

Circuit Description

1.RECEIVER

The signal from the antenna is passed through a transmission/reception selector circuit and is amplified by T217. The signal after amplified enter to 1846 for processing then output the audio, the audio signal is amplified by UTC2822 and output by the speaker at last.

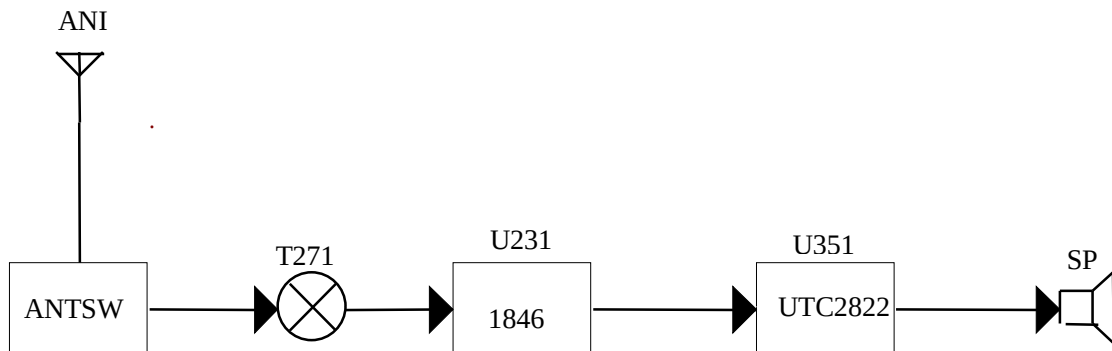


Figure1. RECEIVER CIRCUIT

2.TRANSMITTER

The signal from the microphone passes through 1846, after modulation in the carrier modulation, the modulation signal with the carrier promotes by buffer T121,T131, and amplified by T141 then sends to the antenna terminals.

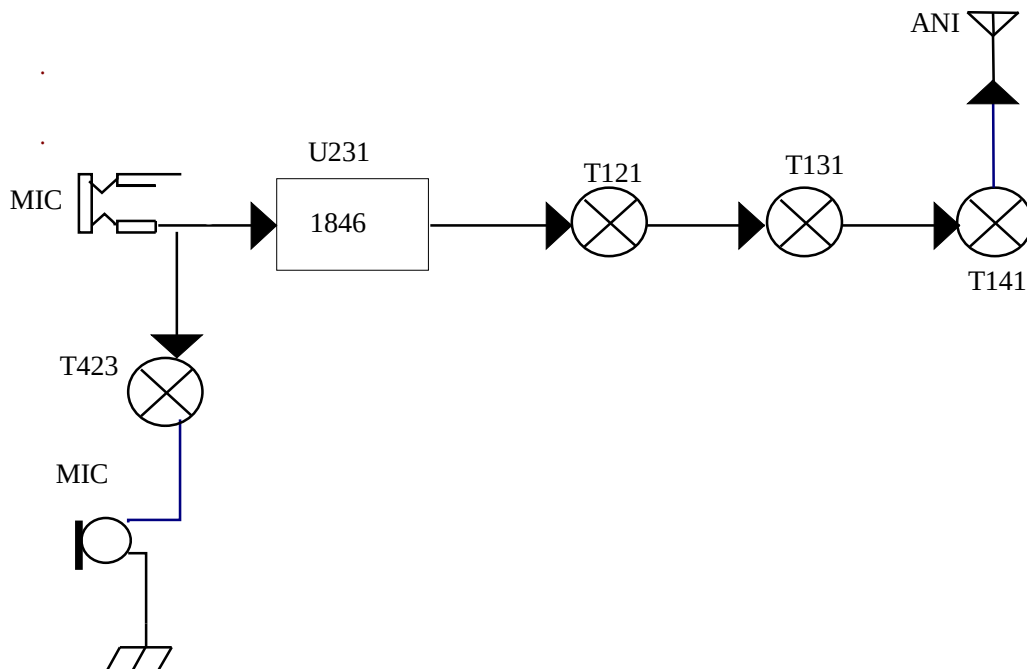


Figure2.TRANSMITTER CIRCUIT

3.TRANSMISSION/RECEPTION SELECTOR CIRCUIT

The transmission output is passed through the transmission/reception selector circuit and low-pass filter to the antenna. The transmission/reception selector circuit, which consists of diodes D161, D160, D261 and D262, is turned on during transmission and off during reception to switch the signal.

4.DIGITAL CONTROL CIRCUIT

SIDE KEY AND ENCODER CIRCUIT

The signal from side key and encoder is directly input to the processor.

Reset and backup circuit

When turn on the power, a positive pulse is output from the reset circuit consisting of D831, C831 and R831 to the third feed of reset terminal on U821 microprocessor. When turn off the power, U517 detects a 3.3 V drop, and output a low signal, it outputs data to U811 and enter backup mode.

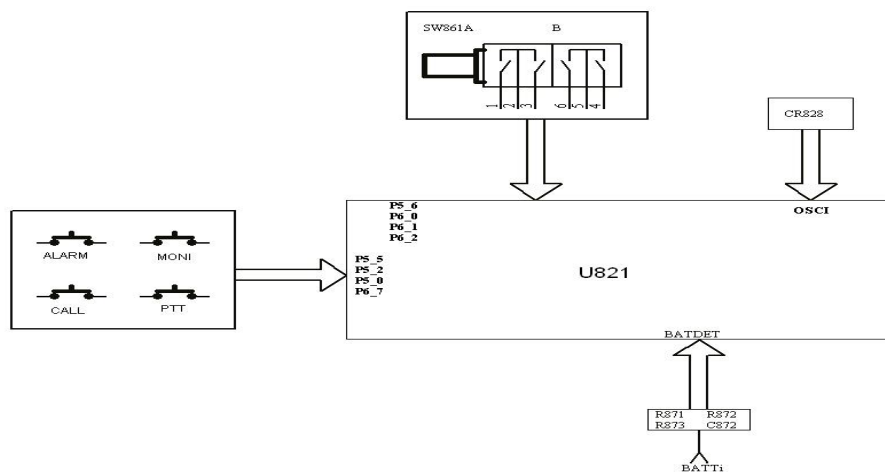


Figure3, digital control circuit

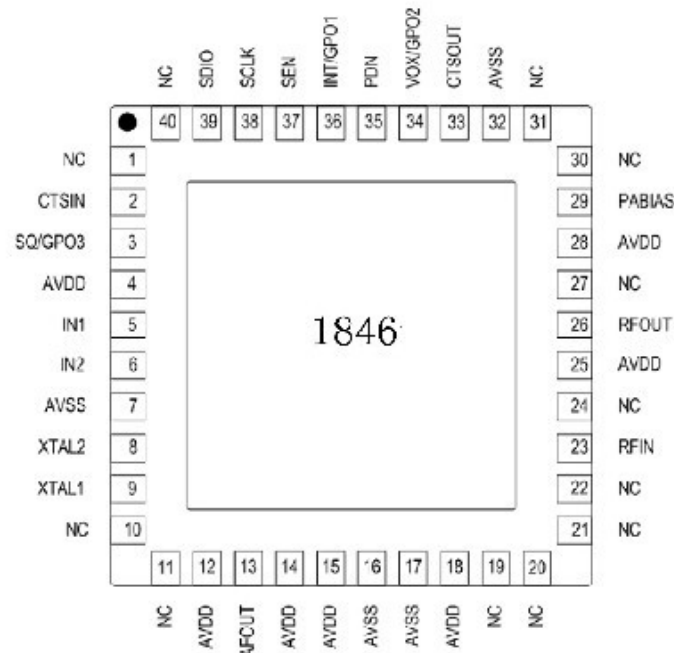
BATTERY VOLTAGE TEST CIRCUIT

Power supply voltage after partial pressure input to the microprocessor analog interface

