

金阿波羅股份有限公司

GOLD APOLLO CO; LTD.

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GOLD APOLLO

Service Manual

MODEL: VP-101

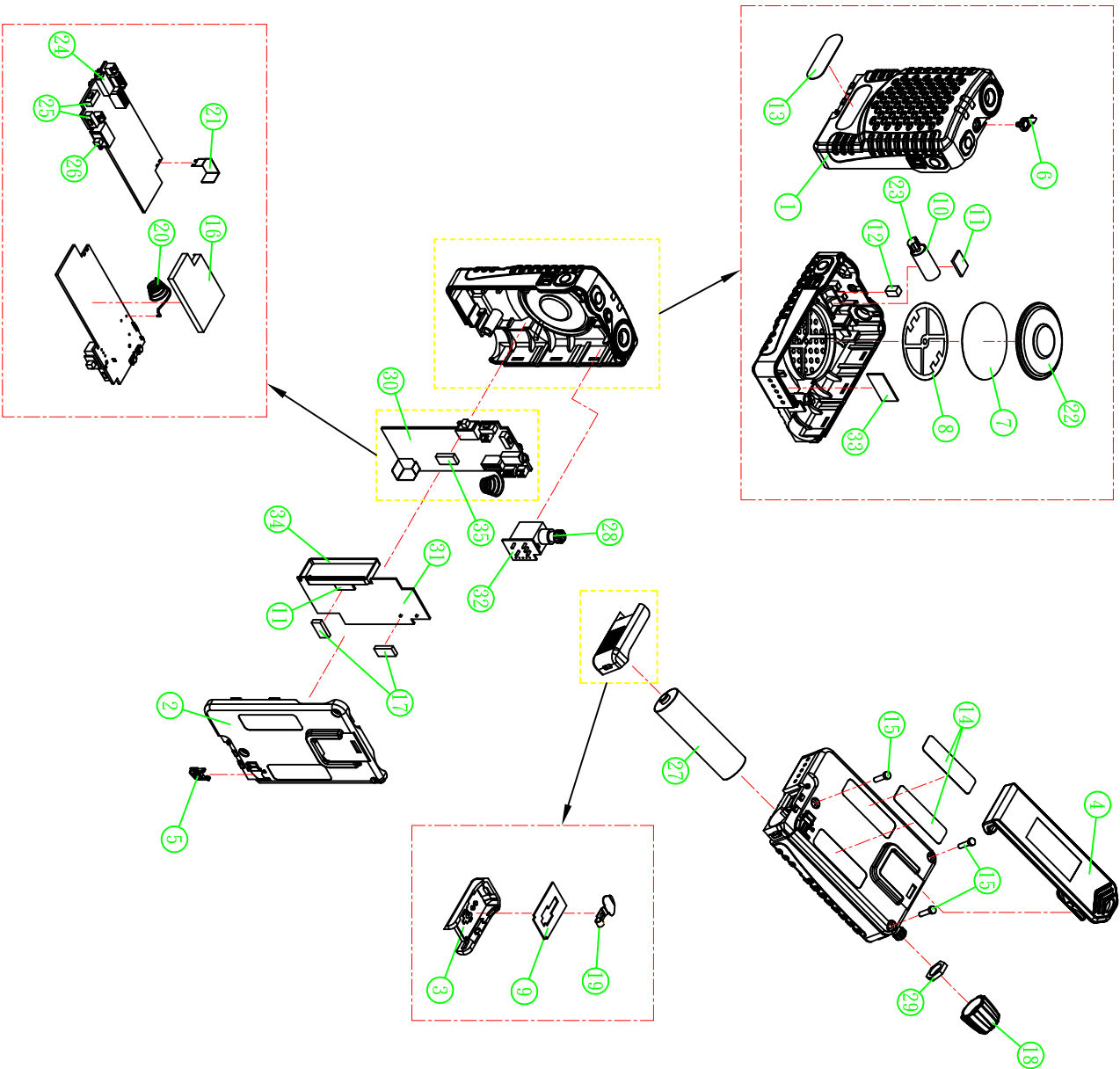
FREQUENCY: W152-470 Mhz

RF_PCB VERSION: VPWFUHFR1.7 BOM : V1.0

DIGIT_PCB VERSION: VP101-1.5 BOM : V140

APPROVED DATE : 08/13/2009

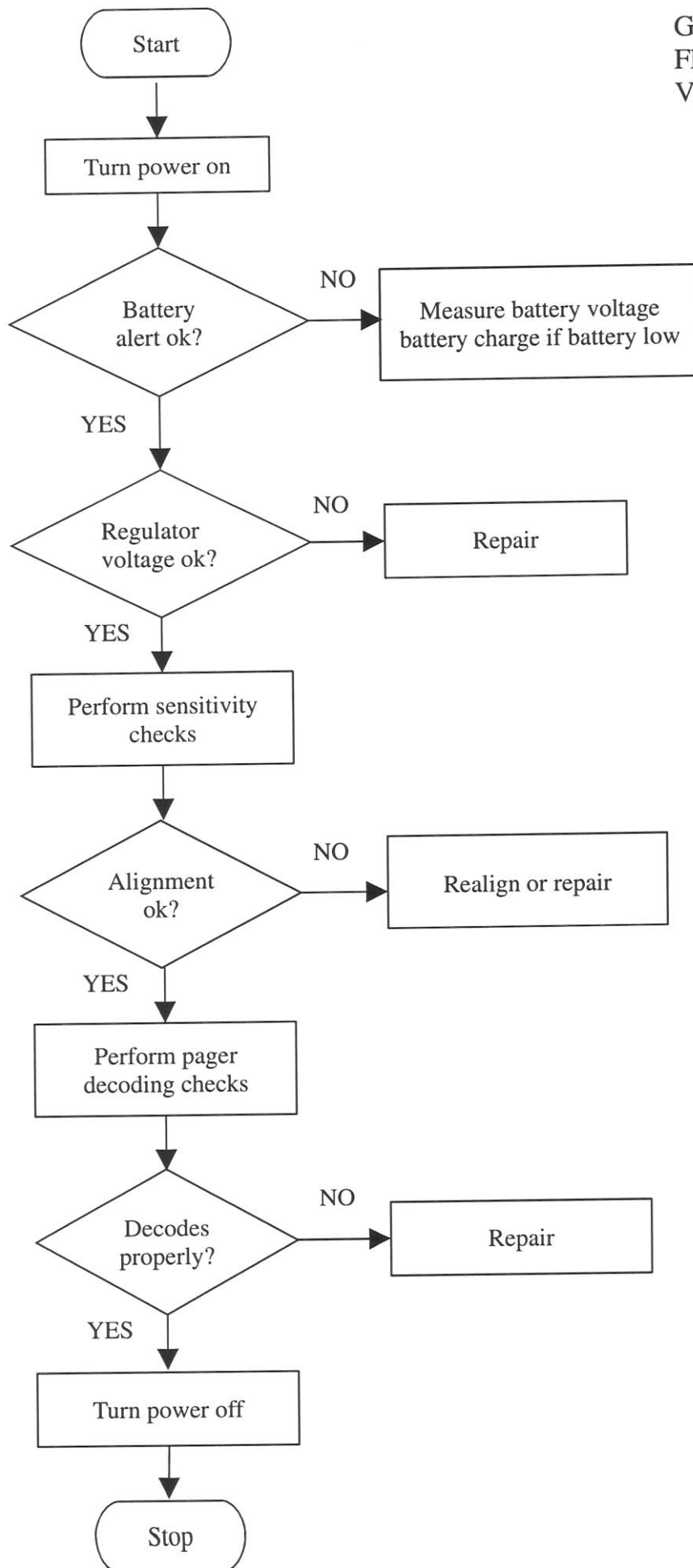
REV.	EC NO.	DATE	DESCRIPTION



20	662-00031-G	負極彈簧	1	40			
19	662-00032-G	正極彈片	1	39			
18	519AT200BK0010	旋鈕/包膠	1	38			
17	818-00008-0	T2墊片	2	37			
16	674-00015-0	銅隔離罩	1	36			
15	647-00001-0	M2螺絲	3	35	819-00013-0	T1.5墊片	1
14	753-00005-0	下蓋貼紙	2	34		ANT	1
13		LOC0銅板	1	33		PCB-EXT	1
12	818-00006-0	T3.4墊片	1	32		PCB-IR	1
11	819-00003-0	T0.8墊片	2	31		PCB-R	1
10	818-00012-0	PORON雙面膠	1	30		PCB-D	1
9	813-00044-G	電池蓋 防水墊片	1	29		NUT	1
8	822-00019-G	喇叭防塵布 雙面膠	1	28		VR	1
7	815-00012-G	喇叭防塵布	1	27		BATTERY	1
6	540AT101BK0000	耳機孔塞	1	26	211-01103002G	SLIDE SWITCH	1
5	518AT101BK0000	LOCK	1	25	214-000E0102G	TACT SWITCH	2
4	517AT101BK0000	背夾組	1	24	232-00009-G	PHONE JACK	1
3	513AT101BK0000	電池蓋	1	23	375-00014-0	MOTOR	1
2	512AT101BK0000	下蓋	1	22	321-00011-G	SPEAKER	1
1	511AT101BK0000	上蓋/包膠	1	21	662-00016-0	接觸彈片	1
編號	料號	品名	用量	編號	料號	品名	用量

