VOICE PAGER VP100

Apollo

dpc

For More Information Contact:
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Web: www.apollowireless.com

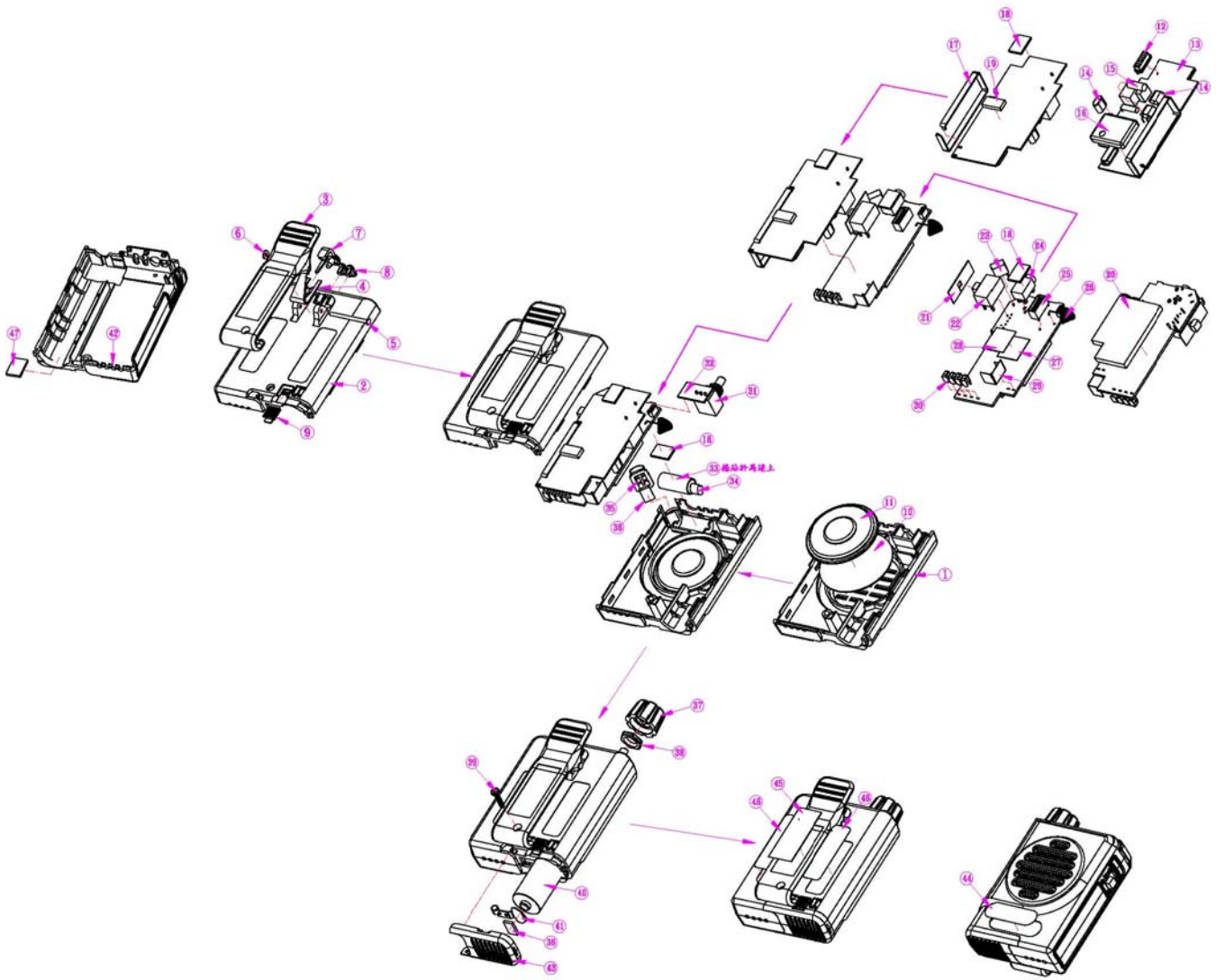
Digital Paging Company

Apollo

Voice Pager

Service Manual

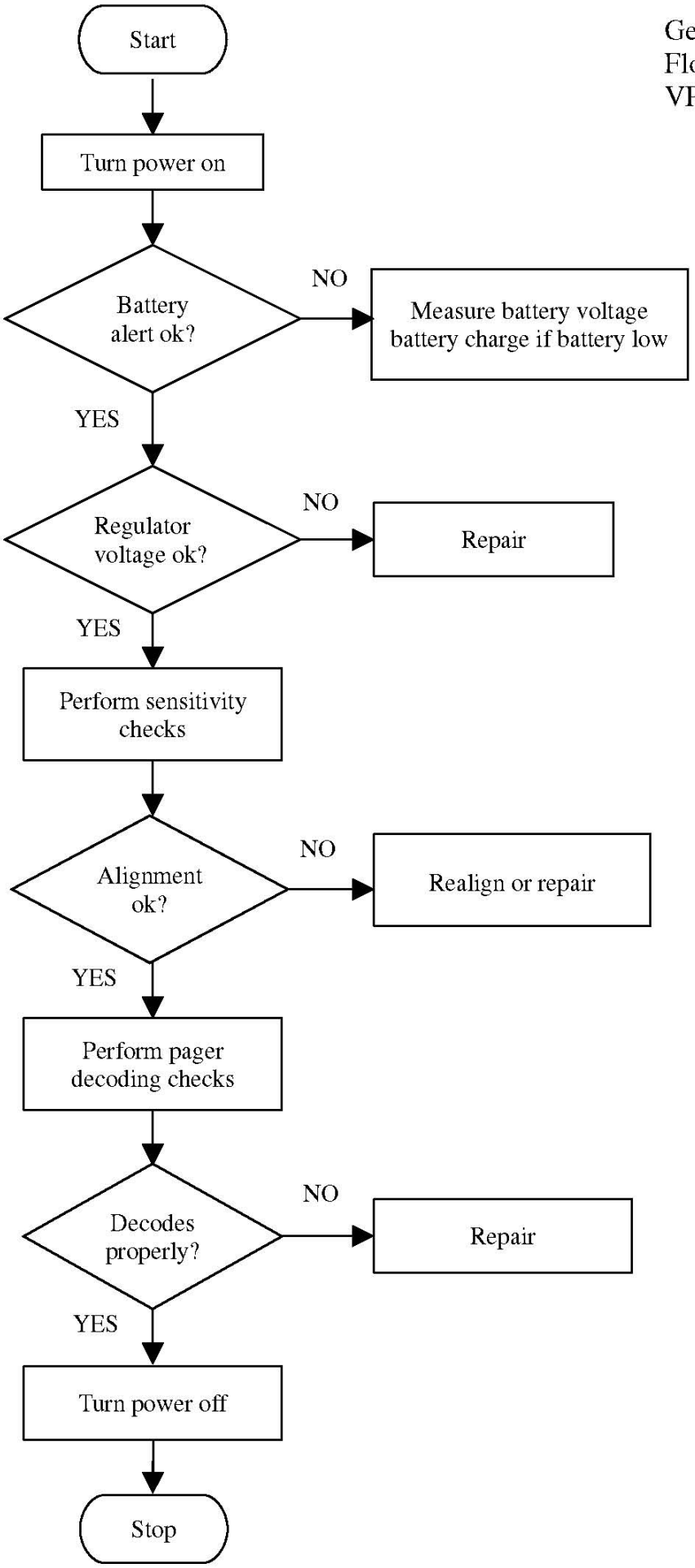
MODEL:	VP-100
FREQUENCY:	148-470 Mhz
RF_PCB VERSION:	VPWFUHFR1.6 VER:2.0
DIGIT_PCB VERSION:	VP100-1.9 VER:V3.0