BATTERY SAVE CIRCUIT

The squelch is off during receive. The power circuit enters battery save mode if no key has been pressed for five seconds. The circuit is controlled by microprocessor directly.

5.1846 DESCRIPTION



MAINLY SECTION DESCRIPTION

1.DSP consists of IF amplifier, FM modulation, RSSI calculator, AFC control circuit, audio/audio mixer filter, CTCSS/DCS filter and so on.

2.Synthesizer mainly functions :

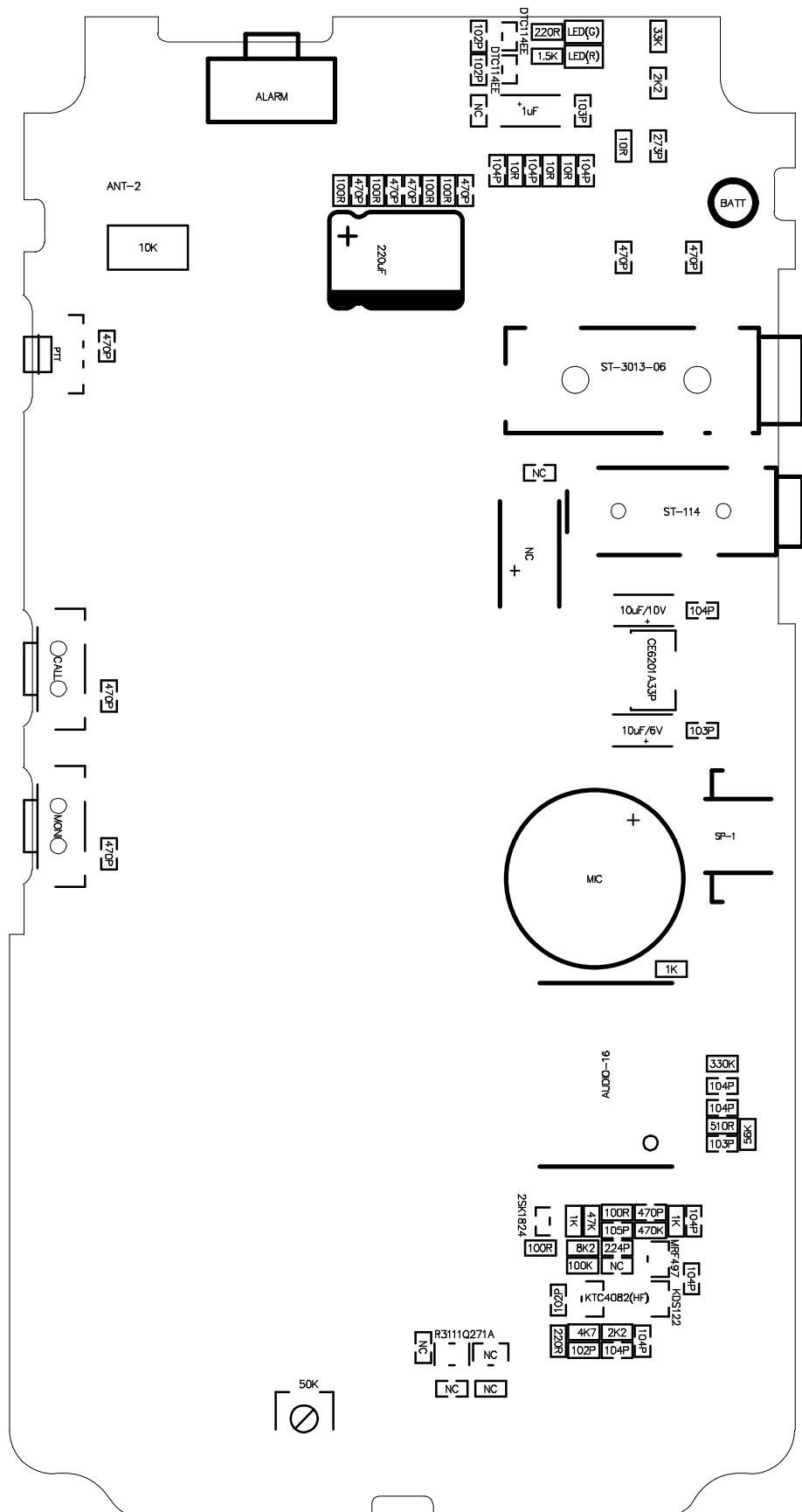
- ① The synthesizer produces a local oscillator signal, used to switch the RF input to a continuous low medium frequency.
- ② Synthesizer provides the base clock to adjust the VCO frequency.

