

# Service Manual



**Model: KG-UVD1**  
**Version: KG-UVD1-0905-V1**

**QUANZHOU WOUXUN ELECTRONICS CO., LTD**

## KG-UVD1 Dual-Band Maintenance Manual

### Introduction

### The Scope for the Manual

This manual is for the technicians who know well about the communication and have some experiences of maintenance. All necessary information of maintenance and actual published date are included in this manual.

If there is any change after publishing, we will complement it by “Maintenance Aviso” or “Manual Revision” according to the requirements.

### Personal Safety

- Please pay attention to the below proceedings for your safety:

Don't transmit before you carefully check all plugs for TX Frequency, or any of the unfolded plugs doesn't connect to the relative ends.

- Please turn off the power, and don't operate the equipment when you are near the electric detonator or on flammability gas station.

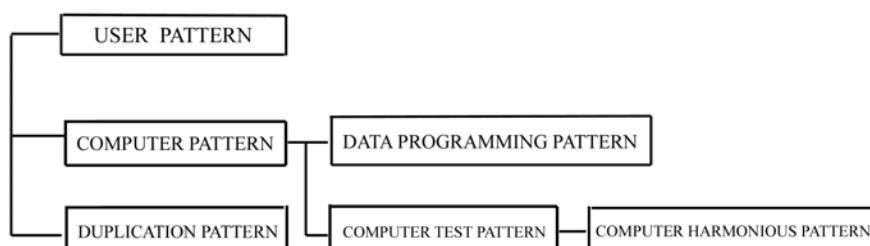
- Only the qualified technicians can maintain the equipment.

### Maintenance Service

In order to maintain the equipment easily and establish the complete maintenance system, we supply the information including principium chart, printing circuitry chart and the settings of the equipment.

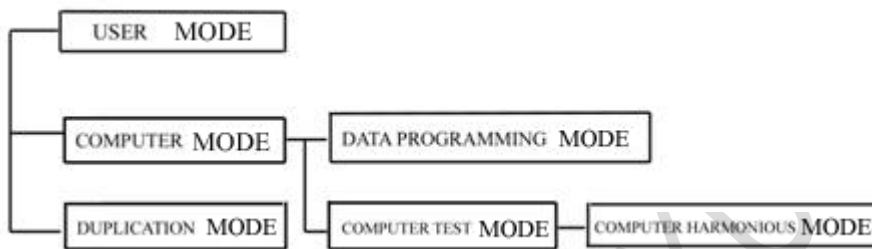
### Mode Combination

#### 1. Mode Combination



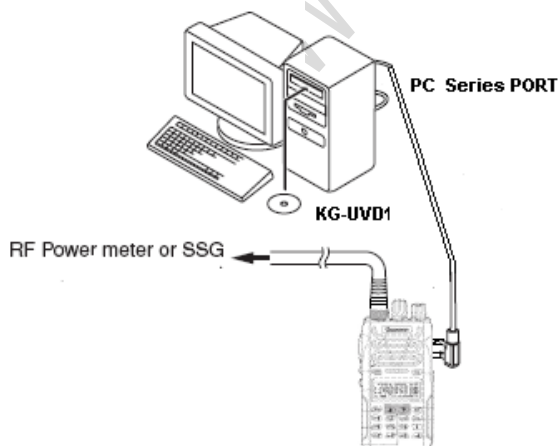
PATTERN	FUNCTION
USER PATTERN	For normal use
COMPUTER PATTERN	Correspondence between the handset user and computer (IBM Compatible Machine)
DATA PROGRAMMING PATTERN	For reading out or reading in the frequency data and other functions
COMPUTER TEST PATTERN	For examining handset by computer
DUPLICATION PATTERN	For programming data reproduction from a handset to another

## 2. Enter the Mode



## 3. Computer Mode

KG-UVD1 handheld transceiver programs by computer, the programming connection and the programming software (KG-UVD1). The programming software can be used in the IBM computer or compatible machine.



## Duplication Mode

1. “Duplication Mode” can copy the data of a handheld transceiver to another one.

The dealers can do this duplication without a personal computer.

2. Operating Method

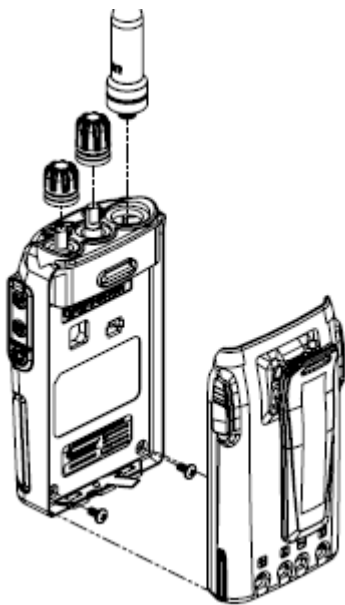
- ① Connecting the duplicated source radio with waiting-duplicated target radio by cloning Line  
(The waiting-duplicated target radio need to be putting through the power source)

② Pressing [MONI] key on duplicated source radio, the duplication starts.

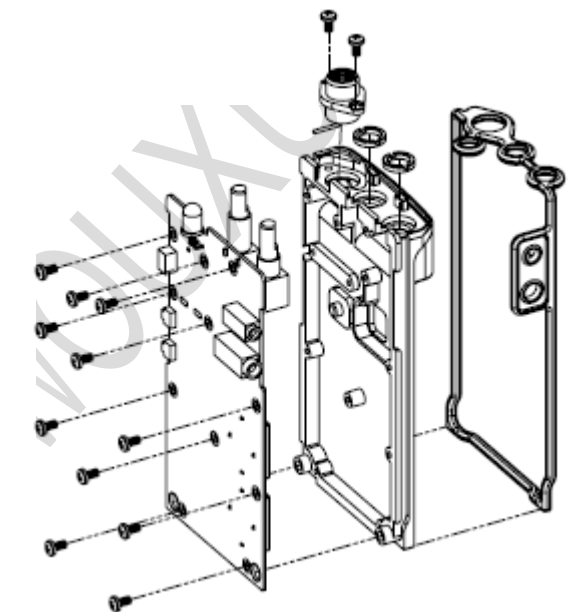
When duplicating, the flickering red light means sending data. After duplicating successfully, the red light extinguishes, and the source radio enters the standby mode. If the red light keeps flickering, it means the duplication failed.

The green light flickers when the target radio duplicates. The duplication finishes when the green light extinguishes.

## Assembling & Disassembling Chart

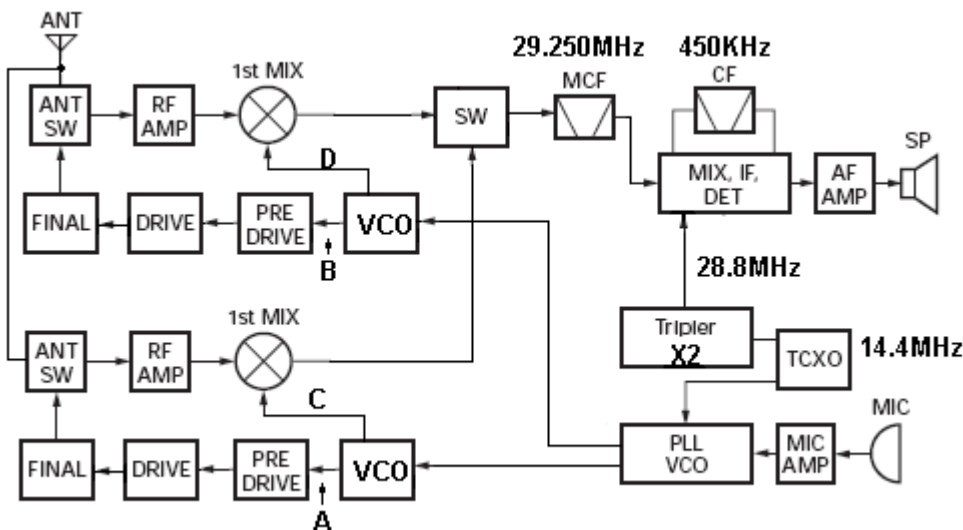


Disassembling Shell Chart



Disassembling TX/RX Board Chart

## IFrequency Structure



Pic 1

Frequency Structure	A	C	B	D
(1)	136~ 174.995MHz	165.250~ 204.245MHz	400~ 470.995MHz	429.25~ 500.245MHz
(2)	136~ 174.995MHz	165.250~ 204.245MHz	450~ 520.995MHz	479.25~ 550.245MHz
(3)	136~ 174.995MHz	165.250~ 204.245MHz	245~ 245.995MHz	274.25~ 275.245MHz

Chart 1

Please refer the frequency of A.B.C.D points of PIC 1 on Chart 1.

The 1<sup>st</sup> intermediate frequency of this radio is 29.250MHz, the 2<sup>nd</sup> is 450KHz.

## II Receiving

### (1) The front end of U Band (RF Amplifier)

The signal which is received from the antenna enters the transmission/receive change-over switch diode circuit (D148, D137, D138 and D147), then goes through BPF (L191 and L192), and is enlarged by RF amplifier (T322). The signal goes through the BPF(L185,L189,L187,L188), and then enters the mixing. These BPF (D142, D143, D144, D145) is adjusted by the variable condenser. The input voltage by variable condenser is adjusted by the outputting voltage by microprocessor (IC811).( See PIC 2)

### (2)The front end of V Band(RF Amplifier)

The signal which is received from the antenna enters the transmission/receive change-over switch diode circuit (D322, D315, D316 和 D443), then goes through BPF(L344 and L345), and is enlarged by RF amplifier (T324).The signal goes through the BPF(L320, L342, L341 L340), and then enters the mixing. These BPF (D318 D319, D320,D321)adjusted by the variable condenser. The input voltage by variable condenser is adjusted by the outputting voltage by microprocessor (IC811).( See PIC 2)

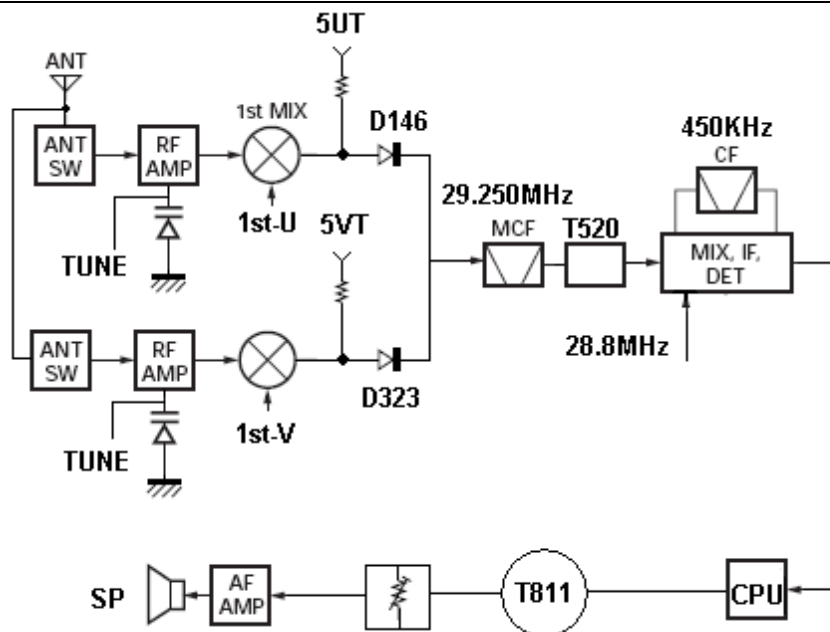


图2 PIC2

### (3) The 1<sup>st</sup> Mixer

The signals from the front end of U Band and the Rx LO produced by PLL electrocircuit create the 1<sup>st</sup> immediate frequency signal of 29.250MHz on T144 Mixing. The created signal is sent to the changeover on-off on U/V Band.