VP-100 EXPLODE DRAWING

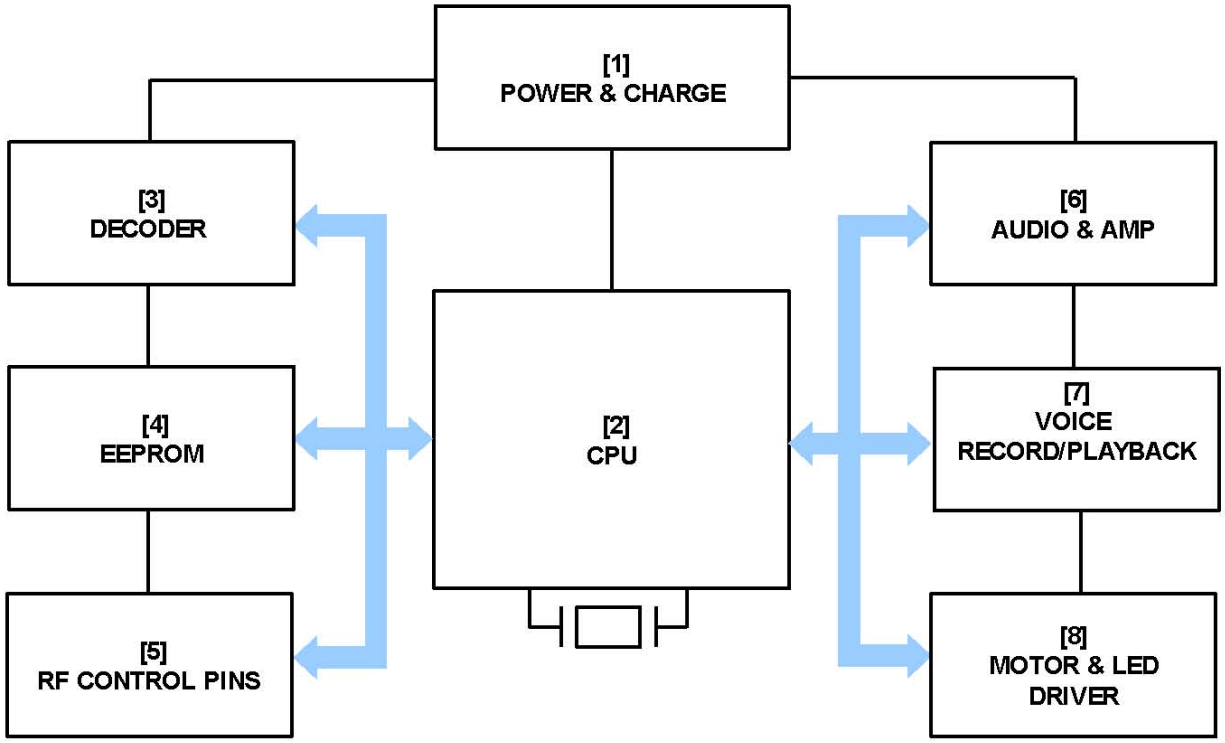
NO	PART NO	PART NAME	NO	PART NO	PART NAME
1	511AT100	UPPER COVER	25	237-14002-0	CONNECTOR
2	512AT100	REAR COVER	26	662-00023-0	BATTERY SPRING(-)
3	517APA01BK0010	CLIP BELT	27	676-00007-0	SHIELD LABEL
4		CLIP SPRING	28		INSULATE LABEL
5	662-00018-0	BOLT	29	662-00016-0	BATTERY SPRING(1)
6		WASHER	30	686-00003-0	CHARGE SPRING
7	540AT100EC0000	EARPHONE PLUG	31	131-2030B0921	VR
8	540AT100CC2000	LIGHT PILLAR	32	184-V01000118-0	VR PCB
9	518AT100	LOCK	33	818-00032-0	MOTOR SPACER
10	815-00002-0	DUST-PROOF CLOTH	34	375-00003-0	VIBRATE MOTOR
11	321-00006-0	SPEAKER	35	514AT100	KEY
12	236-14001-0	CONNECTOR	36	813-00032-0	KEY SPACER
13		PCB-RF	37	519AT100	BUTTON
14	816-00001-G	CRYSTAL SLEEVE(BIG)	38		NUT
15	816-00002-G	CRYSTAL SLEEVE(CENTER)	39	647-00001-0	M2x10 SCREW
16	674-00005-0	SHIELD BOX	40	223-122122100	AAA BATTERY
17	671-00010-0	ANTENNA	41	662-00017-0	BATTERY SPRING(2)
18	819-00005-0	T1 RUBBER	42	813-00031-0	CHARGE SPRING SPACER
19	817-00001-0	T2 SPONGE	43	513AT100	BATTERY COVER
20	674-00015-0	D-PCB SHIELD BOX	44	515APA01BSA000	LOGO LENCE
21	515AT100B00000	SWITCH LENCE	45		LABEL 1
22	211-011130Z23	SLIDE SWITCHES	46	753-00010-0	LABEL 2
23	214-00025302З	TACT SWITCHES	47	817-00006-0	455E SPONGE
24	232-00004-0	PHONE JACK	48		