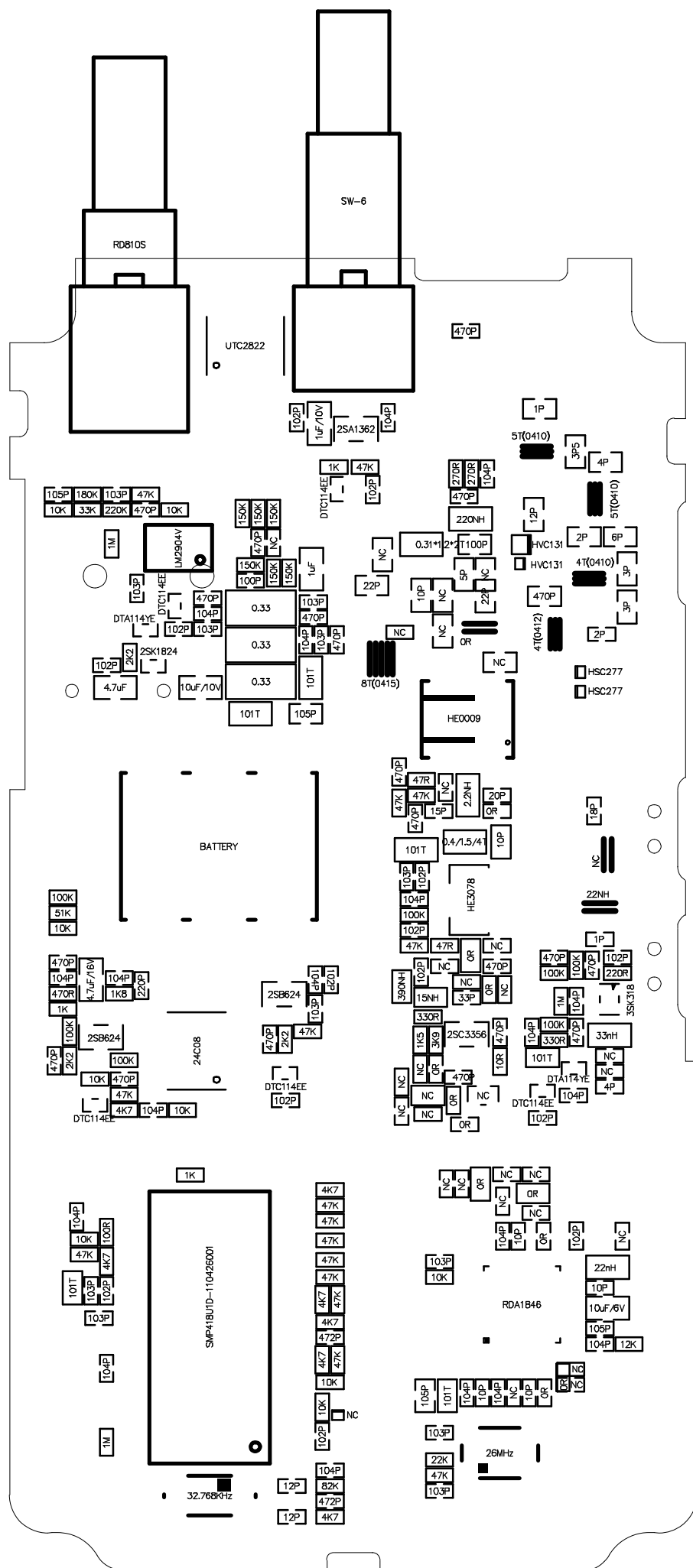
3.BASE CLOCK

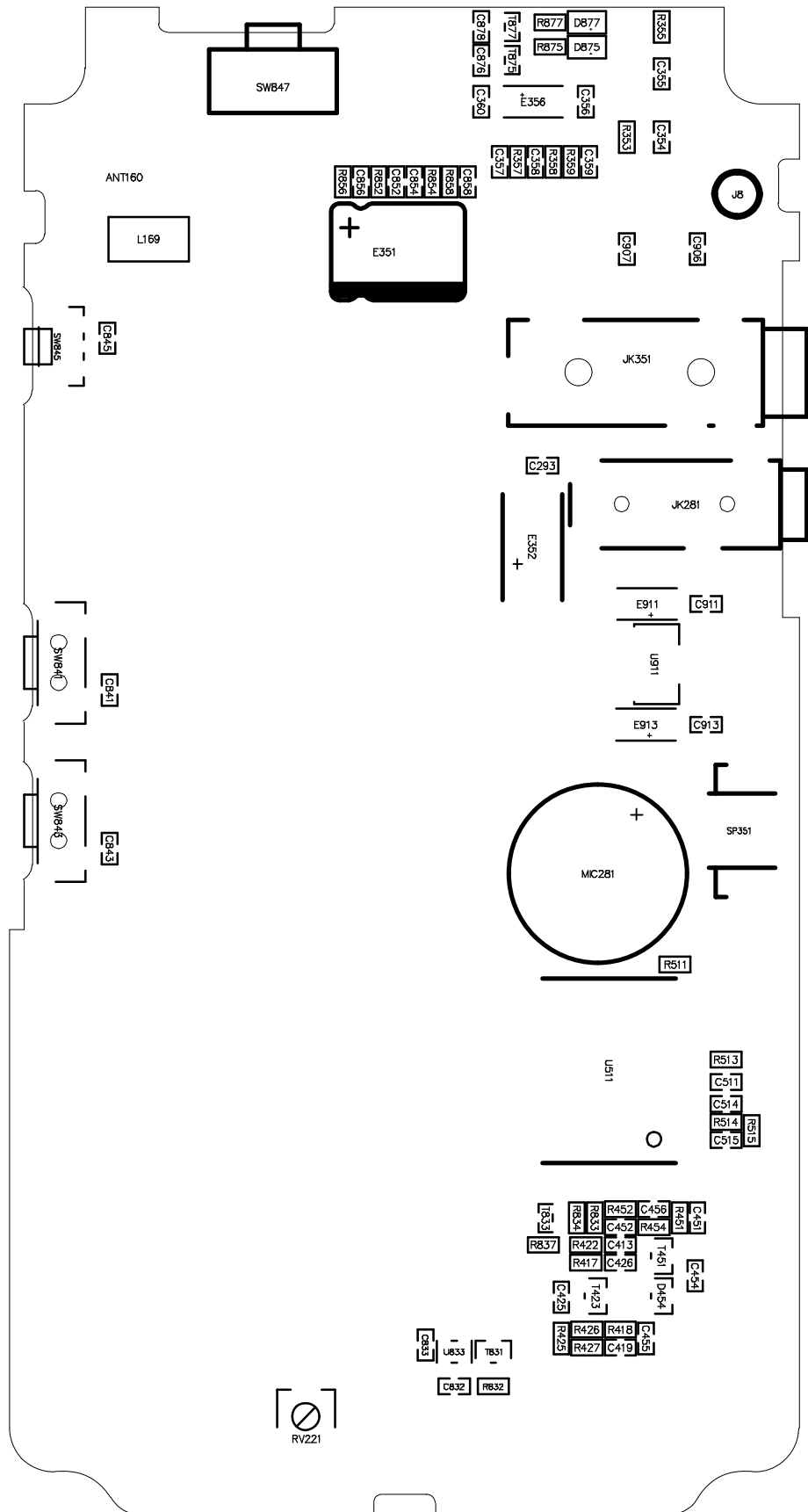
1846 ports more base clocks, for example, 12.8 MHz,13MHz and so on.