The signals from the front end of V Band and the Rx LO produced by PLL electrocircuit create the 1<sup>st</sup> immediate frequency signal of 29.250MHz on T323 Mixing. The created signal is sent to the changeover on-off on U/V Band.

The changeover on-off switches the signals according to the working state of U/V Band on microprocessor (IC811). After switching, the signals are sent to MCF(FL515,FL516) (See PIC2)

### (4) The enlarging circuit on Intermediate Frequency

The first signal from intermediate frequency eliminate the signals from adjacent channels through MCF(FL515,FL516). The amplifier (T520) enlarges and enters the I-F system chip (U516). The I-F system chip provides the second mixer, the second LO signal, limiting amplifier, orthogonal detector and RSSI (received signal intensity indicator).The second mixer sends and mixes the first intermediate frequency signal and the second LO signal of 28.8MHz, and then creates the second LO signal of 450kHz.

The second intermediate frequency signal keeps eliminating the signals of the adjacent channels by the chinaware wave filter. The second signal through filter is enlarged by limiting amplifier and demodulated by orthogonal detector with chinaware discriminator. The demodulated signal enters the tone circuit on microprocessor (IC811) and processes.(See PIC2)

### (5) Wide/Narrow Switch Circuit

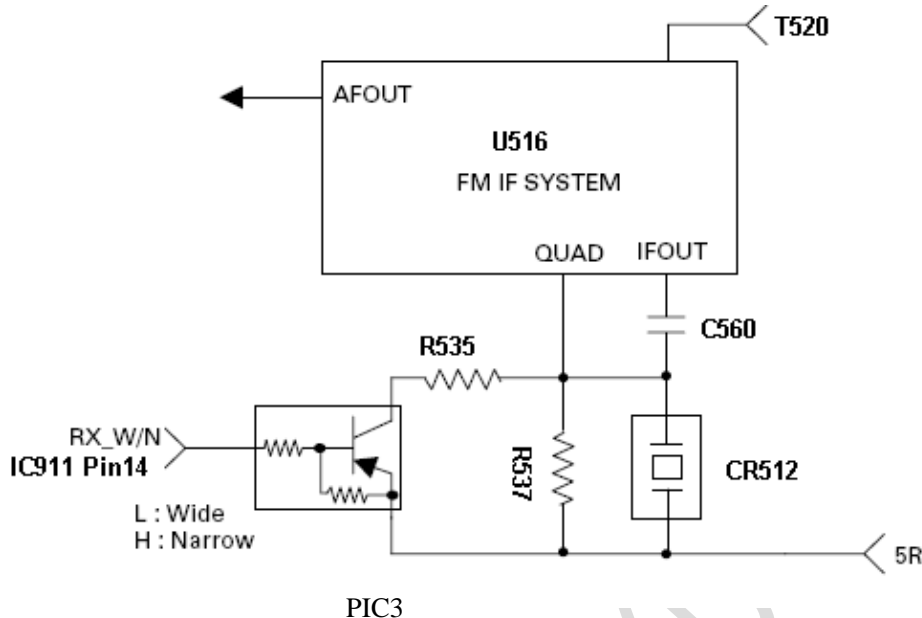
We can set the bandwidth of all channels by turning on the Wide/Narrow switch.

The data from Wide (low level) and Narrow (high level) is outputted by the 14<sup>th</sup> pin on microprocessors.

T528 is connected when receiving the data from WIDE (low level).

T528 is disconnected when receiving the data from NARROW (high level).

T528 is connected/ disconnected by WIDE/NARROW data.The regular changing level from U516 detector is used to maintain the constant output level on WIDE/NARROW signals. (See PIC3)



(6) Tone Amplifier Circuit

The demodulated signal is sent to the tone amplifier by T811 from the 25<sup>th</sup> feet tube of microprocessor (IC811),after entering the tone circuit and being processed.

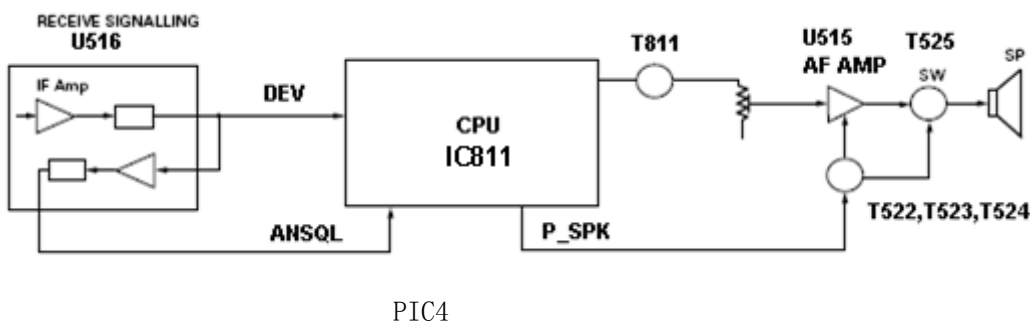
After being enlarged by the tone power amplifier, the signal is outputted to the loudhailer by AF volume control. (See PIC 2)

(7) Squelch

A part of AF signals from FM IC (U516) enter IC again. The noise components are enlarged and revised by the filter, and then creates the DC voltage corresponded to the noise level.

The DC signal is sent to the simulated port (Pin28) of microprocessor through FM IC. IC405 decides whether outputs the sound from the speaker by testing the outputted voltage is higher or lower than the default value.

(See PIC4)



(8) Receiving Signaling (QT/DQT)

The signal from FM IC (U516) enters and is processed by microprocessor (IC811).(See PIC4)  
 Microprocessor (IC811) determin whether QT or DQT matches the setting value, and control the output of P-SPK and loudhail by this result. (See PIC 4)

III PLL Frequency Syntheses

PLL circuit produces the Rx LO for receiving and the RF signal for transmitting. This transceiver is adopted double channel integrate circuit, which can simultaneously produce two different Rx LO and RF signal.

(1) PLL

The frequency step of PLL circuit is 5 or 6.25kHz.

The referring surge signal of 14.4MHz is divided frequency by a fixed arithmometer in U112. The signal from the oscillator (VCO) is cushioned and enlarged by T130 and T311 separately, and is divided frequency by programmable double modulation arithmometer separately in U112. In the U112 phase comparator, the frequency division processes compare. After being filtered by the different lowpass, the two created signals separately are sent to the two independent VCO controlling frequency of oscillator. See PIC 5

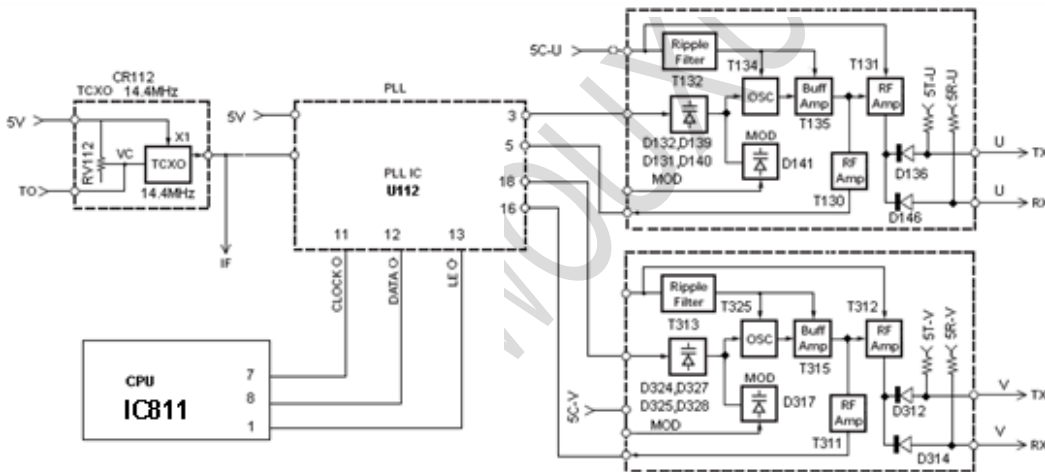


图5 PIC5

(2)VCO

①U Band VCO on the Transceiver

The frequency that is used in U Band on the transceiver is produced by T134 vibration when it is transmitting or receiving frequency points.

Through the phase comparator will receive transportation to the VCO control voltage variable diode (D132, D139, D131, D140) to control the oscillation frequency.Oscillation frequency of the signal by the T135, T135 amplification levels, with the D136 and D135 were sent to the RF amplifiers and receivers for the first points of the vibration frequency. See PIC5.

② V Band VCO on the Transceiver

The frequency that is used in V Band on the transceiver is produced by T325 vibration when it is transmitting or



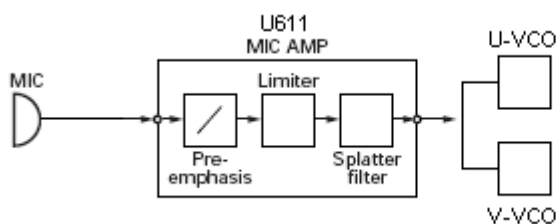
receiving frequency points.

Through the phase comparator will receive transportation to the VCO control voltage variable diode (D324, D325, D327, D328) to control the oscillation frequency. Oscillation frequency of the signal by the T135, T135 amplification levels, with the D136 and D135 were sent to the RF amplifiers and receivers for the first points of the vibration frequency. See PIC5.

## IV Transmitting Part System

### (1) Speaker Amplifier

The signal from speaker processes regulation of the maximum frequency deviation by tone processor (U611). And then it is sent to VCO on U Band or V Band for modulating and inputting. See PIC 6



PIC6

### (2) Drives and Terminal Amplifier

This transceiver has two separation drives and terminal amplifiers on U Band and V Band.