General Trouble shooting
Flow chart for Apollo Pager
VP-100



[VP-100] VOICE PAGER

DIGIT PCB BLOCK DIAGRAM



NOTE:

[1]POWER AND CHARGE: U2,D7,L1,R9,R52,R43,C23,C22,C54,C55,C7,C14,C56,C10,C36,D6,Q5,R8,R53,R55,R54,C9

[2]CPU : U7,U6,Y1,Y2,R13,R12,R19,R46,R28,C11,C12,C35,C8,C34

[3]DECODER : U8,Y3,R24,R23,R22,R21,C18,C17,C15,C16,C13

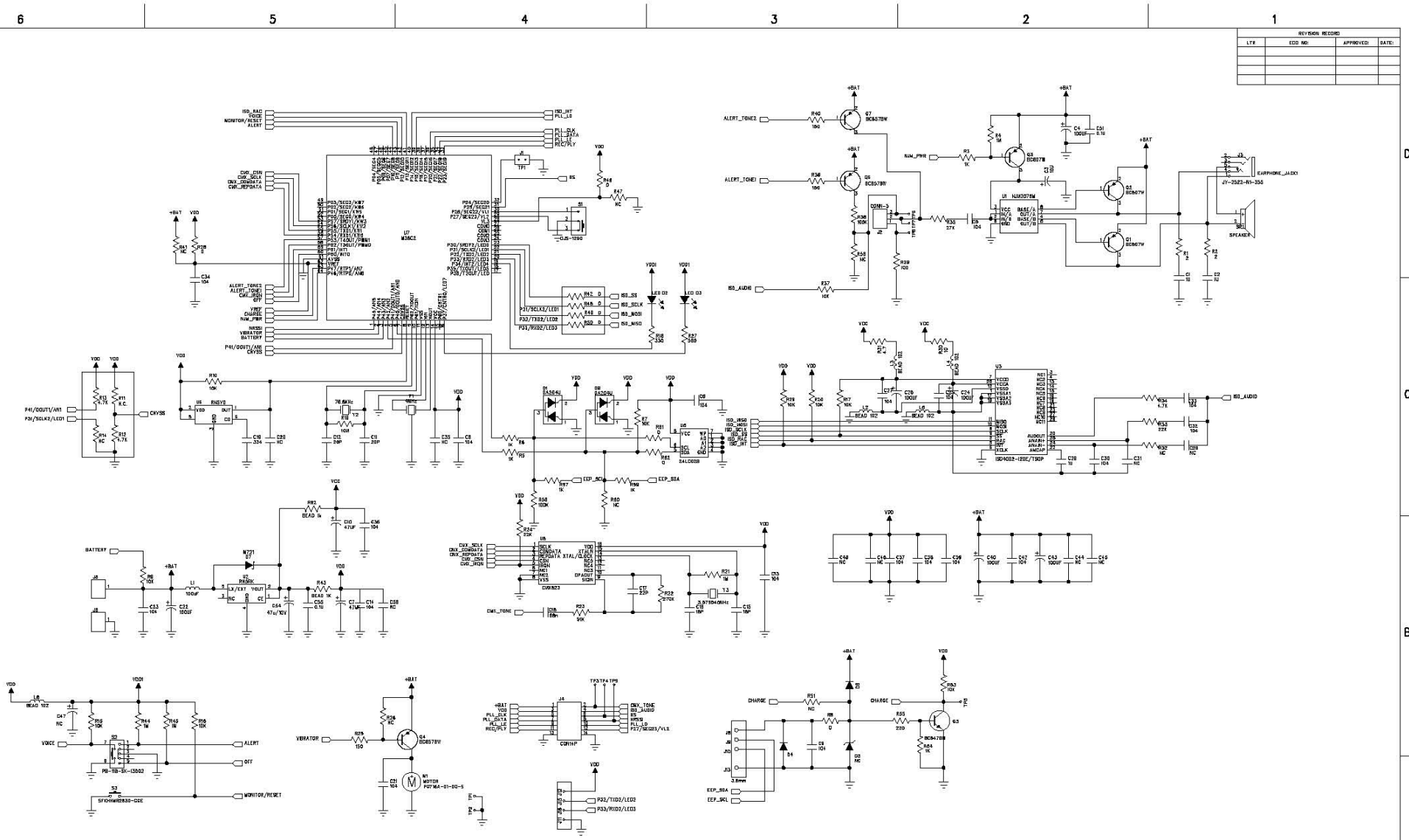
[4]EEPROM : U5,D1,D8,R5,R6,R7,C6

[5]RF CONTROL PINS : J4

[6]AUDIO AND AMP : U1,Q1,Q2,Q3,Q6,Q7,R40,R36,R37,R38,R39,R35,R3,R4,R1,R2,C5,C3,C4,C51,C1,C2,SP1,J3

[7]VOICE RECORD/PLAYBACK : U3,L2,L3,L4,L5,R20,R29,R17,R30,R31,R33,R34,C26,C27,C24,C25,C29,C30,C32,C33

[8]MOTOR AND LED DRIVER : M1,Q4,R25,C21,LED2,LED3,R18,R27



VoicePager VP-100 V1.9 /06'0706

Voice Pager ~VP100 全頻呼叫器材料表

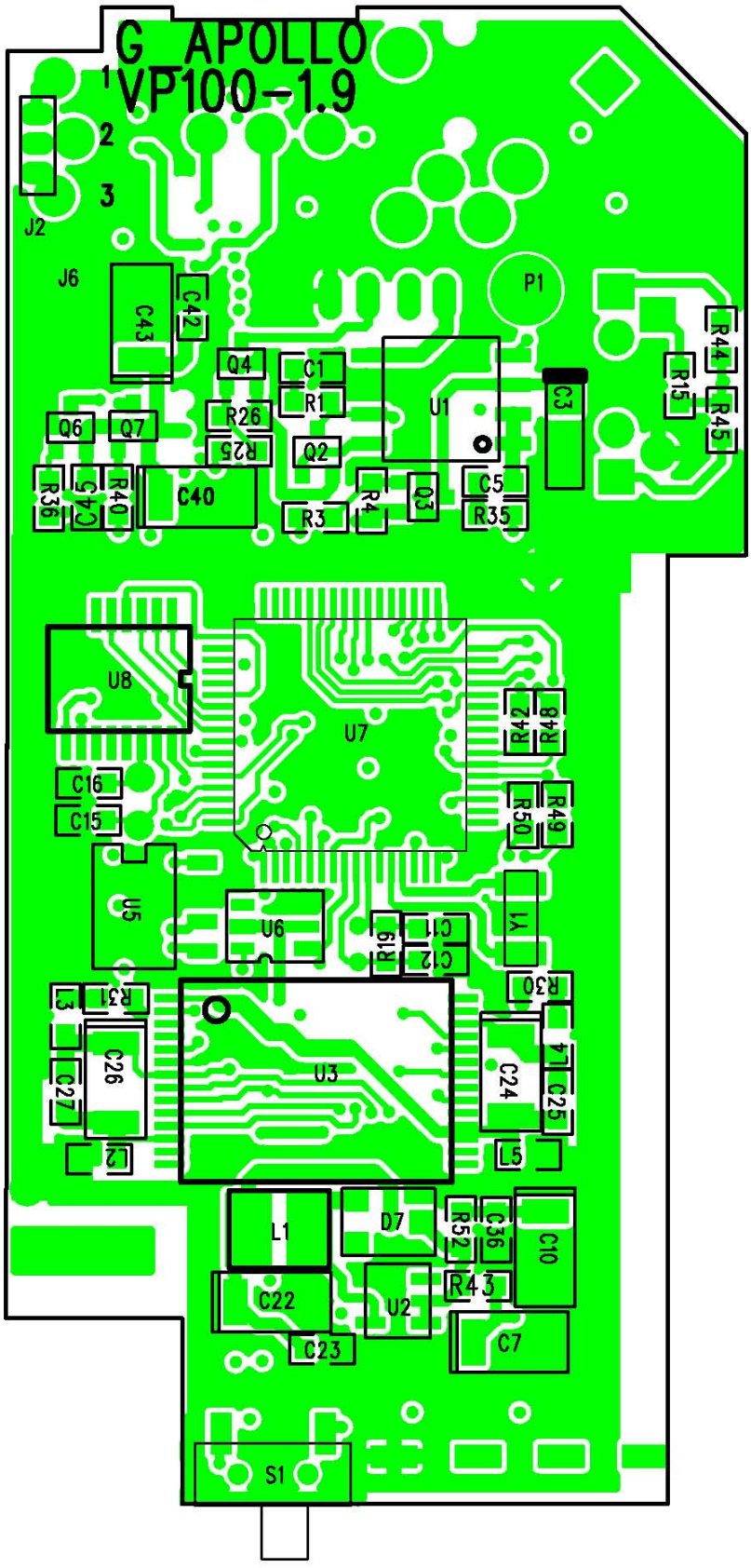
RD-950119

VP100 Digit PCB BOM V3.0

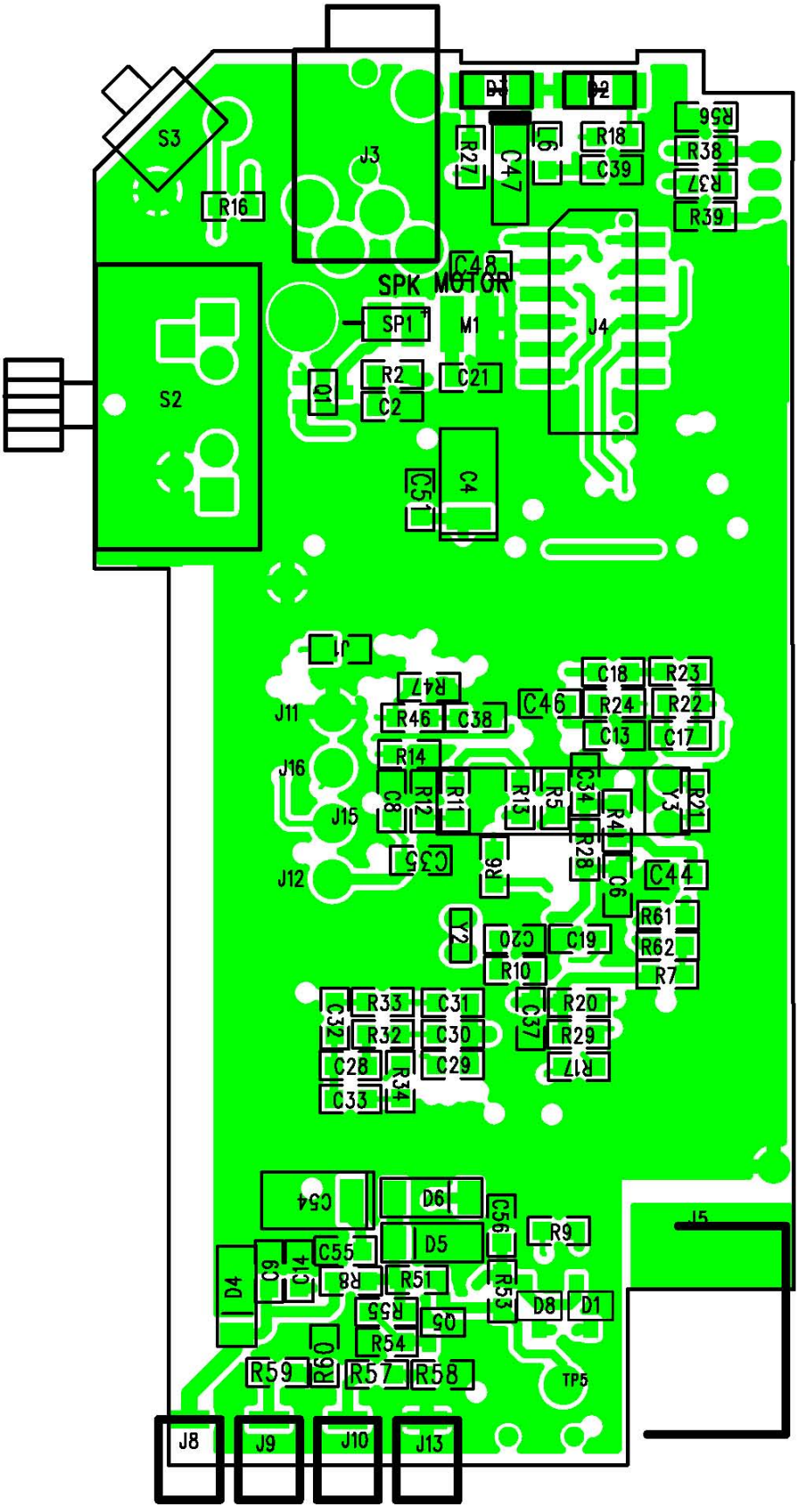
DATE: JUL,06,2006

ITEM	PART NUMBER	DISCRIPTION		QTY	REFERENCE NUMBER
1		IC,CPU M38C29FFA	PCS	1	U7
2		IC,Decoder CMX823	PCS	1	U8
3		IC,OP NJM2076M	PCS	1	U1
4		IC,EEPROM 24LC02B	PCS	1	U5
5		IC,DC/DC RN5RK301A	PCS	1	U2
6		IC,Reset RN5VD25AA	PCS	1	U6
7		IC,Record ISD4002-120E/TSOP	PCS	1	U3
