801	B4J	3613010000000	Baseband processor
499	D303	T3A	3399040600000	PESD5V0S1UB	999	X1001	T3J	3701327610060	Crystal
500	D304	T3B	3302030000030	Zener diode	1000	X8001	B6J	3701019250000	VCO
501	D6001	T4H	3304010100220	Varactor	1001	Z6001	T3G	3802580540010	Crystal filter
502	D6002	B4I	3304010100220	Varactor	1002	/	/	/	PCB



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