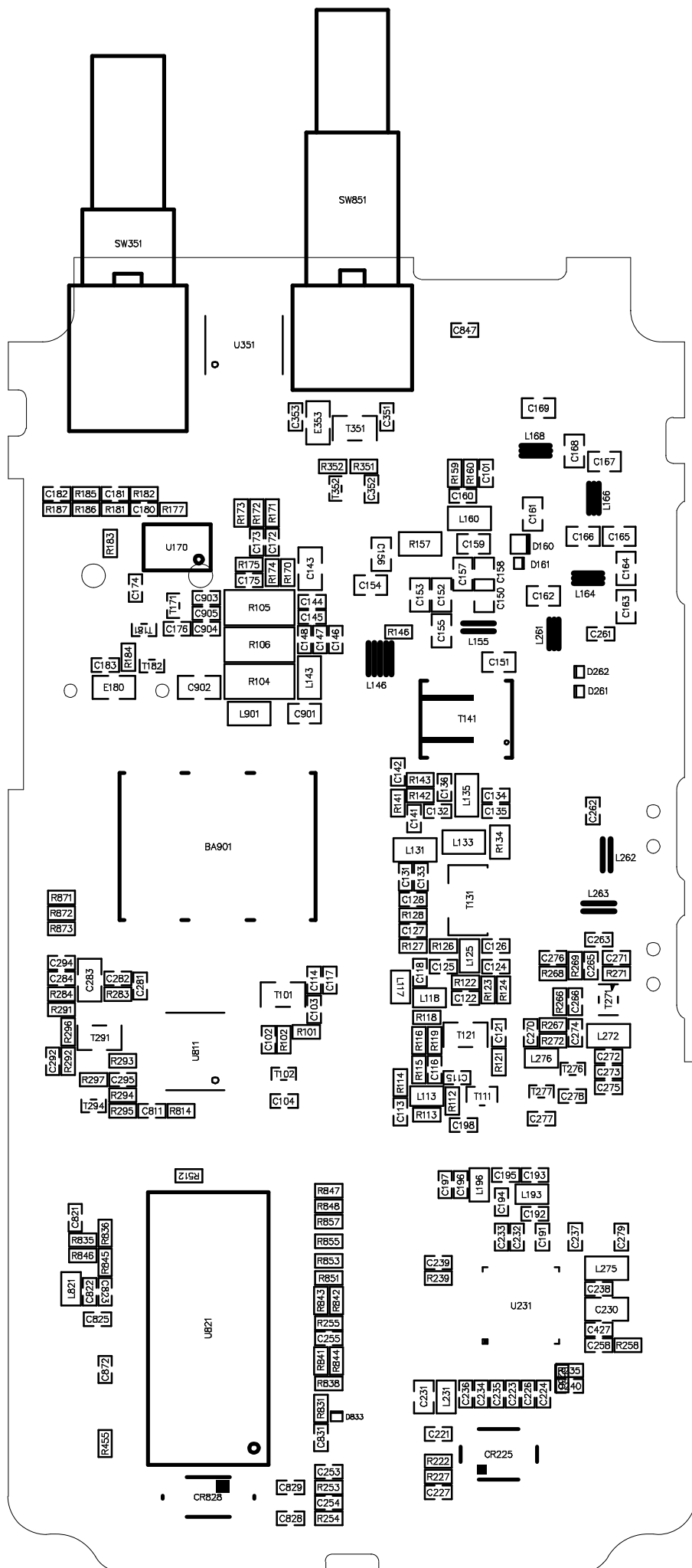
4.SERIAL CONTROL INTERFACE

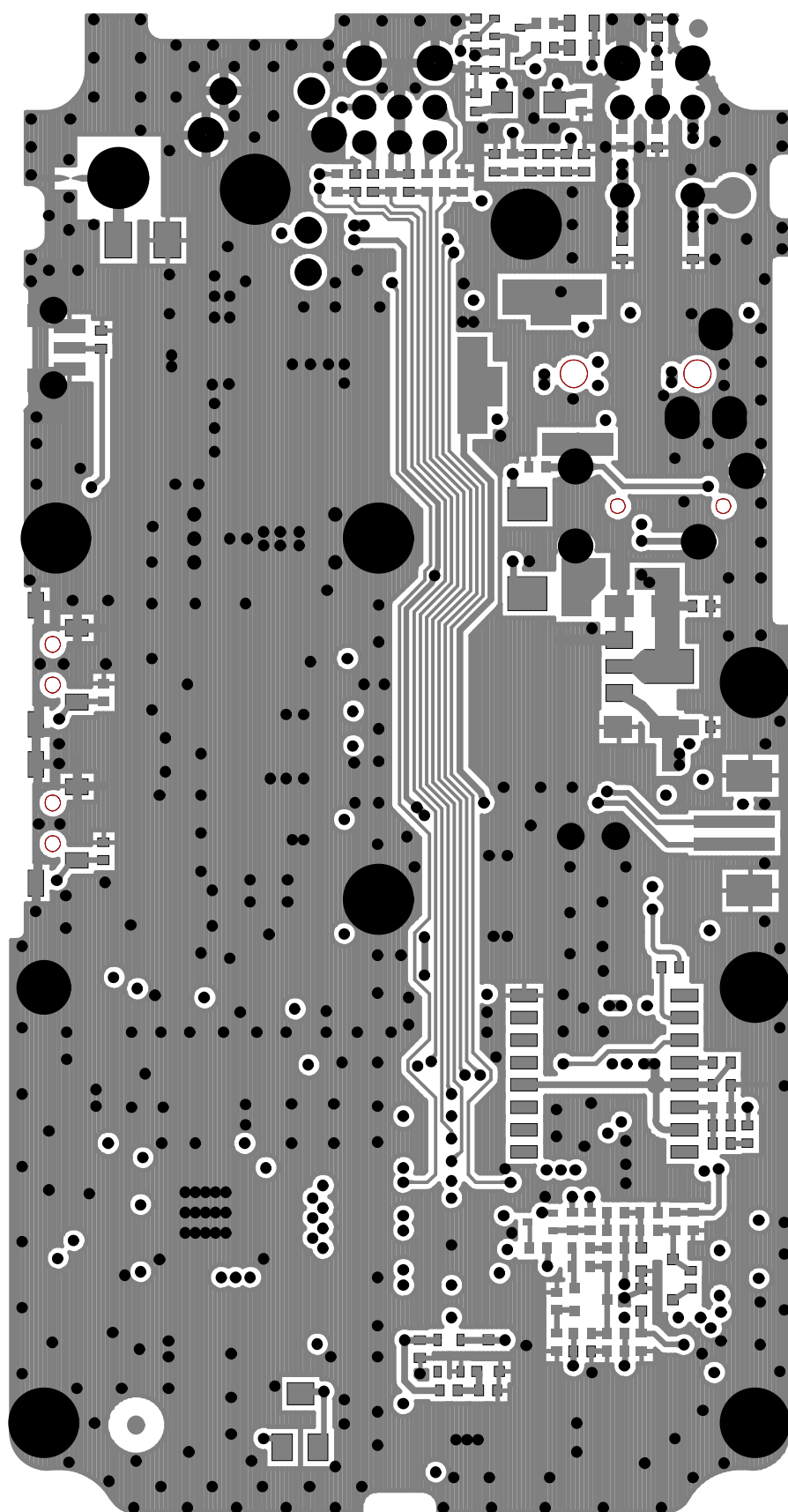
A three lines serial control interface is used to read the main IC and 1846 control record. Serial control is 24 characters in length, 18 bit numeric string and 6 bit address string.