#### ① Drives and Terminal Amplifier on U Band

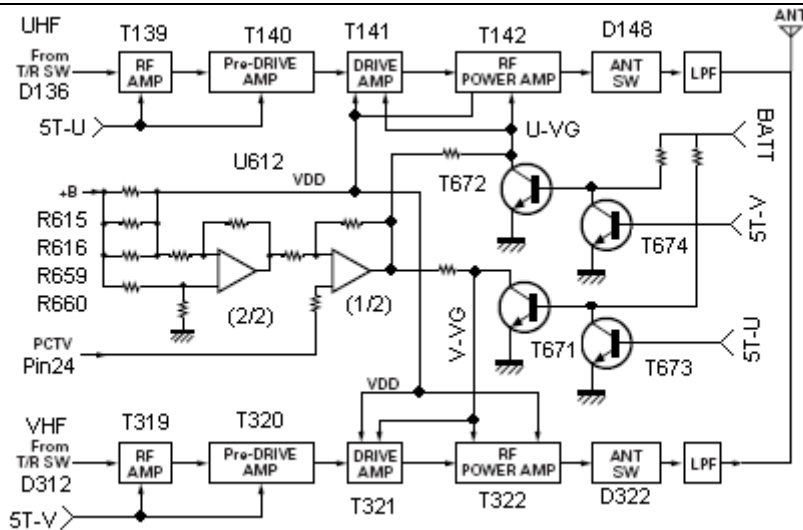
The signal from T/R Switch (D136 ON) is enlarged to 50mW by pre-drive amplifier (T139,T140) and drive amplifier (T141). The output of drive amplifier is enlarged to 4.0W by the RF power amplifier (T142) (works as when low power is 1W). The output of RF power amplifier is through the harmonic filter (LPF) and the antenna switch (D148), and is sent to the terminal of the antenna .

See PIC 7

#### ② Drives and Terminal Amplifier on V Band

The signal from T/R Switch (D312 ON) is enlarged to 50mW by pre-drive amplifier (T319,T320) and drive amplifier (T322). The output of drive amplifier is enlarged to 4.0W by the RF power amplifier (T322) ((works as when low power is 1W). The output of RF power amplifier is through the harmonic filter (LPF) and the antenna switch, and is sent to the terminal of the antenna (D322).

See PIC 7



PIC 7

(3) Automatic Power Control Circuit (APC)

APC circuit always monitor the circuit that is through the radio frequency RF amplifier (T142 or T322),and maintain the stable electric current. The diversification of electronic current that is enlarged by radio frequency power amplifier can cause the lower voltage of R615, R616, R659 and R660. The voltage is sent to difference amplifier U612(2/2) U612(1/2), and compares the outputting voltage of IC101(2/2) with the reference voltage from IC405. The output voltage of U612 (1/2) control the radio frequency RF amplifier, drive amplifier, VG of pre-drive amplifier to keep the voltage consistent.

The changes of high/low power are realized by changing the reference voltage.

The two terminal amplifiers of this transceiver use the same APC circuit. So they are switched on the output VG voltage from APC. When U Band transmitting, the VG voltage that sends APC to V Band resists to ground short circuit. On the contrary, when V Band transmitting, the VG voltage that sends APC to U Band resists to ground short circuit. See PIC7

(4) Coding Signaling

QT/DQT

The DQT/QT data outputs from the CPU 23 base pins. The signal through the low pass CR filter, a partial signal delivers TCXO CR112. Another part of signal and the tone signaling mix, then inputs separately to U or V Band of VCO.

V Electrical Power

10 electrical power of 5V is used in this transceiver.

They respectively provide to the microprocessor: 5V,5M

When connecting, 5M always keep outputting. Although 5M is the regular output,it is closed when turn off the electrical power to prevent the microprocessor from malfunction.

5C-V is the public 5V on V Band,which keeps output on non-save mode.

5C-U is the public 5V on U Band,which keeps output on non-save mode.

5R-U is the receiving 5V on U Band,which keeps output during receiving.

5T-U is the transmitting 5V on U Band,which keeps output during transmitting.

5R-V is the receiving 5V on V Band,which keeps output during receiving.

5T-V is the transmitting 5V on V Band,which keeps output during transmitting.

5R is the shard 5V by the intermediate frequency circuit. (U band and V band of receiving use in common the partial power source.

The electrical power is used in enlarging the speaker (The shared partial electrical source on U Band and V Band)

There are another two overall electrical sources, BATT+ and BATT.

BATT+ is input electronic source. BATT is electronic source by controlled by power switch.

## VI Controlled Electrical Circuit

The controlled circuit is made up of microprocessor(IC811) and exterior circuit.

It controls the TX-RX unit. The main functions of IC811 are as bellows:

- (1) Transforming the transmitting and receiving states according to PTT input signal
- (2) Numerating system,group, frequency and program data from the stored circuit
- (3) Sending frequency data to PLL
- (4) Controlling the open and close of squelch according to the output DC voltage from squelch circuit.
- (5) Controlling the tone frequency mute according to the decoding data

## VII Keypad and display circuit

- (1) Keyboard entry examination

K1,K2,K3,K4 are keypad fan-out,D1,D2,D3,D4 are keypad input end. They are managed after examining by microprocessor (IC811). See PIC8

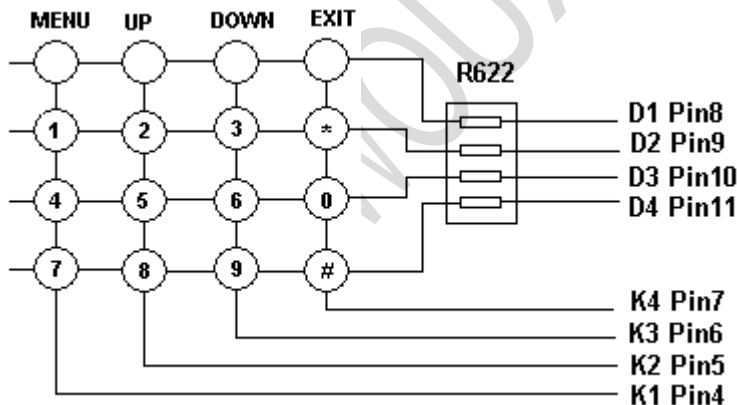


图8

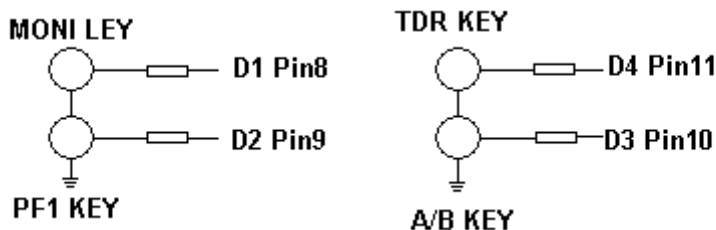
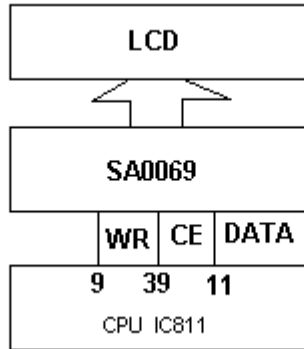


图9

(2) Display Circuit

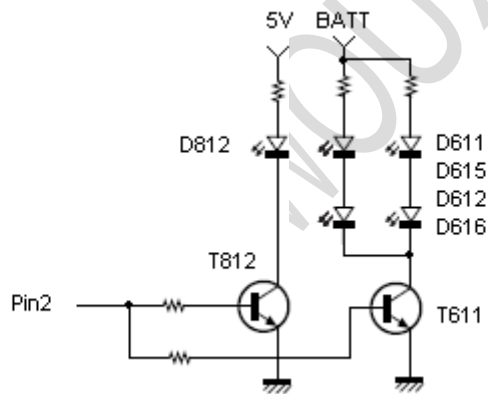
LCD demonstrated the information (IC811) controls the screen by the microprocessor (liquid crystal) to demonstrate that the actuation integrated circuit causes the screen (liquid crystal) the monitor demonstration corresponding information. See PIC 10



PIC10

(3) Backlight Circuit

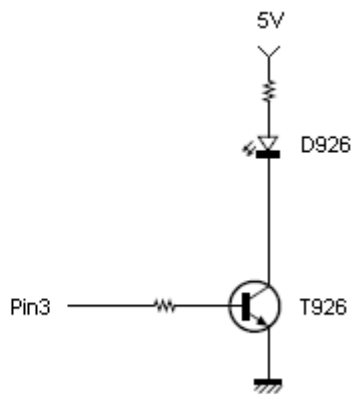
The backlight of LCD and keypad is single-colored, which is controlled by the pin of microprocessor. See PIC11



PIC11

(4) Illumination Circuit

The illumination circuit is controlled by the pin of the microprocessor(IC811). See PIC12



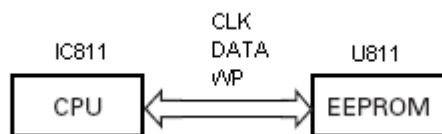
PIC 12

### VIII Memorizer Circuit

The memorizer circuit is made up of CCPU (IC811) and EEPROM (U811)

The capacitance is 64k bits, including the handset controlling program by CPU and the operation function data.

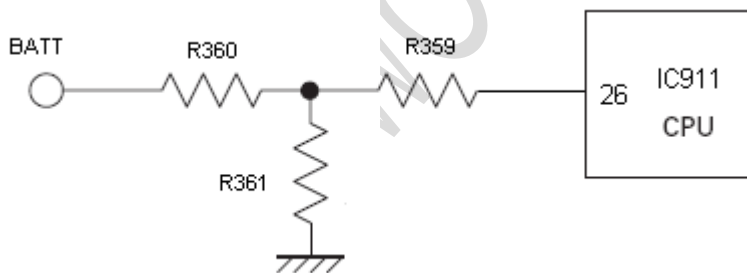
See PIC13



PIC 13

### IX Batterypack Low Voltage Prompt

Monitoring the batterypack voltage by microprocessor. The transceiver will sound when the voltage is lower than the alarm voltage. See PIC14

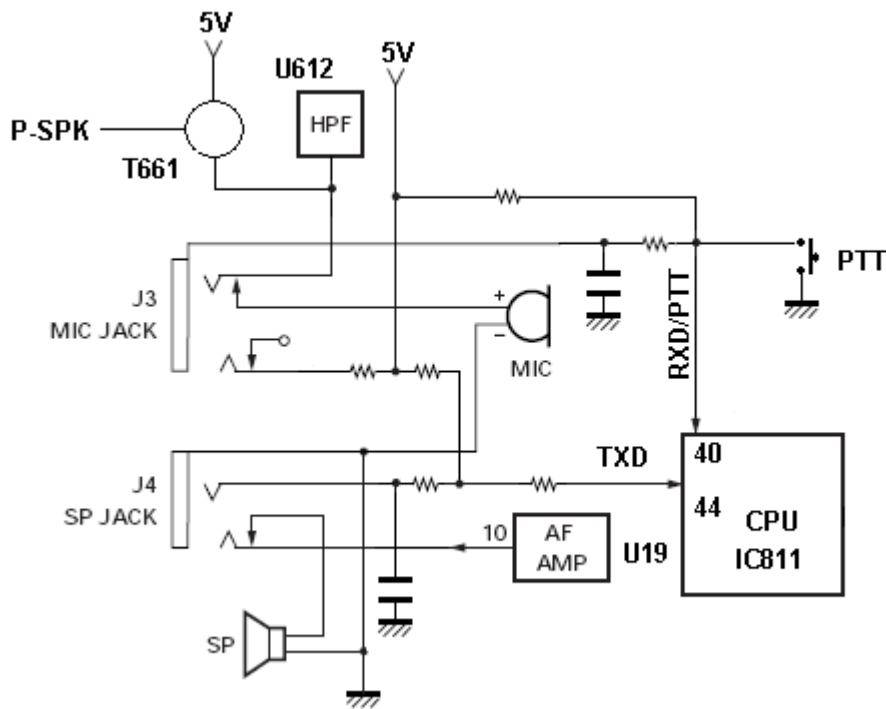


PIC 14

### X Programming Communication

The transceiver communicates data with PC through RXD TXD on earphone seat.