8		T/R, BC847BW	PCS	1	Q5
9		T/R, BC857BW	PCS	3	Q4,Q6,Q7
10		T/R, BC807BW	PCS	3	Q1,Q2,Q3
51		LED, (KPKA-2810SURCK/Red)	PCS	1	D3
52		LED,(KPKA-2810VGC/Green)	PCS	1	D2
11		Diode, MA721	PCS	1	D7
12		Diode, DA204U	PCS	2	D1,D8
13		Diode, 1N4148	PCS	1	D6
14		Inductor,100uH (LQH4C101K04)	PCS	1	L1
15		Bead,1000 ohm /1A at 100Mhz (0603)	PCS	5	L2,L3,L4,L5,R43,R52
16		C/R, 0 (0603)	PCS	10	R8,R28,R42,R46,R48,R49,R50,L6,R61,R62
17		C/R, 10 (0603)	PCS	1	R30
18		C/R, 100 (0603)	PCS	1	R39
19		C/R, 10K (0603)	PCS	10	R7,R9,R10,R15,R16,R17,R20,R29,R53,R37
20		C/R, 100K (0603)	PCS	2	R38,R58
21		C/R, 10M (0603)	PCS	1	R19
22		C/R, 150 (0603)	PCS	3	R25,R36,R40
23		C/R, 1K (0603)	PCS	6	R3,R5,R6,R54,R57,R59
24		C/R, 1M (0603)	PCS	4	R4,R21,R44,R45
25		C/R, 2 (0603)	PCS	2	R1,R2
26		C/R, 220 (0603)	PCS	1	R55
27		C/R, 22K (0603)	PCS	2	R24,R33
28		C/R, 27K (0603)	PCS	1	R35
29		C/R, 270K (0603)	PCS	1	R22
30		C/R, 330 (0603)	PCS	1	R18
31		C/R, 4.7 (0603)	PCS	1	R31
32		C/R, 4.7K (0603)	PCS	3	R12,R13,R34
34		C/R, 51K (0603)	PCS	1	R23
35		C/R, 560 (0603)	PCS	1	R27
36		T/C, 100U/6V (B)	PCS	6	C4,C22,C24,C26,C40,C43
37		T/C, 47U/10V (B)	PCS	3	C7,C10,C54