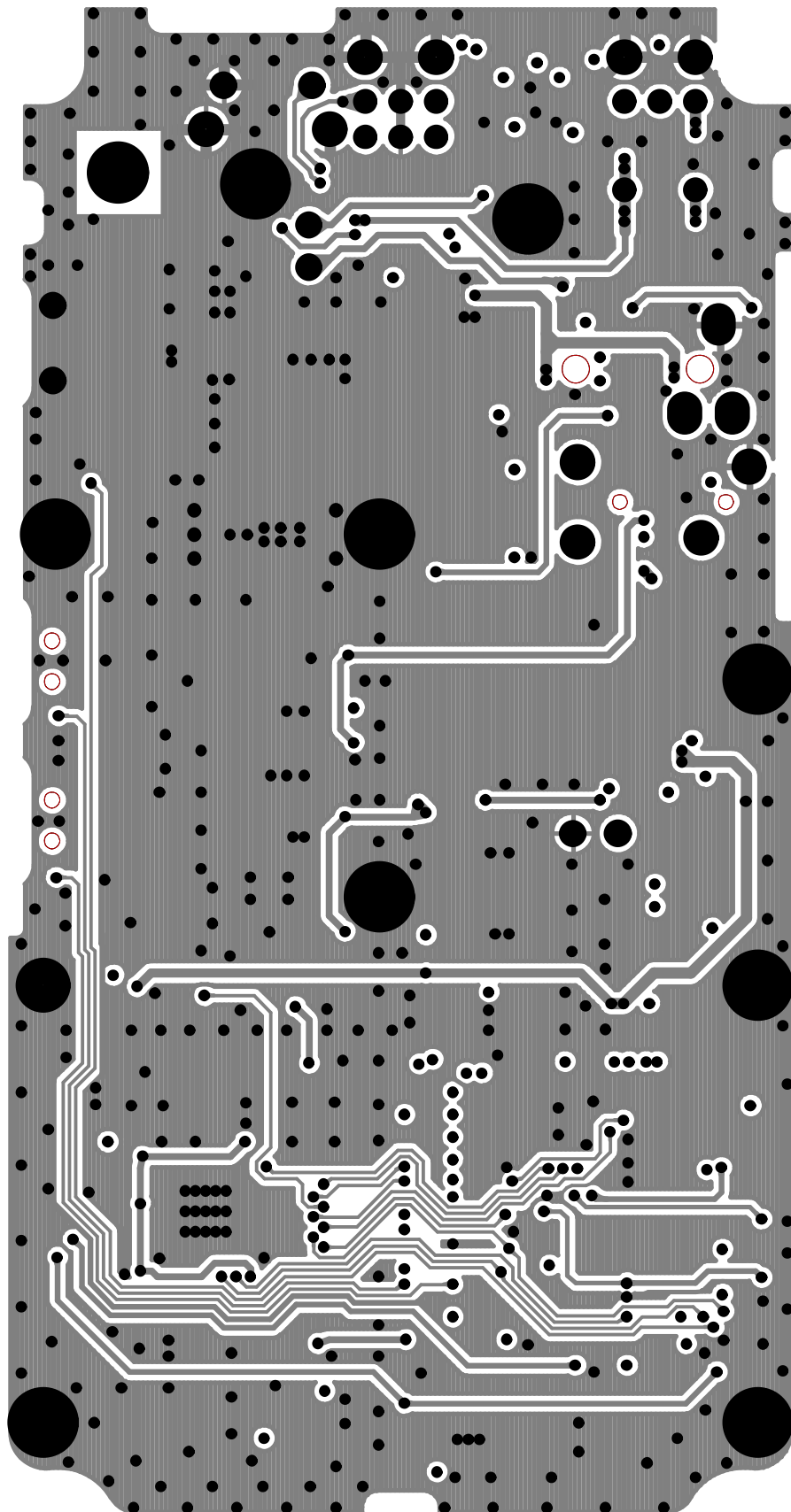


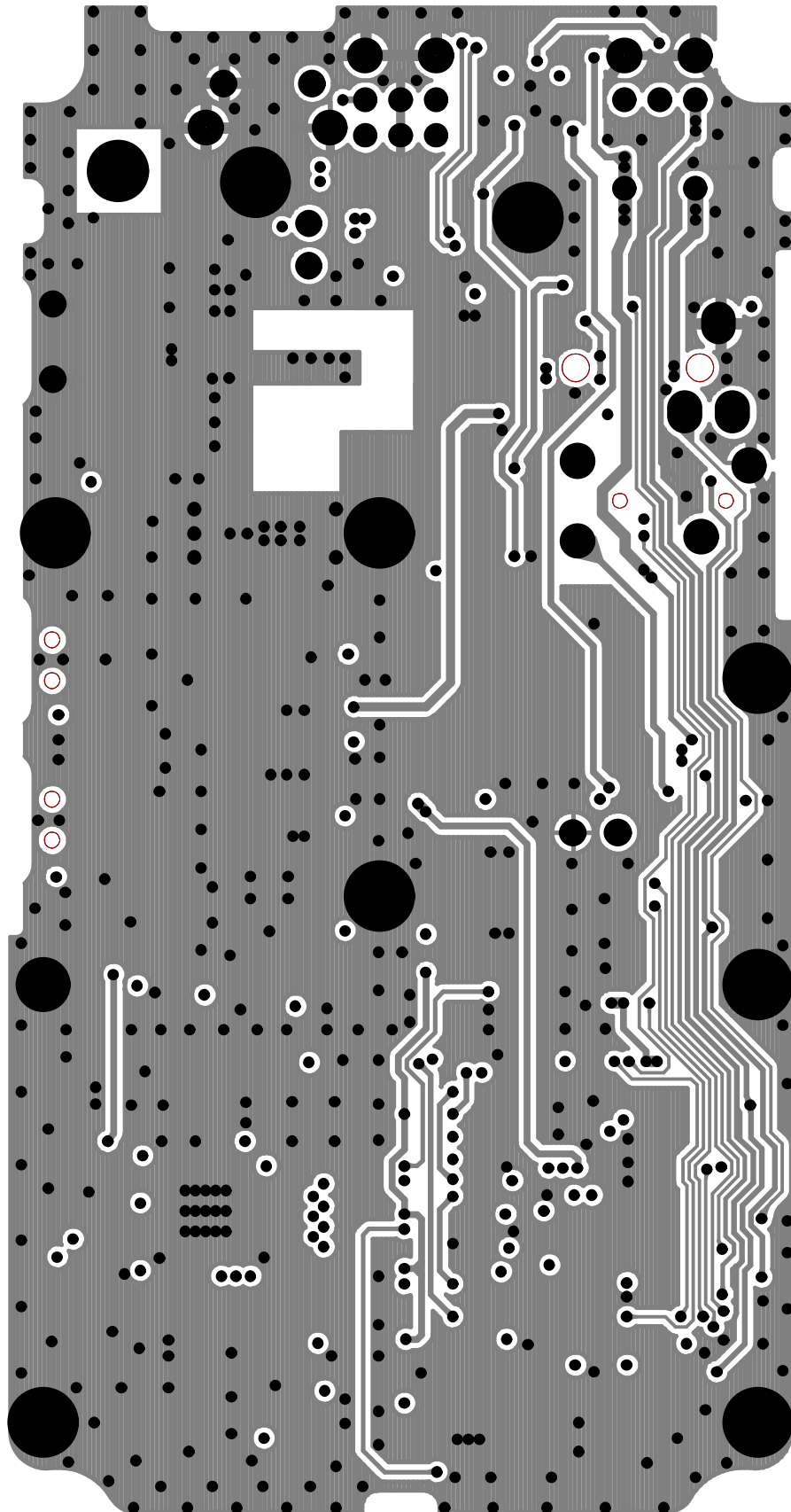


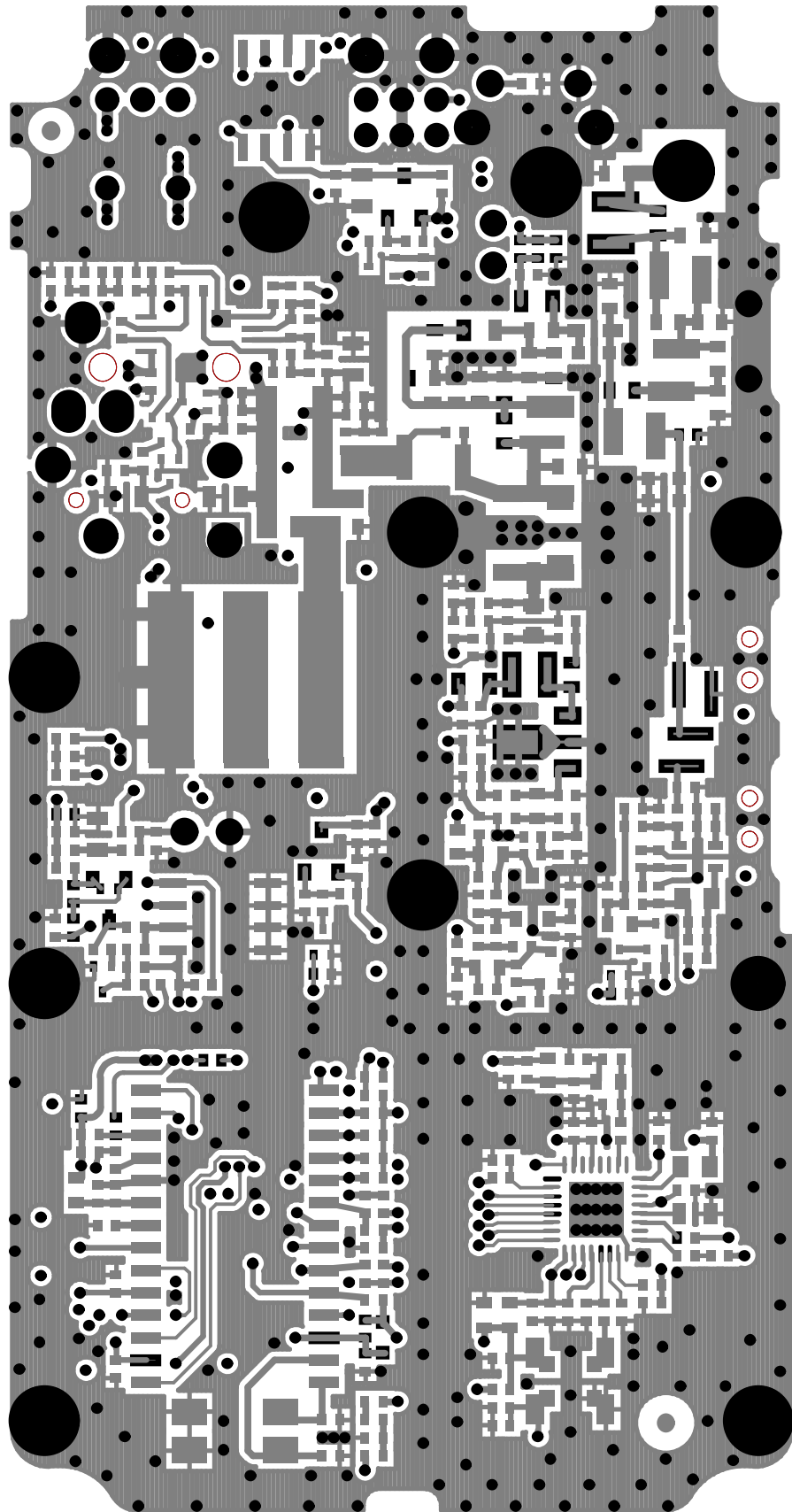


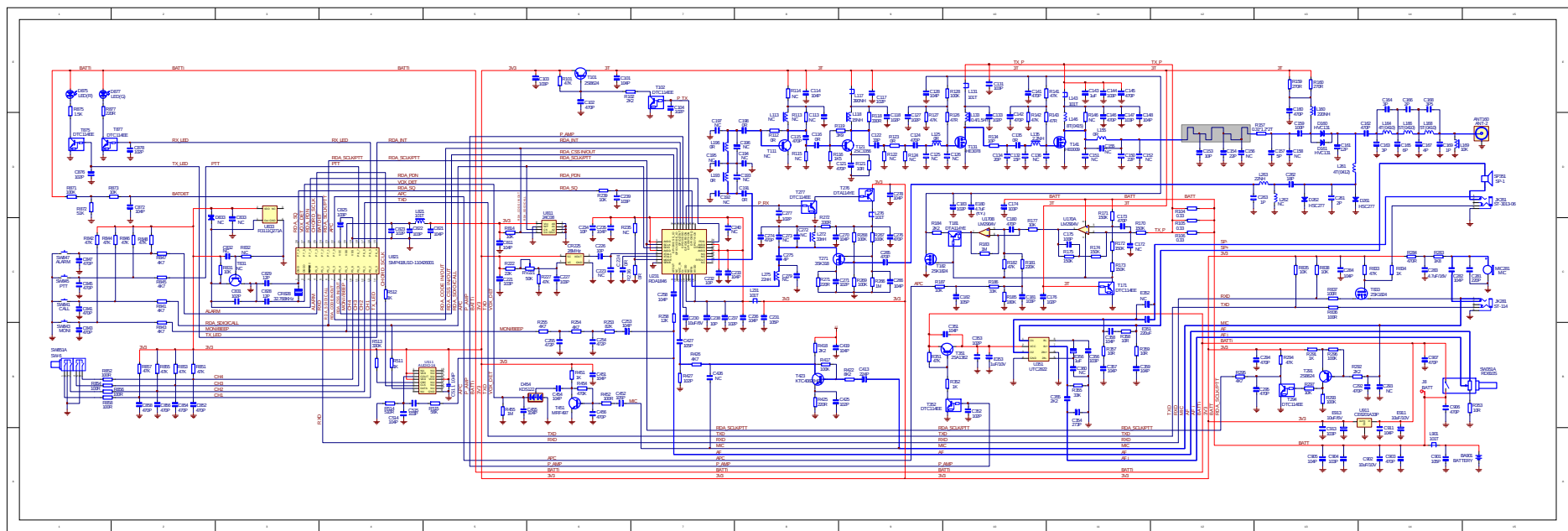




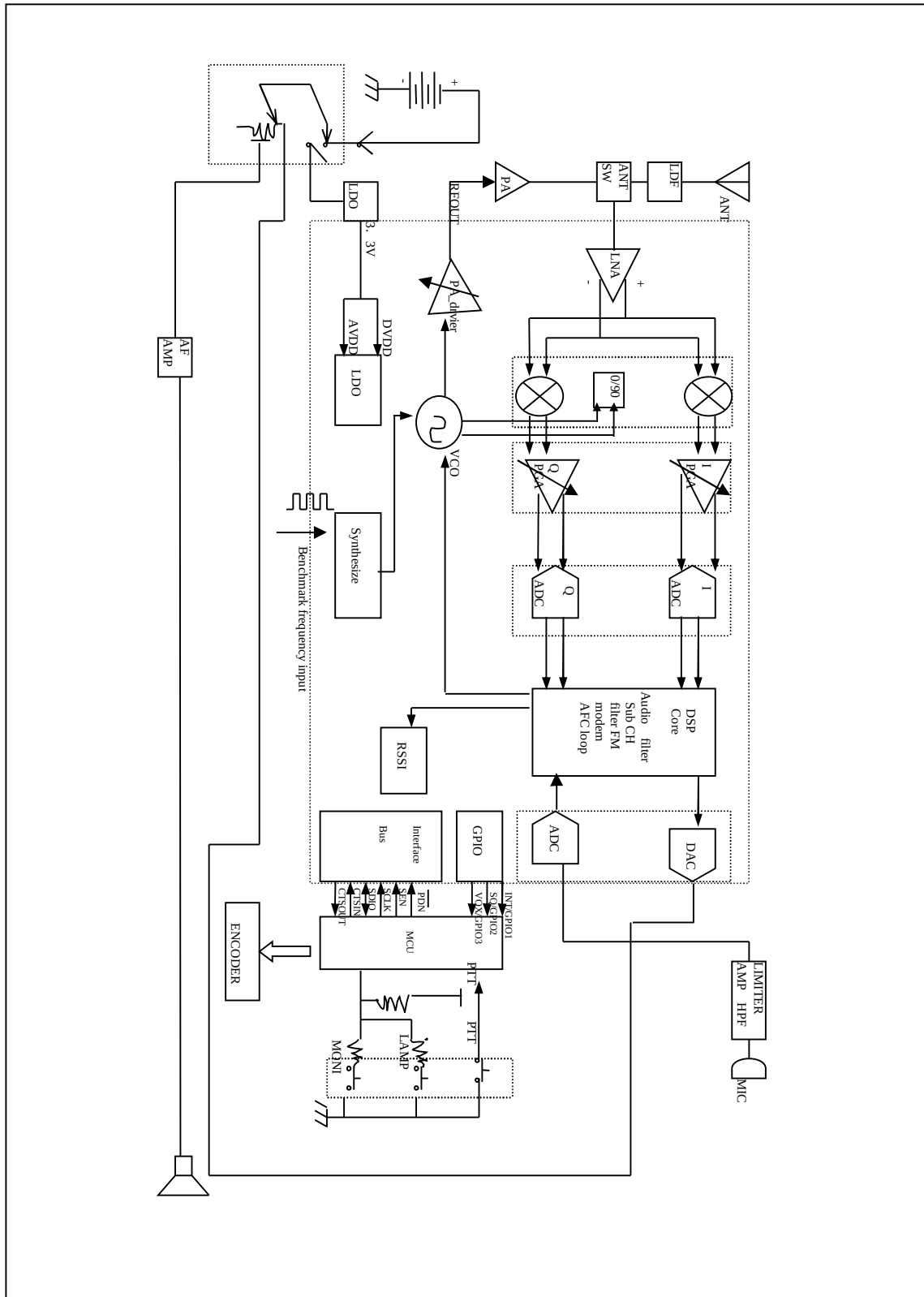








Block Diagram



BOM

MODEL	spefication	qty	position number					
capacitance								
0P5	C0402	1	C273					
5P	C0402	3	C263	C275	C272			
10P	C0402	5	C232	C226	C234	C191	C238	
12P	C0402	2	C829	C828				
15P	C0402	2	C261	C132				
27P	C0402	2	C262	C134				
33P	C0402	1	C122					
100P	C0402	1	C175					
102P	C0402	19	C878	C876	C425	C353	C352	C183
			C277	C831	C823	C271	C237	C176