See PIC 15



PIC 15

### XI JP811 Terminal Function

Terminal Pin No.	NAME	INPUT & OUTPUT	Function Description
1	SP+	Output	SPK Output
2	MIC+	Input	MIC Input
3	BATT	Input	Input Electronic Source of Keypad backlight
4	5V	Input	LCD Drive IC & Input Electronic Source of LCD Backlight
5	GND		
6	GND		
7	GND		
8	LCD-CS	Output	IC始能端控制
9	(BATT-TEST) / LCD-RS	Output	Electronic Source Voltage Examination/ Read-Write End Control of LCD Drive IC
10	LAMP1	Output	Electronic Source Control of LCD Backlight
11	GND		
12	K1	Input	Keypad Matrix Input
13	K2	Input	Keypad Matrix Input
14	K3	Input	Keypad Matrix Input

15	K4	Input	Keypad Matrix Input
16	D1	Output	Keypad Matrix Output
17	D2	Output	Keypad Matrix Output
18	D3	Output	Keypad Matrix Output
19	D4	Output	Keypad Matrix Output
20	GND		

## XII Terminal Function of Microprocessor (IC811)

Pin NO.	Tube Feet Name	Function Description
1	PLL-LE/ROM-WP	Phase-locked loop Data End/ Stored IC Write Protection Board
2	LAMP1	LCD Backlight Control
3	5SC-UHF	Control by (UHF) VCO Electrical Source
4	K1	Row Line 1 on K1 Keypad
5	K2	Row Line 2 on K2 Keypad
6	K3	Row Line 3 on K3 Keypad
7	K4	Row Line 4 on K4 Keypad
8	D1/PLL-CLK/ROM-CLK/MONI/LCD-D0	Line 1 on Keypad/Phase-locked Loop Clock/ Squelch Key/LCD Drive Data
9	D2/PLL-DATA/PF1/LCD-D1	Row Line 2 on Keypad/Phase-locked Loop Data/ Sidekey1/LCD Drive Data
10	D3/Viose-CLK/ (A/B) /LCD-D2	Row Line 3 on keypad/ Voice Clock/(A/B) Button/ LCD Drive Data
11	D4/PF2/LCD-D3	Row Line 4 on keypad/Topkey PF2/ LCD Drive Data
12	CN2	CN2 Channel Decoding Bit
13	CN1	CN1 Channel Decoding Bit
14	(N/W) /ROM-Data	Wide/Narrow Bandwidth Control/ Packet Data
15	AVDD	
16	RXO	Microprocessor Audio Amplifier Output
17	RXI	Microprocessor Audio Amplifier Input
18	MICI	Microprocessor Audio Amplifier Output
19	MICO	Microprocessor Audio Amplifier Input
20	TONE/DTMF/Beep	Audio Signal Output/Double Audio Signal Output/Prompt Output
21	PLLC	
22	AVSS	
23	CTCSS/DCS/TUNE	CTCSS/DCS/Receiving Auto Track Gain Output
24	APC	Auto Power Control Voltage Output
25	AURX	Input End of Microprocessor Audio Channel
26	Batt-TEST/LCD-RS	Battery Voltage Sampling Input/LCD Drive IC Control End
27	VOX	MIC Sampling Data Input
28	ANSQL	Squelch Voltage Sample Input End
29	XIN	
30	XOUT	
31	VSS	
32	RESET	

33	VDD	
34	5SC-VHF	(VHF) VCO Electronic Source Control
35	P-TX/RX-VHF	(VHF)Transmitting/Receiving electronic source control
36	P-SPK	Audio Power Amplifier Electronic Power Control
37	LAMP2	Illumination Control
38	P-TX/RX-UHF	UHF Transmit/Receive Electronic Source Control
39	LCD_CS	LCD Drive CMOS chip
40	RXD/PTT	Communication Data Foot Input/Transmit Key Examination
41	Voice-BUSY/DTMF-STD	Voice Chip Busy Line Double Audio Decoding Valid Data Receiving Symbol Bite
42	FM-SDIO/Voice-DATA	Reception Chip Serial Data/Voice Chip Serial Data
43	GREEN	Controlled by Receiving Indicator Light
44	RED/TXD	Receiving Indicator Light/serial communication data foot outputs

## XII Adjustment

Apparatus used in Adjustment: Lineless Integration Test Apparatus, Digital voltage-stabilized source, Digital Multimeters

Nominal Voltage:7.4V

6.2 Alarm Voltage Tone Power:0.5W

Test Contents	Test Points	Text Range	Test Value	Instrument/ Apparatus
VHF-VCO TX/RX	CV-V	136.000MHz	高于0.8	Digital Multimeters
VHF-VCO TX/RX	CV-V	174.995MHz	低于4.0V	Digital Multimeters
UHF-VCO TX/RX	CV-U	400.000MHZ	高于1.0V	Digital Multimeters
UHF-VCO TX-RX	CV-U	470.995MHZ	低于4.0V	Digital Multimeters



DCS Modulation Spoke	VHF/UHF	$0.3\text{KHz} \leq X \leq 0.7\text{KHz}$	Lineless Integration Test Apparatus
Debugging Characteristic	VHF/UHF	+3dB~-3dB	Lineless Integration Test Apparatus
VHF POWER	136~174.995MHz	$\cong 4.3\text{W}$	Lineless Integration Test Apparatus
UHF POWER	400~470.995MHz	$\cong 4.0\text{W}$	Lineless Integration Test Apparatus

## Components List

### Mainboard Top Layer Part Detailed List

NO.	Name	Item	Spec.	Dosage	Bit No.
1	Capacitance	2P	C0402	1	C5 35
2	Capacitance	8P	C0402	1	C5 34
3	Capacitance	10P	C0402	2	C8 51 C632
4	Capacitance	12P	C0402	1	C5 88
5	Capacitance	20P	C0402	1	C5 21
6	Capacitance	24P	C0402	1	C5 98
7	Capacitance	27P	C0402	2	C8 49 C848
8	Capacitance	68P	C0402	1	C5 94
9	Capacitance	100P	C0402	13	C8 23 C822 C821 C820 C657 C656 C653 C65 1
					C2 06 C160 C646 C397 C394
10	Capacitance	102P	C0402	10	C1 90 C838 C639 C611 C516 C373 C169 C16 5
					C6 45 R631
11	Capacitance	103P	C0402	22	C3 60 C847 C839 C837 C829 C815 C813 C612
					C5 96 C545 C541 C512 C168 C166 C388 C844
					C1 C159 C138 C644 C615 C393

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12	Capacitance	104P	C0402	36	C8 33	C364	C846	C845	C389	C843	C842	C840
					R1 63	C652	C641	C640	C636	C634	C624	C599
					C5 11	C164	C162	C158	C617	C614	C841	C396
					C8 30	C827	C817	C814	C812	C655	C514	C513
					C5 92	C589	C518	C515				
13	Capacitance	105P	C0402	4	C6 75	C642	R840	R133				
14	Capacitance	200P	C0402	1	C5 90							
15	Capacitance	202P	C0402	1	C6 37							
16	Capacitance	220P	C0402	5	C8 50	C832	C831	C552	C927			
17	Capacitance	223P	C0402	7	C8 36	C816	C635	C633	C597	C216	C157	
18	Capacitance	224P	C0402	2	C5 23	C520						
19	Capacitance	332P	C0402	1	C6 26							
20	Capacitance	393P	C0402	1	C5 24							
21	Capacitance	470P	C0402	7	C6 58	C167	C163	C134	C643	C616	C390	
22	Capacitance	472P	C0402	3	C8 25	C625	C156					
23	Capacitance	473P	C0402	4	C6 38	C631	C628	C519				
24	Capacitance	680P	C0402	2	C6 30	C627						
25	Capacitance	683P	C0402	2	C8 28	C826						
26	Capacitance	NC	C0402	3	C8 24	C623	C237					
27	Capacitance	1P	C0603	1	C1 36							
28	Capacitance	30P	C0603	1	C4 31							
29	Capacitance	104P	C0603	2	C5 17	C647						

30	Capacitance	104P	C0805	1	C4 55
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31	Resistance	0R	R0402	5	R8 59	R838	R816	R641	R632
32	Resistance	10R	R0402	1	R6 19				
33	Resistance	56R	R0402	1	R9 26				
34	Resistance	100R	R0402	5	R8 55	R664	R662	R617	R572
35	Resistance	150R	R0402	1	R8 21				
36	Resistance	330R	R0402	2	R8 29	R665			
37	Resistance	560R	R0402	1	R8 22				
38	Resistance	1K	R0402	7	R8 24	R669	R668	R663	R359 R815 R814
39	Resistance	1.2K	R0402	1	R5 95				
40	Resistance	2.2K	R0402	10	R8 20	R666	R639	R622	R573 R119 R115 R114
					R3 90	R378			
41	Resistance	3.3K	R0402	3	R8 42	R636	R626		
42	Resistance	3.9K	R0402	1	R6 24				
43	Resistance	4.7K	R0402	8	R8 54	R839	R630	R623	R618 R219 R927 C629
44	Resistance	5.6K	R0402	2	R8 45	R844			
45	Resistance	10K	R0402	14	R6 72	R671	R850	R813	R811 R643 R634 R633
					R6 27	R620	R144	R140	R651 R134
46	Resistance	18K	R0402	1	R6 40				
47	Resistance	22K	R0402	8	R6 74	R673	R384	R852	R848 R613 R576 R862
48	Resistance	24K	R0402	1	R5 81				
49	Resistance	30K	R0402	1	R6 37				
50	Resistance	33K	R0402	3	R6 29	R628	R621		