38		T/C, 10U/10V (A)	PCS	1	C3
39		C/C, 104 (0603)	PCS	21	C5,C6,C8,C9,C13,C14,C21,C23,C25,C27,C30,C32,C33,C34,C36,C37,C38,C39,C42,C51,C55
40		C/C, 18P (0603)	PCS	2	C15,C16
41		C/C, 1U (0603)	PCS	3	C1,C2,C29
42		C/C, 20P (0603)	PCS	2	C11,C12
43		C/C, 22P (0603)	PCS	1	C17
44		C/C, 68n (0603)	PCS	1	C18
45		C/C, 334 (0603)	PCS	1	C19
46		Resonator, 4Mhz(CSTCR4M00G53-B0)	PCS	1	Y1
47		Connector, AMP14PIN(Male)	PCS	1	J4
48		PCB VP100-1.9,4L,FR-4,1.2mm	PCS	1	PCB
49		PCB VP100_VR1.1,1L,FR1,1.0mm	PCS	1	PCB
53		電池彈片(負極)221022-M051-C	PCS	1	J6
54		電池彈片(正極)磷銅鍍金9.5*8.7*t0.2mm	PCS	1	J5
55		Motor (P0716A-01-00-S)	PCS	1	M1
56		Earphone Jack (JY-2522-N1-355)	PCS	1	J3
57		Speaker, (CP-C363NT-2 4Ohm)(36CB-50B)	PCS	1	SP1
58		充電彈片(221022-M035-E)	PCS	4	J8,J9,J10,J13
59		VR, (RD0971110089-20K(15A)(GGE))	PCS	1	R38 (PCB VP100_VR1.1)
60		X'TAL, 3.579545 Mhz (3*9mm)	PCS	1	Y3
61		X'TAL, 76.8 Khz	PCS	1	Y2
62		Slide Switch (PB-11B-SK-13D02)	PCS	1	S2
63		TACT Switch(SFKHHMR2530-GGE)	PCS	1	S3
64		AI924_3PIN_DIP_CONNECTOR(母)QPOFY-03S1	PCS	1	J2
65		AI924_3PIN_DIP_CONNECTOR(公)583.0100.103	PCS	1	J7 (PCB VP100_VR1.1)
	NOTE :	1.S3,需直立焊接,上面兩PIN需剪腳			

SILK SCREEN (T)



SILK SCREEN (B)