			C135	C133	C127	C118	C117	C104
			R427					
103P	C0402	15	C515	C913	C356	C239	C825	C822
			C227	C221	C147	C144	C131	C181
			C103	C904	C174			
104P	C0402	29	C511	C911	C359	C358	C357	C455
			C454	C451	C419	C514	C351	C278
			C233	C821	C235	C266	C258	C236
			C148	C128	C114	C253	C872	C811
			C284	C101	C905	C270	C282	
105P	C0402	3	C452	C427	C182			
220P	C0402	1	C281					
224P	C0402	1	C413					
470P	C0402	28	C907	C906	C858	C856	C854	C852
			C845	C843	C841	C456	C276	C265
			C160	C274	C146	C145	C142	C141
			C124	C121	C180	C173	C102	C294
			C295	C847	C292	C903		
472P	C0402	2	C255	C254				
473P	C0402	1	C354					
3P	C0603	1	C163					
6P	C0603	1	C169					
10P	C0603	1	C164					
13P	C0603	2	C168	C166				
22P	C0603	1	C167					
30P	C0603	1	C165					
33P	C0603	1	C161					
56P	C0603	1	C154					
68P	C0603	1	C159					
105P	C0603	2	C231	C901				
470P	C0603	1	C162					
10uF/10V(106P)	C0805	4	C902	E913	E911	C230		
1uF(105P)	C0805	2	C143	E353				
4.7uF(475P)	C0805	2	E180	C283				
1uF	EIA3216	1	E356					
220uF	E-06424L	1	E351					
resistance								
0R	R0402	7	R123	R112	C224	C198	C116	C115
			R236					
1K	R0402	6	R511	R834	R352	R451	R291	R512
1K5	R0402	2	R116	R875				
1K8	R0402	1	R283					
2K2	R0402	3	R102	R292	C355			