51	Resistance	47K	R0402	12	R8 43	R817	R596	R135	R118	R116	R113	R648
					R3 89	R379	R667	R861				
52	Resistance	51K	R0402	1	R6 35							
53	Resistance	56K	R0402	2	R8 41	R216						
54	Resistance	68K	R0402	2	C2 33	R145						
55	Resistance	82K	R0402	1	R8 53							
56	Resistance	91K	R0402	1	R8 46							
57	Resistance	100K	R0402	7	R8 18	R642	R139	R137	R650	R647	R646	
58	Resistance	120K	R0402	3	R6 75	R851	R830					
59	Resistance	150K	R0402	2	R6 55	R654						
60	Resistance	180K	R0402	1	R1 31							
61	Resistance	220K	R0402	6	R8 58	R828	R819	R578	R218	R112		
62	Resistance	470K	R0402	1	R8 60							
63	Resistance	680K	R0402	2	R1 10	R638						
64	Resistance	1M	R0402	2	R6 45	R644						
65	Resistance	1.8M	R0402	2	R6 12	R611						
66	Resistance	NC	R0402	4	R6 25	R217	R138	R856				
67	Resistance	270R	R0603	2	R3 58	R356						
69	Resistance	15K	R0603	2	R3 61	R360						
70	Resistance	150K	R0603	4	R6 58	R657	R656	R614				
71	Resistance	0.39R	R1206	4	R6 60	R659	R615	R616				
72	Rank Resistance	47K	RP-1206-4	2	RP 812	RP81 1						

73	Adjustable Resistance	50K	RV1008 (2*2)	1	RE S61 1
74	Adjustable Resistance	50K	RV1206 (3*3)	1	RV 112
75	Laminated Capacitance	2.2uF/16V	C0805	2	E6 15 E614
76	Laminated Capacitance	4.7uF/16V	C0805	3	E6 12 E611 E117
77	Laminated Capacitance	10uF/16V	C0805	8	C6 62 C661 E518 C196 C195 C193 C456 C457
78	Laminated Capacitance	22uF/16V	C0805	1	C1 94
79	High Frequency Laminated Inductance	CH68nH	L0603	1	L5 18
80	High Frequency Laminated Inductance	CH100nH	L0603	4	L8 11 L611 L520 L517
81	High Frequency Laminated Inductance	CH120nH	L0603	1	L5 19
82	High Frequency Laminated Inductance	CH220nH	L0603	1	L5 22
83	Diode	RLS4148	D-ESC	4	D8 11 D518 D326 D169
84	Diode	RL4148	D-ESC	2	D6 11 D610
85	Dynatron	1SS372	D-USM	2	D8 12 D612
86	Dynatron	2SC4617	T-ESM	2	T6 15 T614
87	Dynatron	DTA114EE	T-ESM	1	T6 61
88	Dynatron	DTC114EE	T-ESM	12	T6 74 T673 T672 T671 T815 T814 T611 T146
					T6 13 T219 T862 T326
89	Dynatron	5B1	T-TSM	6	T8 12 T138 T137 T136 T318 T317
90	Dynatron	2SC2712	T-TSM	1	T9 26
91	Dynatron	2SC4116	T-USM	1	T8

					11
92	Dynatron	2SC4226	T-USM	1	T5 21
93	Dynatron	1SS4181	T-USM	1	T6 16
94	Power Tube	2SK3476	T-2-5N1A	2	T3 22 T142
95	Integration	CL6010	U-QFN24-04 04-P050	1	U5 14
96	Integration	24C64	U-SOP8-157- P127	1	U8 11
97	Integration	LM4558	U-SOP8-157- P127-L1006	1	U6 11
98	Integration	LM358	U-SOP8-157- P127	1	U6 12
99	Touch On-Off	MONI KEY	S-TD-26EA	1	SW 614
100	Touch On-Off	PF1	S-TD-26EA	1	SW 615
101	Touch On-off	PTT KEY	S-TD-30EA	1	SW 613
102	Ø2.5 Earphone Seat	2.5 mm	JK-ST-104	1	JK 513
103	Ø3.5 Earphone Seat	3.5 mm	JK-ST-301	1	JK 611
104	Ø5 White Lamp	LED	D-LED-0502 5L	1	D9 26
105	排座	JP20	JP-20-2	1	JP8 11
106	Main CMOS Chip	EM78P568-44	U-QFP44-101 0-P100	1	IC8 11
107	Voice Chip	VOICE	U-VOICE-1	1	U8 12
108	Crystalloid	32.768KHz	FX-MC-146	1	CR 811
109	Green Light	GREEN	D0603	1	D8 14
110	Red Light	RED	D0603	1	D8 15

## Mainboard first floor part detailed list



No.	Name	Item	Spec.	Dosage	Digit No.									
1	Capacitance	0.5P	C0402	2	C330	C250								
2	Capacitance	0.75P	C0402	1	C242									
3	Capacitance	1P	C0402	1	C191									
4	Capacitance	1.5P	C0402	3	C419	C418	C322							
5	Capacitance	2P	C0402	2	C445	C533								
6	Capacitance	3P	C0402	3	C188	C187	C111							
7	Capacitance	4P	C0402	4	C179	C178	C152	C229						
8	Capacitance	5P	C0402	4	C398	C263	C262	C260						
9	Capacitance	6P	C0402	4	C318	C232	C259	C182						
10	Capacitance	7P	C0402	5	C410	C246	C245	C265	C119					
11	Capacitance	8P	C0402	4	C452	C255	C175	C328						
12	Capacitance	10P	C0402	5	C526	C381	R335	C210	R341					
13	Capacitance	11P	C0402	2	C189	C186								
14	Capacitance	12P	C0402	5	C439	C395	C337	C333	C253					
15	Capacitance	18P	C0402	4	C313	C346	C180	C177						
16	Capacitance	20P	C0402	1	C530									
17	Capacitance	24P	C0402	2	C406	C112								
18	Capacitance	33P	C0402	1	C447									
19	Capacitance	51P	C0402	1	C211									
20	Capacitance	82P	C0402	1	C227									
21	Capacitance	100P	C0402	12	C557	C547	C539	C560	C215	C213	C212	C208		
					C204	C202	C192	C385						
22	Capacitance	102P	C0402	46	C666	C819	C317	C361	C139	C682	C574	C281		
					L339	C357	C355	C351	C350	C339	C332	C326		
					C129	C125	C120	C115	C283	C618	C348	C347		
					C555	C531	C429	C408	C405	C400	C391	C443		
					C258	C228	C220	C219	C286	C171	C170	C852		
					C127	C124	C130	C123	C331	C217				
23	Capacitance	103P	C0402	20	C622	C525	C363	C135	C345	C540	C536	C532		
					C426	C401	C221	C183	C650	C620	C538	C205		
					C354	C422	C113	C230						
24	Capacitance	104P	C0402	31	C667	C316	C353	C561	C684	C683	C573	C264		
					R364	C529	C621	C122	C114	C428	C424	C414		
					C251	C234	C595	C546	C543	C542	C562	C203		
					C402	C133	C387	C329	C323	C319	C218			
25	Capacitance	105P	C0402	2	C358	C131								
26	Capacitance	180P	C0402	1	C282									
27	Capacitance	220P	C0402	2	C528	C527								
28	Capacitance	223P	C0402	2	C550	C563								
29	Capacitance	470P	C0402	43	C665	C416	C137	C365	C572	C247	C240	C239		
					L186	C392	C375	C254	C252	C248	C236	C266		
					C144	C558	C556	C433	C413	C407	C403	C649		

					C261 C257 C185 C184 C174 C172 C321 C147
					C648 C619 C366 C343 C285 C117 C231 C181
					C176 C384 C383
30	Capacitance	473P	C0402	1	C554
31	Capacitance	474P	C0402	1	C549
32	Capacitance	NC	C0402	22	C818 C311 C423 C559 C442 C425 C404 C399
					C378 C376 C372 C235 C224 C222 C209 C244
					C284 C432 C225 C430 C280 C377
33	Capacitance	0.5P	C0603	3	C446 C149 C143
34	Capacitance	1P	C0603	1	C140
35	Capacitance	3P	C0603	1	C154
36	Capacitance	4P	C0603	1	C444
37	Capacitance	5P	C0603	2	C371 C153
38	Capacitance	6P	C0603	2	C150 C145
39	Capacitance	7P	C0603	2	C151 D320
40	Capacitance	9P	C0603	1	C155
41	Capacitance	10P	C0603	2	C427 C116
42	Capacitance	12P	C0603	2	C453 C450
	Capacitance	13P	C0603	1	L319
43	Capacitance	22P	C0603	3	C368 L340 L341
44	Capacitance	24P	C0603	1	C436
45	Capacitance	27P	C0603	1	C126
46	Capacitance	33P	C0603	5	C420 C367 C349 C146 C141
47	Capacitance	51P	C0603	1	C438
48	Capacitance	56P	C0603	1	C238
49	Capacitance	100P	C0603	1	C320
50	Capacitance	220P	C0603	1	C356
51	Capacitance	470P	C0603	3	C352 C128 C121
52	Resistance	0R	C0402	12	C312 C449 C448 C440 C437 C374 C223 C421
					C417 C226 R214 R331
53	Resistance	10R	R0402	5	R438 R339 R324 R147 R195
54	Resistance	22R	R0402	2	R334 R193
55	Resistance	47R	R0402	9	R418 R354 R350 R208 R202 R192 R205 R187
					R452
56	Resistance	75R	R0402	1	R168
57	Resistance	100R	R0402	14	R511 R524 R513 R380 R329 R326 R178 R176
					R173 R172 R149 R126 R136 C342
58	Resistance	150R	R0402	3	R525 R456 R166
59	Resistance	180R	R0402	2	R372 R319
60	Resistance	220R	R0402	1	R327
61	Resistance	330R	R0402	2	R444 R121
62	Resistance	470R	R0402	1	R417
63	Resistance	560R	R0402	4	R315 R313 R153 R151