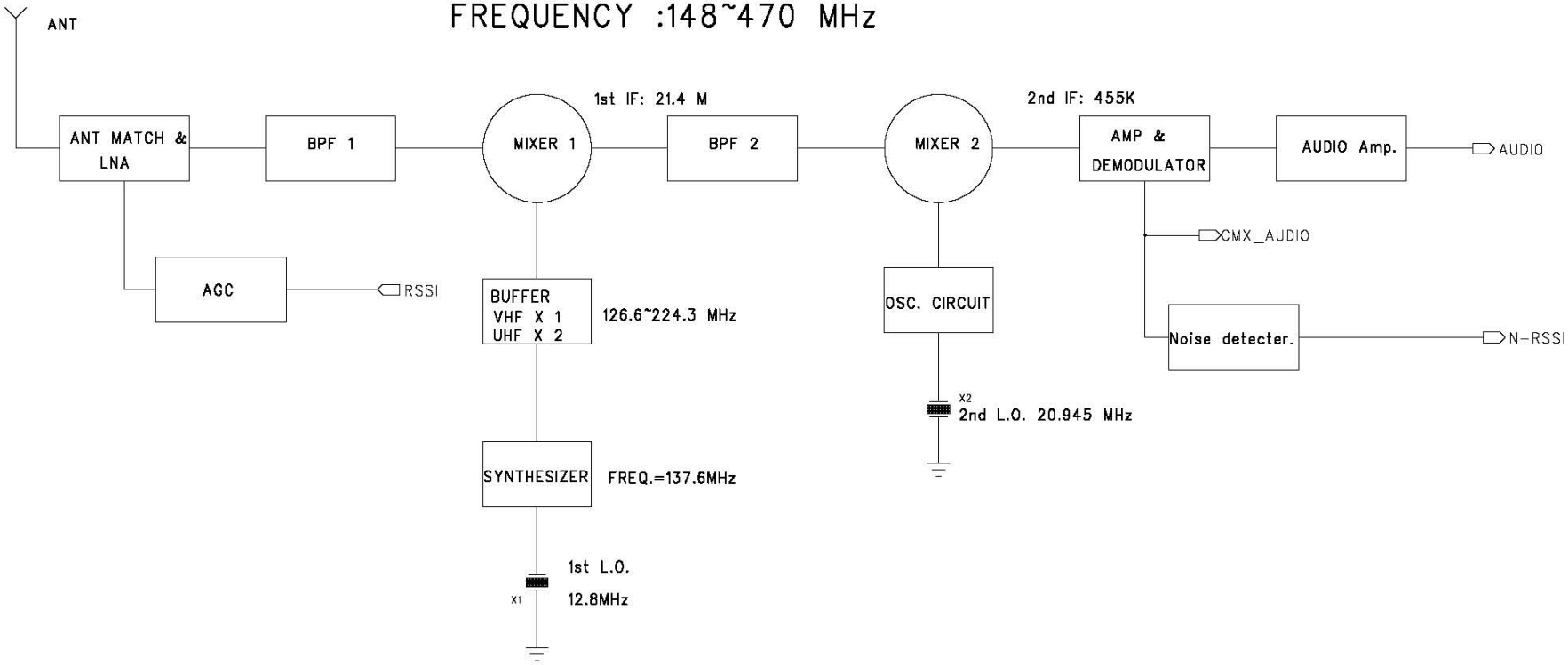
VP-100 Alignmemt Procedure

For synthsizer RF board(148~470MHZ)

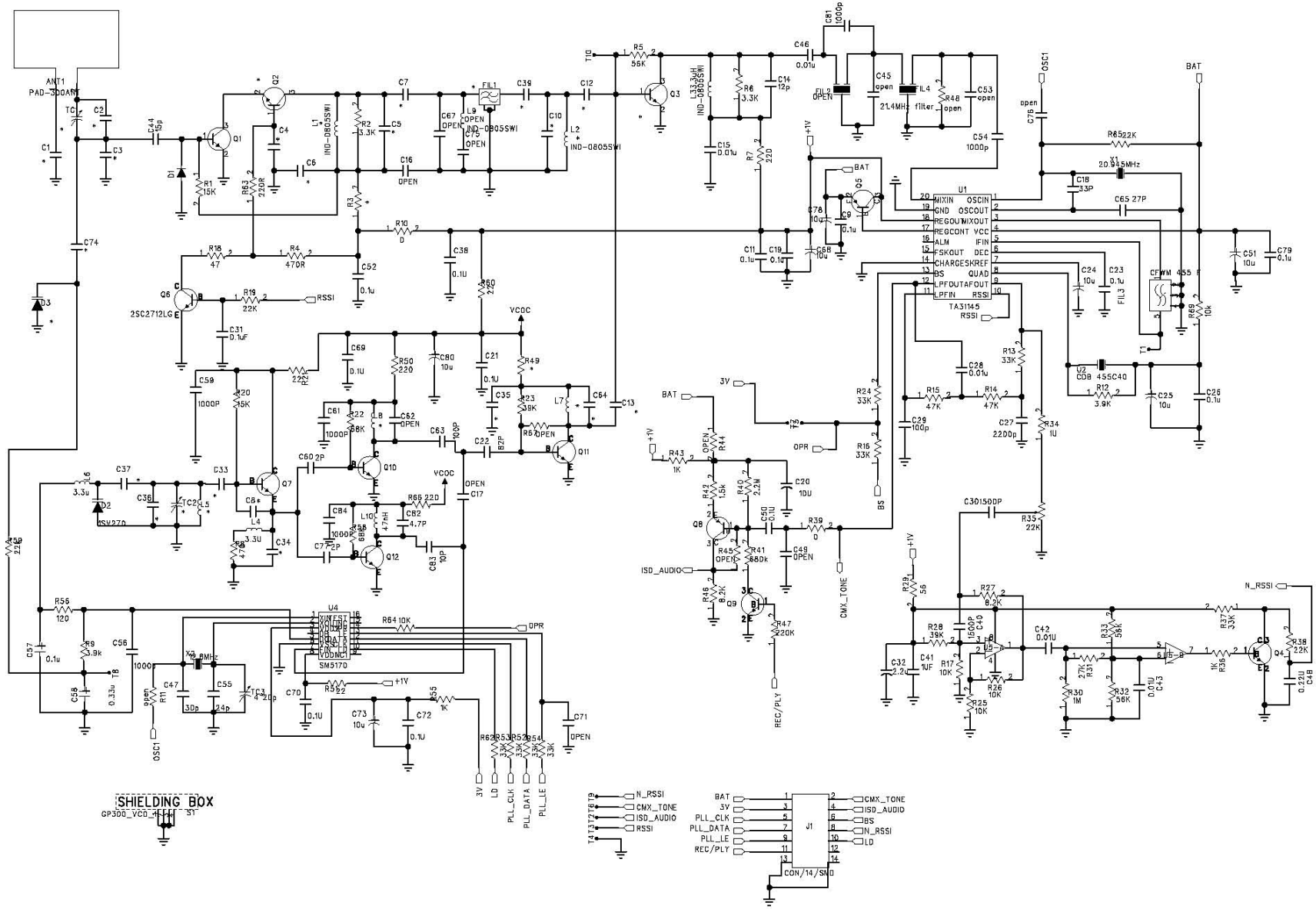
1. Make test point Vdd & RE short.
2. Set S.G. at correct frequency,and set RF level -50dBm.
3. Tuning TC2 to set vco voltage (159MHZ=2.2V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 455K+/-50HZ.
6. Tuning TC1to get IF (455kHZ) power maximum.
7. Tuning VR1 to get N-RSSI(T9 point) Voltage 0.88V at SINAD 12dB.
8. Disconnect Vdd & RE.