3K9	R0402	1	R119					
4K7	R0402	8	R295	R845	R841	R843	R255	R254
			R847	R426				
8K2	R0402	1	R422					
10K	R0402	10	R239	R831	R838	R187	R177	R873
			R814	R835	R297	R184		
10R	R0402	5	R359	R358	R357	R353	R121	
12K	R0402	1	R258					
22K	R0402	1	R222					
33K	R0402	2	R355	R186				
47K	R0402	17	R833	R351	R842	R857	R855	R853
			R851	R294	R227	R142	R141	R127
			R848	R846	R844	R182	R101	
47R	R0402	2	R143	R126				
51K	R0402	1	R872					
56K	R0402	1	R515					
82K	R0402	1	R253					
100K	R0402	8	R293	R296	R269	R268	R267	R128
			R871	R417				
100R	R0402	7	R837	R858	R856	R854	R852	R452
			R836					
150K	R0402	6	R175	R174	R173	R172	R171	R170
180K	R0402	1	R185					
220K	R0402	1	R181					
220R	R0402	2	R425	R877				
270R	R0402	2	R160	R159				
330K	R0402	1	R513					
330R	R0402	3	R272	R271	R118			
470K	R0402	1	R454					
470R	R0402	1	R284					
510R	R0402	1	R514					
680R	R0402	1	R418					
1M	R0402	3	R455	R266	R183			
0R	R0603	4	R134	L196	L193	L125		
0R	R0805	1	R157					
10K	R1206	1	L169					
0.39	R1206	3	R106	R105	R104			
50K	RV1208	1	RV221					
induction								
27NH	L0603	2	L262	L135				
100NH	L0603	3	L118	L263	L275			
220nH	L0603	2	L272	L160				
390NH	L0603	1	L117					
101T	L0603	3	L276	L821	L231			
101T	L0805	3	L143	L131	L901			
0.4*1.5*5T	5T	2	L133	L164				
0.4*1.5*6T	6T	3	L261	L168	L166			
0.4*1.5*8T	8T	1	L146					
0.4*1.2*3T	3T	1	L155					
diode								
LED(G)	D0603	1	D877					
LED(R)	D0603	1	D875					
HSC277	D-ESC	2	D262	D261				
HVC131	D-ESC	2	D161	D160				
KDS122	D-USM-MA742	1	D454					
audion								
RQA0009	T-2N1A-2SK3476	1	T141					

2SK1824	T-ESM-2SK1824	2	T833	T182				
DTA114YE	T-ESM-DTA114EE	2	T276	T181				
DTC114EE	T-ESM-DTA114EE	7	T877	T875	T352	T277	T102	T294
			T171					
3078	T-SOT89-2SK3078	1	T131					
2SA1362	T-TSM-2SB624	1	T351					
2SB624	T-TSM-2SB624	2	T291	T101				
2SC3356	T-TSM-2SC3356(R25)	1	T121					
R311Q271A	T-US4	1	U833					
3SK318	T-US4-3SK318	1	T271					
MRF497	T-USM-MRF497	1	T451					
KTC4082(HF)	T-USM-MRF497	1	T423					
integration								
RDA1846	U-QFN32(RDA1846)	1	U231					
AUDIO-16	U-SOIC16	1	U511					
SMP418V1D-11042800	U-SOP28	1	U821					
24C08	U-SOP8	1	U811					
UTC2822	U-SOP8	1	U351					
HT7333	U-SOT89-5A	1	U911					
LM2904V	U-SSOP8	1	U170					
other								
26MHz	FX-DS0305	1	CR225					
32.768KHz	FX-DS0603	1	CR828					
BATTERY	JK-C BC-47S-13-D	1	BA901					
SP-1	JP2-SM1.27-3	1	SP351					
PTT	S-SKRT-1	1	SW845					
CALL	S-SS208GS16	1	SW841					
MONI	S-SS208GS16	1	SW843					
BATT	J-TEST POINT	1	J8					
pinouts								
ANT-2	PX-333-ANT	1	ANT160					
MIC	MIC98	1	MIC281					
SW-6	S-ED08C210	1	SW851					
RD810S	S-R087FENS	1	SW351					
ST-114	JK-ST-106	1	JK281					
ST-3013-06	JK-ST-3013-06	1	JK351					
ALARM	S-SKHLLBA010	1	SW847					
PCB								
CW50801-03		1						

Chip Pin Description

Pin No.	Pin Name	Function description
1	OSCI	Clock crystal input pin
2	OCSO	Clock crystal output pin
3	RESER	Reset pin
4	ALARM	Alarm key detection pin
5	RXD	read and write frequency data
6	RDA_SDIL/CALL	RDA SDIL and CALL key control pin
7	RDA_CEDC IN/OUT	1846 data input/output pin
8	RDA_CSS IN/OUT	1846 CTCSS input/output pin
9	MONI/BEEP	squelch key/beep control pin
10	CH4	encoder control pin
11	CH3	encoder control pin
12	CH2	encoder control pin
13	CH1	encoder control pin
14	TX_LED	transmit indicator light
15	RDA_INT	1846 data control pin
16	RX_LED	receive indicator light
17	TXD	read and write frequency data
18	PTT	PTT key control pin
19	VSS	ground pin
20	VDD	power
21	VCC	
22	APC	auto power control
23	RDA_SCLK/PTT	1846 data control pin
24	BATDET	power detection pin
25	RDA_SEN	1846 data control pin
26	RDA_PDN	1846 data control pin
27	VOX-DET	VOX detection pin
28	RDA_SQ	squelch control pin

SPECIFICATION

Frequency Range	400-470MHz
Channel Number	16
Channel Step	12.5KHz
Antenna Impedance	50Ω
Microphone Impedance	2KΩ
work voltage	7.4V DC
Frequency Stability	$\pm 2.5 \times 10^{-6}$ ppm
Transmitter	
carrier output power	$\leq 5W$
modulation sensitivity	8-12mV
Modulation Distortion	$\leq 5\%$
Modulation Limited	$\leq 5KHz$
Adjacent Channel Power	$\geq 65dB$
Intermodulatohn Rejection	$\geq 40dB$
RECEIVER	
Sensitivity	$\leq 0.224\mu V$
Audio Distortion	$\leq 5\%$
SN RATE	≤ -40
Co-Channel Rejection	$\geq -8dB$
Blocking	$\geq 85dB$
Adjacent Channel Selectivity	$\geq 55dB$
Spurious Radiation	$\geq 55dB$