64	Resistance	680R	R0402	5	R316 R177 R194 R190 R188
65	Resistance	820R	R0402	3	R516 R395 R120
66	Resistance	1K	R0402	13	R835 R834 R320 R526 R538 R338 R330 R146
					R158 R143 R142 R141 C537
67	Resistance	1.5K	R0402	2	R537 R154
68	Resistance	1.8K	R0402	2	R317 R206
69	Resistance	2K	R0402	1	R514
70	Resistance	2.2K	R0402	10	R682 R681 R542 R541 R523 R518 R155 R191
					R376 R383
71	Resistance	2.7K	R0402	2	R535 R455
72	Resistance	3.3K	R0402	7	R536 R387 R377 R353 R175 R180 R517
73	Resistance	3.9K	R0402	3	R520 R439 R196
74	Resistance	4.7K	R0402	12	R823 R534 R161 R533 R388 R382 R184 R183
					R182 R181 R179 R322
75	Resistance	5.6K	R0402	4	R352 R328 R174 R332
77	Resistance	10K	R0402	7	R598 R532 R394 R349 R186 R185 R531
78	Resistance	22K	R0402	1	R661
79	Resistance	33K	R0402	1	R528
80	Resistance	47K	R0402	12	R833 R832 R831 R683 R543 R522 R363 R348
					R162 R204 R201 R375
81	Resistance	56K	R0402	1	R529
82	Resistance	68K	R0402	1	R207
83	Resistance	82K	R0402	4	R448 R447 R445 R362
84	Resistance	100K	R0402	4	R463 R446 R198 R128
85	Resistance	120K	R0402	5	R460 R458 R210 R209 R199
86	Resistance	150K	R0402	5	R321 R325 R171 R200 R159
87	Resistance	180K	R0402	3	R599 R512 R122
88	Resistance	200K	R0402	2	R459 R123
89	Resistance	220K	R0402	1	R160
90	Resistance	330K	R0402	2	R515 R148
91	Resistance	470K	R0402	1	R527
92	Resistance	NC	R0402	6	R539 R392 R333 R127 R465 R464
93	Resistance	1M	R0402	7	R215 R130 R129 R125 R124 R451 R450
94	Resistance	0R	R0603	5	R203 L342 L344 L331 L318
95	Resistance	10R	R0603	1	R197
96	Resistance	270R	R0603	2	R213 R212
97	Resistance	NC	C0603	8	C451 C435 C409 C142 C132 C118 C267
98	Resistance	NC	C0805	2	C256 C338
99	Laminated Capacitance	1uF/16V	C0805	1	C571
100	Laminated Capacitance	4.7uF/16V	C0805	1	E118
101	Laminated	10uF/16V	C0805	8	E665 E667 E519 E684 E574 E520 E521 C454

	Capacitance				
102	Ta Capacitance	0.1uF/16V	EIA3216	3	E313 E122 E121
103	Ta Capacitance	0.22uF/16V	EIA3216	1	E314
104	Ta Capacitance	2.2uF/16V	EIA3216	1	E119
105	Ta Capacitance	4.7uF/16V	EIA3216	2	E311 E120
106	Ta Capacitance	10uF/16V	EIA3216	3	E616 E613 E312
107	Ta Capacitance	100uF	EIA6032	1	E522
108	High Frequency Laminated Inductance	CH12nH	L0402	1	L159
109	High Frequency Laminated Inductance	CH15nH	L0402	1	L171
110	High Frequency Laminated Inductance	CH27nH	L0402	1	C173

111	High Frequency Laminated Inductance	CH47nH	L0402	1	L314
112	High Frequency Laminated Inductance	CH68nH	L0402	2	C412 L325
113	Low Frequency Laminated Inductance	CI2.2uH	L0402	1	R157
114	High Frequency Laminated Inductance	CH2.2nH	L0603	1	L177
115	High Frequency Laminated Inductance	CH12nH	L0603	1	L158
116	High Frequency Laminated Inductance	CH15nH	L0603	1	L155
117	High Frequency Laminated Inductance	CH18nH	L0603	4	L313 L170 L169 L154
118	High frequency Laminated Inductance	CH33nH	L0603	1	R351
119	High Frequency Laminated Inductance	CH68nH	L0603	1	R346
120	High Frequency Laminated Inductance	CH100nH	L0603	2	L153 L317
121	High Frequency Laminated Inductance	CH120nH	L0603	3	L316 L312 L311
122	High Frequency Laminated Inductance	CH220nH	L0603	2	L324 L323
123	High Frequency Laminated Inductance	CH270nH	L0603	4	L168 L162 L161 L160
124	Low Frequency Laminated Inductance	CI1uH	L0603	1	L156
125	Low Frequency Laminated	CI3.3uH	L0603	4	L166 L322 L167 L321

	Inductance				
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126	Low Frequency Laminated Inductance	CI6.8uH	L0603	1	L315
128	Low frequency Laminated Inductance	CI100nH	L0603	1	L152
129	Low Frequency Laminated Inductance	CI560nH	L0603	1	L157
130	Low Frequency Laminated Inductance	CI100nH	L0805	4	L333 L174 L328 L179
131	Line Inductance	HW4.7nH	L0603	1	L191
132	Line Inductance	HW6.8nH	L0603	2	L163 L192
133	Line Inductance	HW12nH	L0603	1	L190
134	Line Inductance	HW18nH	L0603	1	L164
135	Line Inductance	HW27nH	L0603	3	L345 L188 L187
136	Line Inductance	HW39nH	L0603	1	L343
137	Line Inductance	HW56nH	L0603	1	L189
138	Line Inductance	HW82nH	L0603	2	C415 L320
139	Line Inductance	HW120nH	L0603	2	L346 C336
140	Line Inductance	HW150nH	L0603	1	L165
141	Line Inductance	HW560nH	L0603	3	L326 L173 L172
142	Line Inductance	HW1uH	L0805	2	L329 L175
143	Line Inductance	HW220nH	L0805	2	L176 L330
144	Line Inductance	HW560nH	L0805	1	L327
145	High Temperature Not Rise	0.31*1.3*10T	LC035158T	2	L332 L178
146		0.35*1.6*7T	LC03155T	1	L335
147		0.35*1.6*8T	LC03155T	2	L338 L336
148		0.4*1.0*4T	LC04103T	2	R355 L334
149		0.4*1.2*4T	LC03155T	1	L181
150		0.4*1.3*5T	LC03157T	1	L183
151		0.4*1.5*4T	LC03155T	1	L185
152		04*1.5*5T	LC03155T	1	L182
153	Diode	1SV305	D-ESC	6	D145 D144 D143 D142 D319 D318
154	Diode	HVC376	D-ESC	8	D328 D327 D325 D324 D140 D139 D132 D131
155	Diode	HSC277	D-ESC	12	D133 D323 D316 D315 D314 D312 D148 D138 D137 D136 D135 D311
156	Diode	RLS4148	D-ESC	5	D682 D681 D542 D541 D661
157	Diode	BA592	D-USC	2	D322 D146
158	Diode	BB639	D-USC	1	D317
159	Diode	H	D-USC	1	D141
160	No Stick	NC	D-ESC	1	D321
161	Dynatron	HSM88A	D-TSM	2	D443 D147

162	Dynatron	2SC4617	T-ESM	2	T132 T313
163	Dynatron	DTA114EE	T-ESM	1	T526
164	Dynatron	DTC114EE	T-ESM	5	T681 T541 T523 T524 T383
165	Dynatron	2SC3357	T-SOT89	2	T320 T140
166	Dynatron	2SK1588	T-SOT89	1	T525
168	Dynatron	5B1	T-TSM	4	T684 T574 T522 T316
169	Dynatron	2SC3356	T-TSM	2	T319 T139
170	Dynatron	2SC4215	T-USM	2	T520 T129
171	Dynatron	2SC4226	T-USM	6	T311 T312 T135 T131 T130 T315
172	Power Tube	2SK3475	T-SOT89	2	T321 T141
173	Single Bar Tube	K52	T-TSM	2	T325 T134
174	Double Bar Tube	3SK318	T-US4	4	T324 T323 T144 T143
175	Integrate Circuit	TA7368	U-SSOP10-1 75-P10	1	U515
176	Integrate Circuit	TA31136F	U-SSOP16-1 75-P065	1	U516
177	Integrate Circuit	LMX2336	U-SSOP20-1 75-P065	1	U112
178	Filter	450K	FL-PBFC45 5R	1	FL51 4
179	Crystal	29.250MHz	FL-UM-5-3S	2	FL51 FL51 6 5
180	Crystal	14.4MHz	FX-19.2MH Z	1	CR11 2
181	Chinaware	C24	FX-6060-2S	1	CR51 2
182	5V5 Foot	5V	5V	2	U616 U613
183	Channel Potentiometer	ED08741O	S-ED08741 O	1	SW8 11
184	Switch Potentiometer	R08710NS	S-R08710NS	1	SW6 12
185	Antenna Adapter	ANT-2	ANT-KX01	1	ANT 112

LC Board Components List

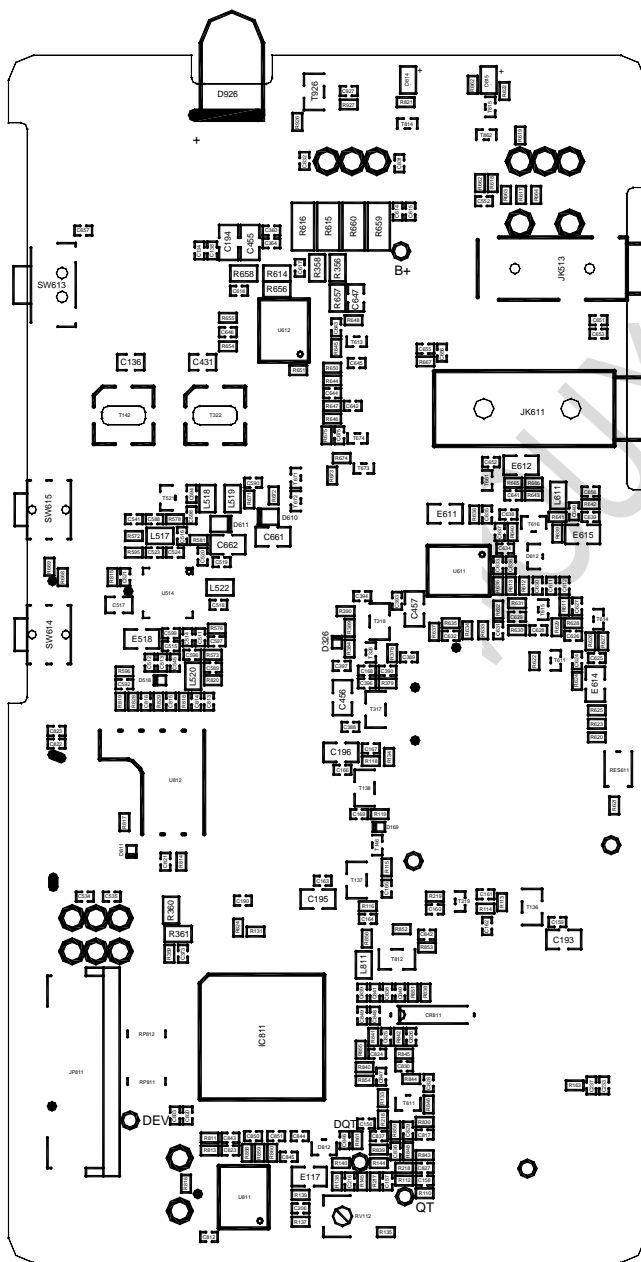
No.	Name	Item	Spec.	Dosage	Digit No.
1	Capacitance	100P	C0402	8	C611 C612 C613 C614 C615 C616 C617 C618
2	Capacitance	102P	C0402	1	C812
3	Capacitance	103P	C0402	1	C619
4	Capacitance	104P	C0402	1	C620