Note: After soldering crystal or other components of RF P.C.B must be waiting 10 minutes for RF P.C.B heat stability ,then go to alignment process.

VP-100 RF P.C.B BLOCK DIAGRAM
FREQUENCY :148~470 MHz



VP100W148~470MHz VER 2.0 2006/09/11



VP100WF PF B.O.M.

FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470

CAPCITOR : Fixed , 50v , 0603 Size , NPO , 5% , Unless Stated.

C1	100P	100P	82P	3.3p	3.3P	3.3P	3.3P
C2	68P	68P	47P	OPEN	OPEN	OPEN	OPEN
C3	20P	16P	16P	15P	8.2P	5.6P	5.6P
C4	1000P	1000P	1000P	100P	100P	100P	100P
C5	18P	18P	16P	3P	2.7P	2.7P	2.2P
C6	1000P	1000P	1000P	100P	100P	100P	100P
C7	1000P	1000P	1000P	1.5P	1.2P	1.2P	1.2P
C8	39P	24P	24P	27P	27P	27P	15P
C9	0.1U						
C10	18P	16P	13P	0.82P	0.68P	0.5P	0.5P
C11	0.1U						
C12	1000P	1000P	1000P	12P	12P	30P	15P
C13	1.5P	1.5P	1.5P	0.5P	0.5P	0.5P	0.5P
C14	12P						
C15	0.01U						
C16	OPEN						
C17	OPEN						
C18	33P						
C19	0.1U						
C20	10U/TAN-A						
C21	0.1U						
C22	82P						
C23	0.1U						
C24	10U/TAN-A						
C25	10U/TAN-A						
C26	0.1U						
C27	2200P						
C28	0.01U						
C29	100P						
C30	1500P						
C31	0.1U						
C32	2.2U						
C33	220P	220P	220P	100P	33P	33P	33P
C34	30P	22P	22P	16P	20P	20P	13P

VP100WF PF B.O.M.

FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470
C35	1000P	1000P	1000P	100P	100P	100P	100P
C36	8.2P	5.6P	3.3P	1.5P	6.8P	5.6P	4.7P
C37	68P	68P	39P	24P	30P	30P	30P
C38	0.1U						
C39	2P	2P	2P	1.5P	1.5P	1.5P	1.5P
C40	1500P						
C41	1U						
C42	0.01U						
C43	0.01U						
C44	15P						
C45	OPEN						
C46	0.01U						
C47	30P						
C48	0.22U						
C49	OPEN						
C50	0.1U						
C51	10U/TAN-A						
C52	0.1U						
C53	OPEN						
C54	1000P						
C55	24P						
C56	1000P						
C57	0.1U/TAN-A						
C58	0.33U/TAN-A						
C59	1000P						
C60	2P						
C61	1000P						
C62	OPEN						
C63	100P						
C64	18P	33P	27P	15P	12P	12P	12P
C65	27P						
C66	OPEN						
C67	OPEN						
C68	10U/TAN-A						
C69	0.1U						
C70	0.1U						

VP100WF PF B.O.M.

FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470
C71	OPEN						
C72	0.1U						
C73	10U/TAN-A						
C74	180P	100P	100P	OPEN	OPEN	OPEN	OPEN
C75	OPEN						
C76	OPEN						
C77	2P						
C78	10U/TAN-A						
C79	0.1U						
C80	10U/TAN-A						
C81	1000P						
C82	4.7P						
C83	10P						
C84	1000P						

RESISTER : Fixed , 1/10w , 0603 Size , NPO , 5% , Unless Stated.

R1	15K						
R2	2.2K						
R3	120	120	120	82	82	82	82
R4	470						
R5	56K						
R6	3.3K						
R7	220						
R8	470						
R9	3.9K						
R10	0						
R11	OPEN						
R12	3.9K						
R13	33K						
R14	47K						
R15	47K						
R16	33K						
R17	10K						
R18	47						
R19	22K						

VP100WF PF B.O.M.

FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470
R20	15K						
R21	22						
R22	68K						
R23	47K						
R24	33K						
R25	10K						
R26	10K						
R27	8.2K						
R28	39K						
R29	56						
R30	1M						
R31	27K						
R32	56K						
R33	56K						
R34	1U						
R35	22K						
R36	1K						
R37	33K						
R38	22K						
R39	0						
R40	2.2M						
R41	680K						
R42	1.5K						
R43	1K						
R44	OPEN						
R45	OPEN						
R46	8.2K						
R47	220K						
R48	OPEN						
R49	220	220	220	390	390	390	390
R50	220						
R51	22						
R52	33K						
R53	33K						
R54	33K						
R55	1K						

VP100WF PF B.O.M.

FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470

R56	120
R57	OPEN
R58	68K
R59	22K
R60	22
R61	OPEN
R62	33K
R63	220
R64	10K
R65	22K
R66	220
R67	OPEN
R69	10K

INDUCTOR :

L1	39NH DELTA 0805Size +/-0.5%		22NH DELTA 0805Size +/-0.5%	
L2	39NH DELTA 0805Size +/-0.5%		22NH DELTA 0805Size +/-0.5%	
L3	3.3UH DELTA 0805Size +/-0.5			
L4	3.3UH DELTA 1008Size +/-0.5			
L5	27nH DELTA 0805Size +/-0.5%		18NH DELTA 0805Size +/-0.5%	
				15NH DELTA 0805Size +/-0.5%
L6	3.3uH M/C 0805Size +/-0.5%			
L7	47nH DELTA 0805Size +/-0.5%		8.2NH DELTA 0805Size +/-0.5%	
		39nH DELTA 0805Size +/-0.5%		
L8	68nH DELTA 0805Size +/-0.5%			
		47nH DELTA 0805Size +/-0.5%		
L9	OPEN			
L10	47nH DELTA 0805Size +/-0.5%			

TRANSISTOR :

Q1	2SC3356/R25/SC-59	
Q2	2SC3356/R25/SC-59	AT31033
Q3	2SC3356/R25/SC-59	AT31033

VP100WF PF B.O.M.

FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470

Q4	BC847BW
Q5	2SA1162GR
Q6	2SC2712LG/SC-59
Q7	2SC4226/R25
Q8	BC857BW
Q9	BC847BW
Q10	2SC4226/R25
Q11	2SC4226/R25
Q12	2SC4226/R25

TRIMMER : SCIMARIC TC03 SERIES

TC1	4-20P	3~10P
TC2	4-20P	3~10P
TC3	4-20P	

DIODE :

D1	1N4148	
D2	1SV270	
D3	1SV270	OPEN

FILTER :

FIL 1	JAMP	TA462E1
FIL 2	OPEN	
FIL 3	CFWM455	
FIL 4	21.4MHZ	

OTHERS :

U1	TA31145FN

VP100WF PF B.O.M.

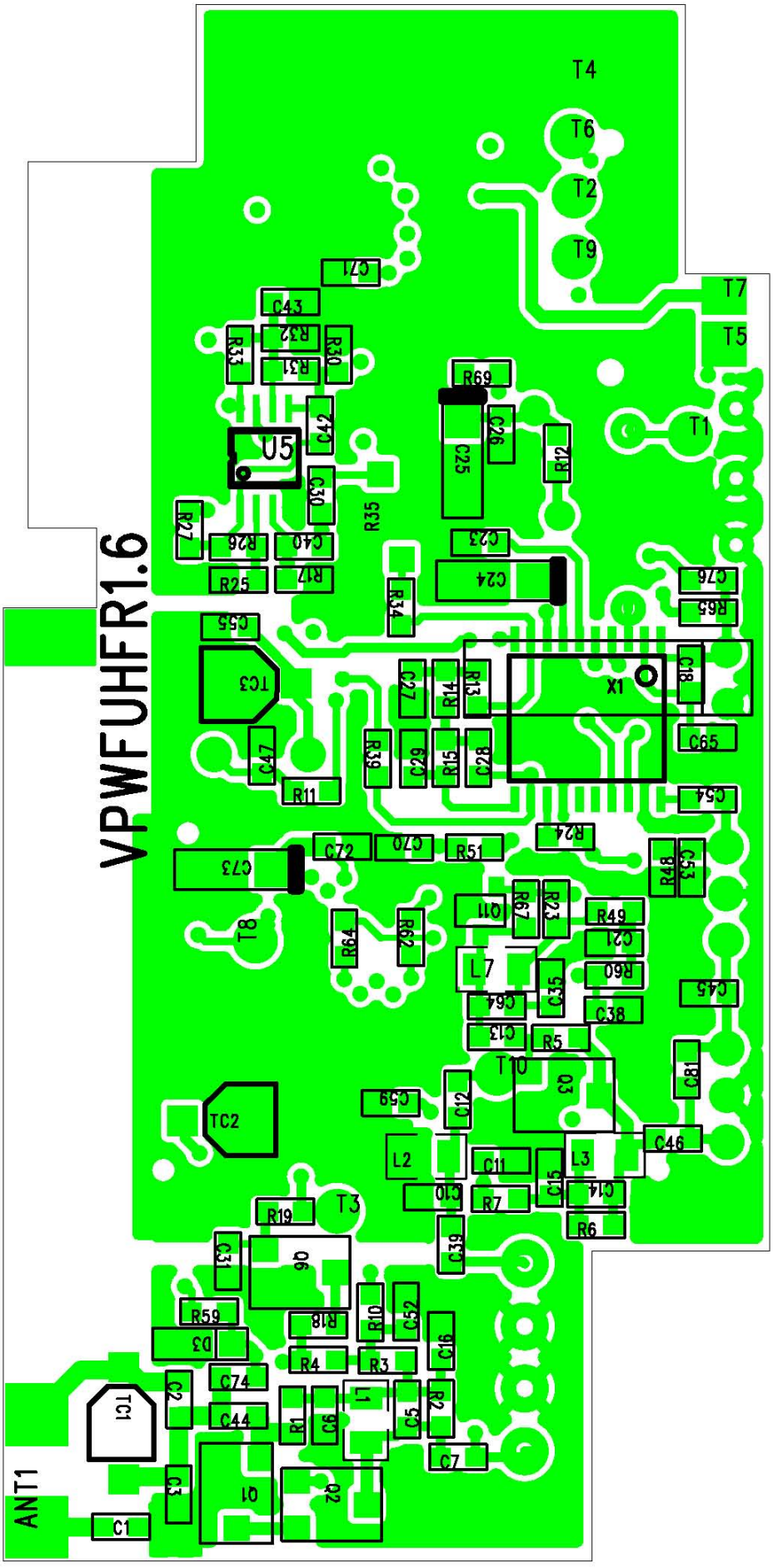
FREQ: VHF 148-470 MHZ

DATE: 2006/9/12

Version	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FREQ	FREQ 148-153	FREQ 152-159(156-162)	FREQ 162-169	FREQ 429-437	FREQ 450-458	FREQ 458-466	FREQ 462-470

U2	CDBLB455C40
U4	SM5170
U5	NJU7015R
X1	20.945MHZ +/-10ppm/X'TAL/ 3*9 /UM-5
X2	12.8MHZ +/-10ppm/X'TAL/UM-5
PCB	VPWFUHFR1.6
J1	AMP FEMALE/14PINS
S1	GP300 Copper Isolation hood
ANT	VP100 LOOP ANTENNA(671-00010-0)

1.FREQ	148-153Mhz	152-159Mhz	162-169Mhz	429-437Mhz	450-458Mhz	458-466Mhz	462-470Mhz
1.VCO	153Mhz=2.2V	159Mhz=2.2V	169Mhz=2.2V	433Mhz=1.5V	454.5Mhz=1.5V	462Mhz=1.5V	466Mhz=1.5V
2.FREQ		156-162Mhz					
2.VCO		162Mhz=2.2V					


VPWFUHFR1.6
T4
T6
T2
T9
T7
T5
T1
U5
X1
T8
T10
TC1
TC2
TC3
ANT1
L7
L2
L3
Q1
Q2
Q3
Q6