5	Capacitance	220P	C0402	1	C624
6	Resistance	100R	R0402	1	R623
7	Resistance	150R	R0402	2	R615 R616
8	Resistance	1.2K	R0402	1	R612
9	Resistance	2.2K	R0402	4	R613 R614 R617 R618
10	Resistance	1.8K	R0402	1	R621
11	Resistance	4.7K	R0402	2	R619 R814
12	Resistance	91K	R0402	1	R611
13	Resistance	150R	R0603	1	R812
14	Resistance	NC	R0603	1	R813
15	White Lamp	White	D0603	4	D611 D612 D615 D616
16	Dynatron	DTC114EE	T-ESM	2	T812 T611
17	Eliminating Resistance	1K	RP-1206-4	1	R622
18	Row Seate	JP20	JP-20-2	1	JP612
19	Ta Capacitance	10uF/16V	EIA3216	1	E611
20	High Frequency Lamineted Capacitance	CH100nH	L0603	1	L611
21	Tringle Singl-Colored White Lamp Board	LED	LED	1	D812
22	MIC	MIC	MIC60	1	MIC61 1
23	State Fix	HD44780	U-CHIP80-S6 A0069	1	U611

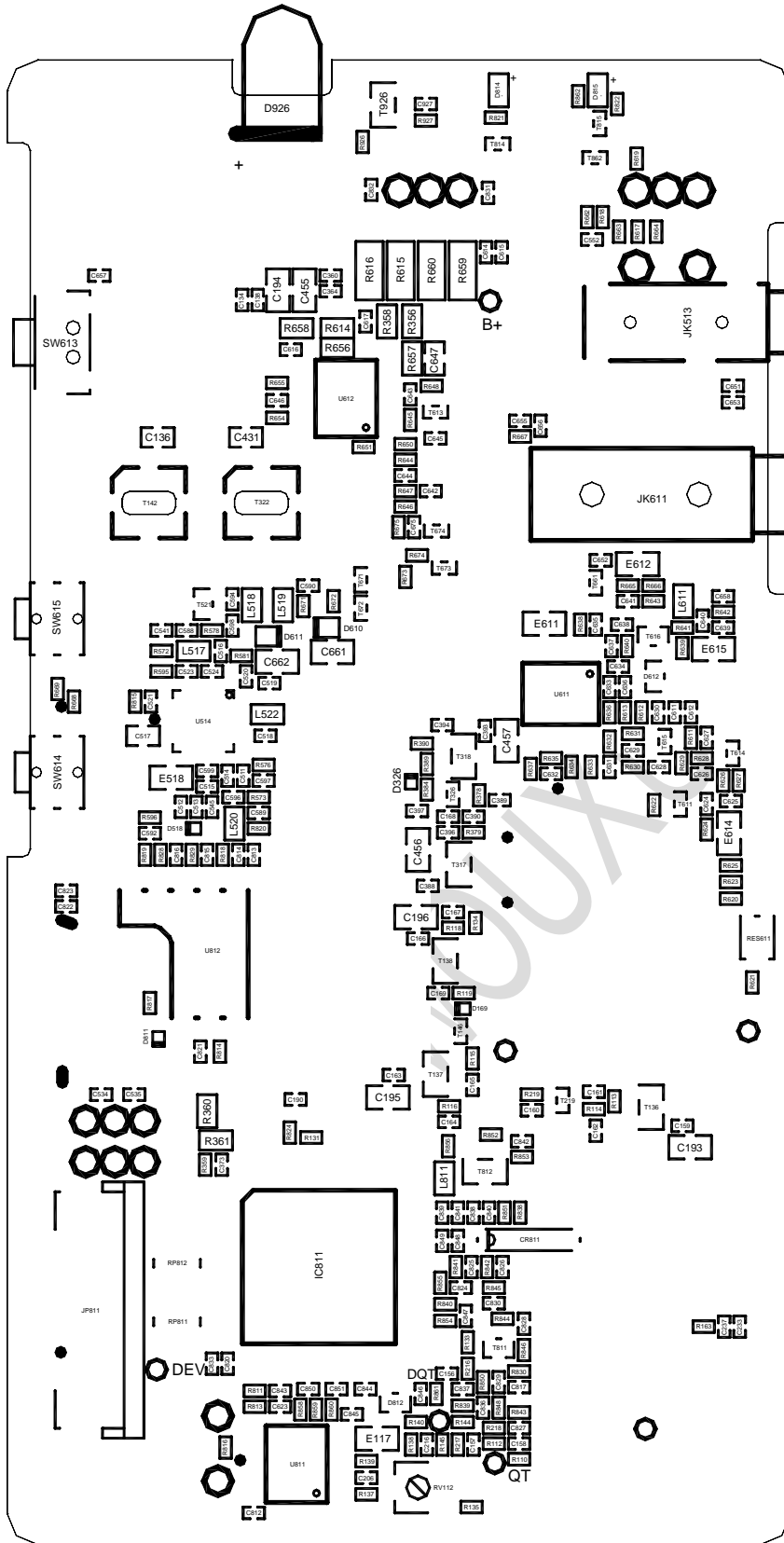
## Mainboard Chart

### Mainboard Top Layer Components Chart

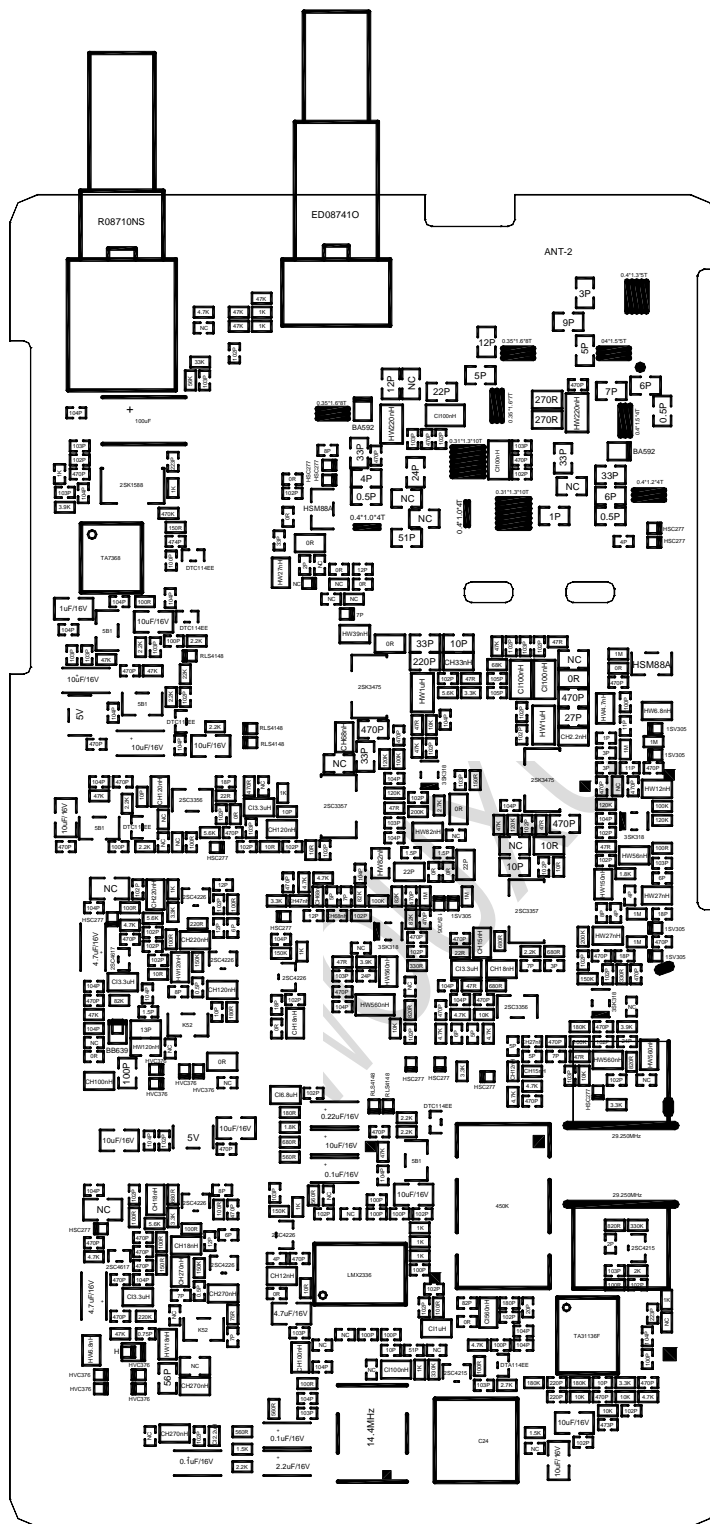


## Mainboard Top Layer Digit No.

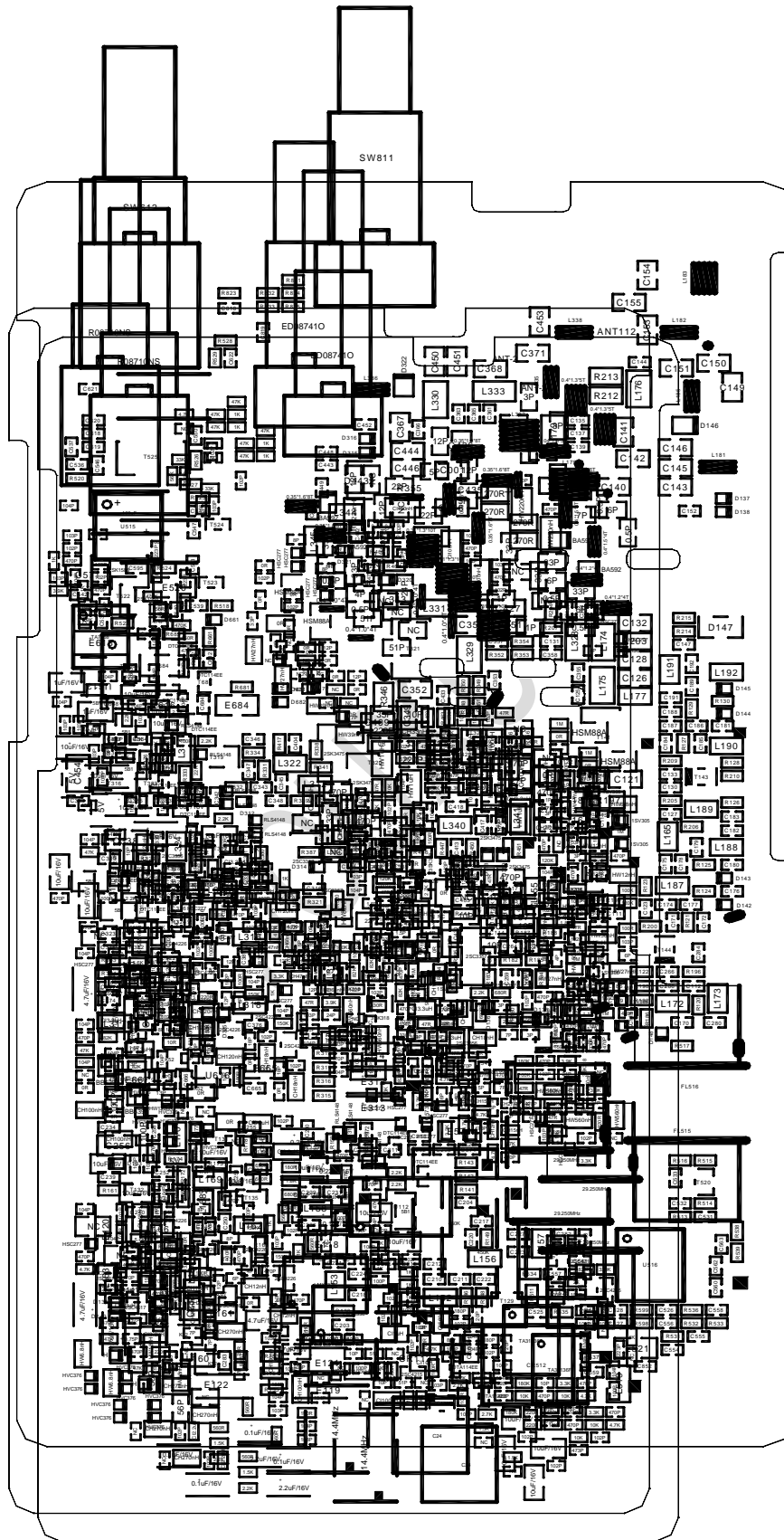
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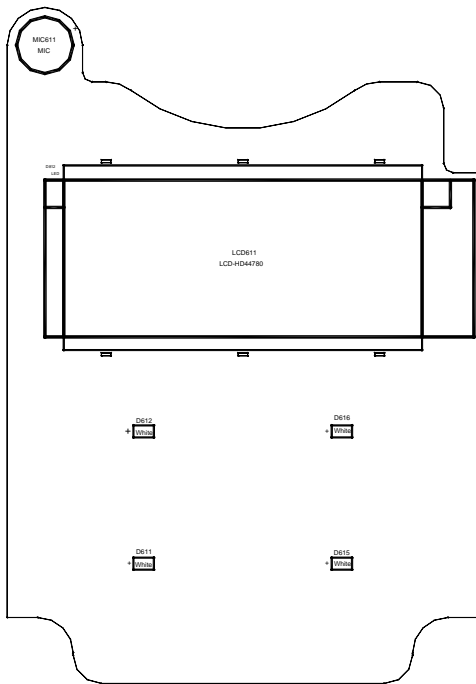
### Mainboard Bottom Layer Components Chart



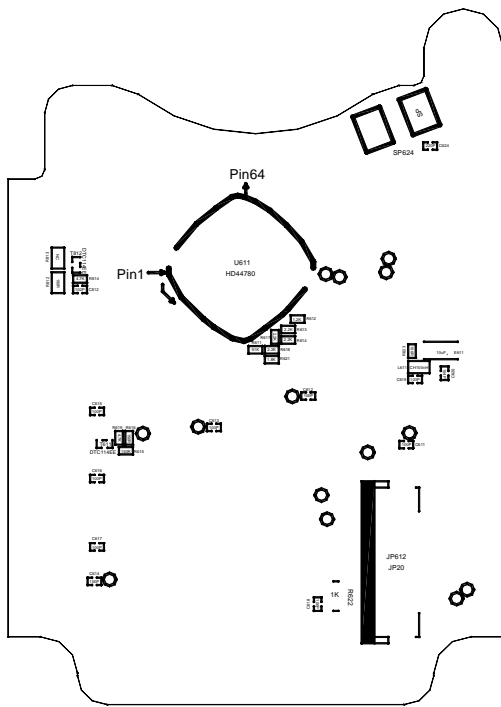
# Mainboard Bottom Layer Digit No. Chart



### Liquid Crystal Board Top Layer Components and Digit No.Chart

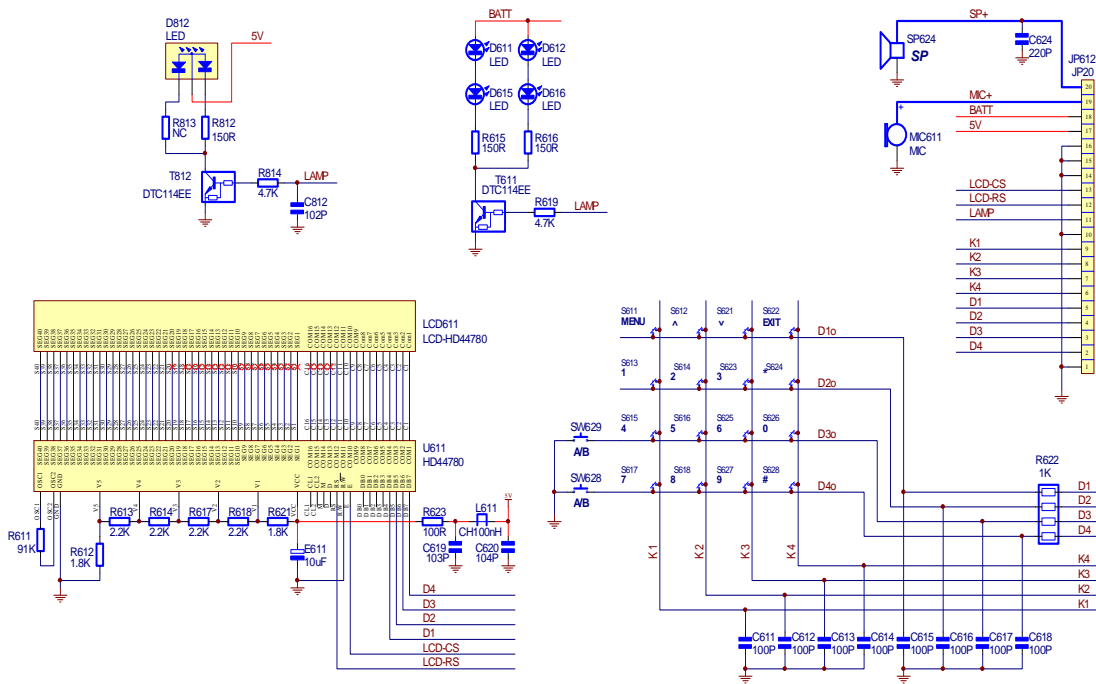


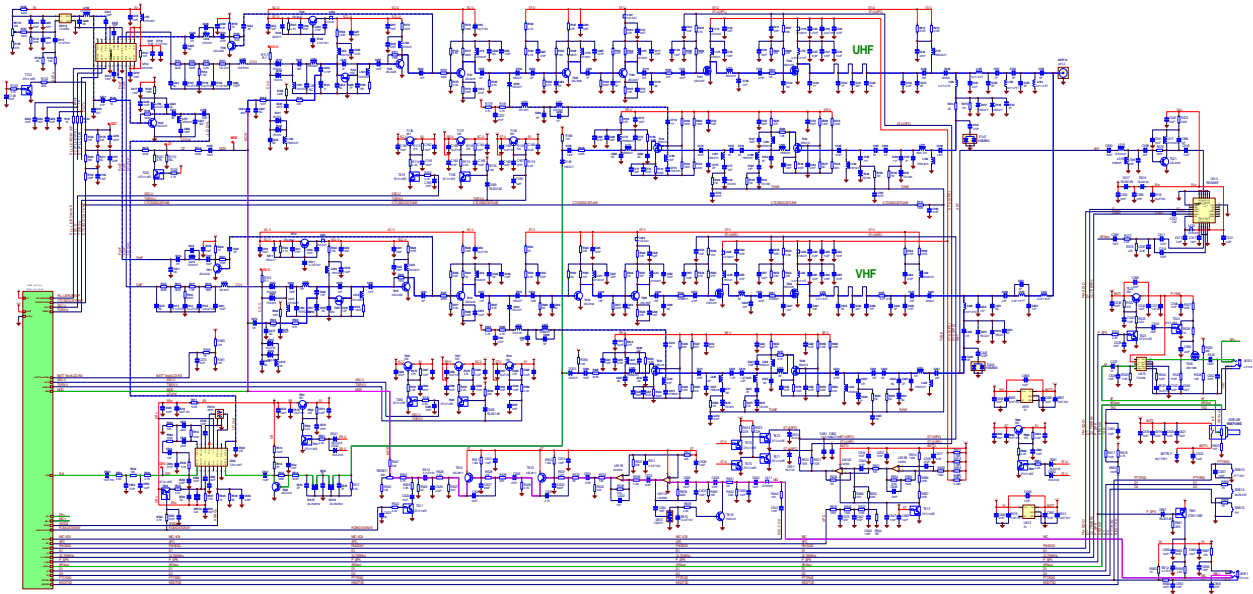
### Liquid Crystal Bottom Layer Chart & Digit No.Chart



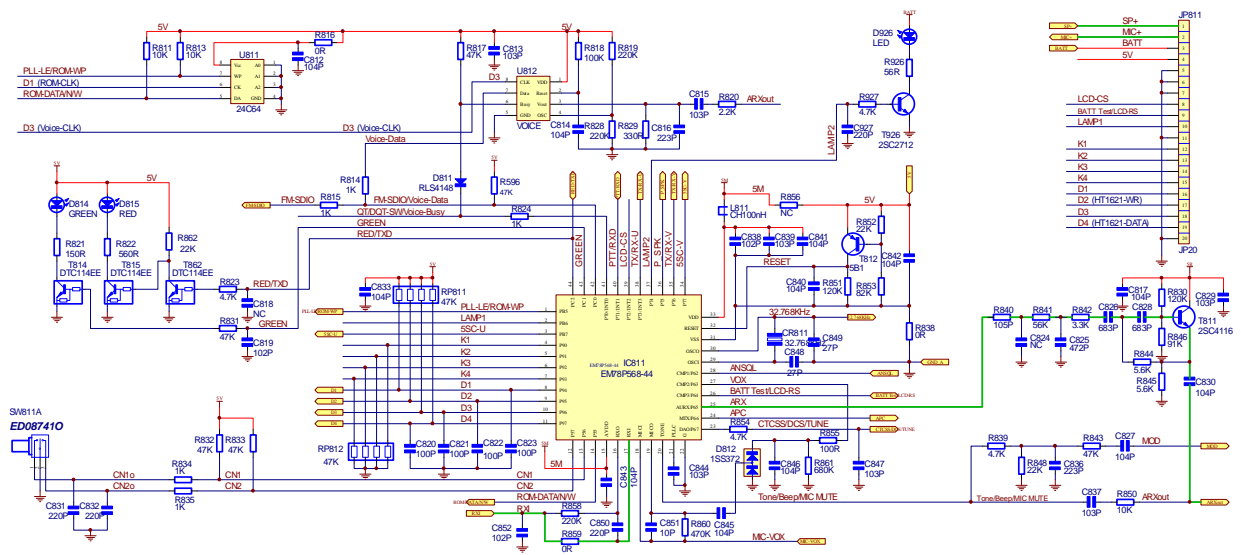
## Circuit Chart







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