DRAWING NO.	VP101-MB200-000000	Apollo GOLD APOLLO CO.,LTD	
PART NO.	XXX		
TOOLING NO.	XXX		
DESCRIPTION	VP-101-爆炸圖	MATERIAL	DESCRIPTION
TOLERANCE	DRA. SUPPLIER	UNIT	SCALE
0~30 : ±0.10	Stanley Chang	mm	~
30~120 : ±0.15	Stanley Chang	mm	~
120~400 : ±0.20	CHK. XXX	SHEET	1/1
>400 : ±0.30	APR. XXX	DATE	03/24/08
ANGLES : ±1			

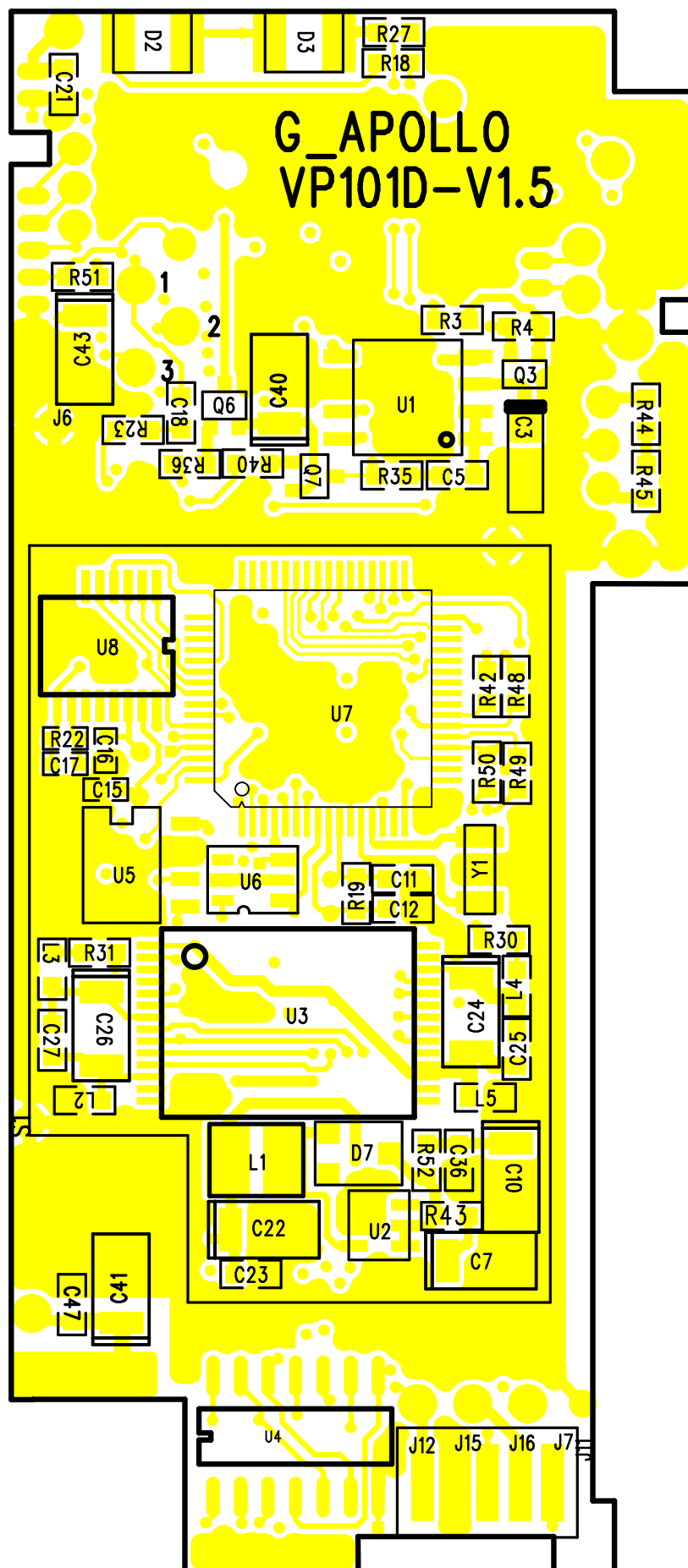
General Trouble shooting
Flow chart for Apollo Pager
VP-101



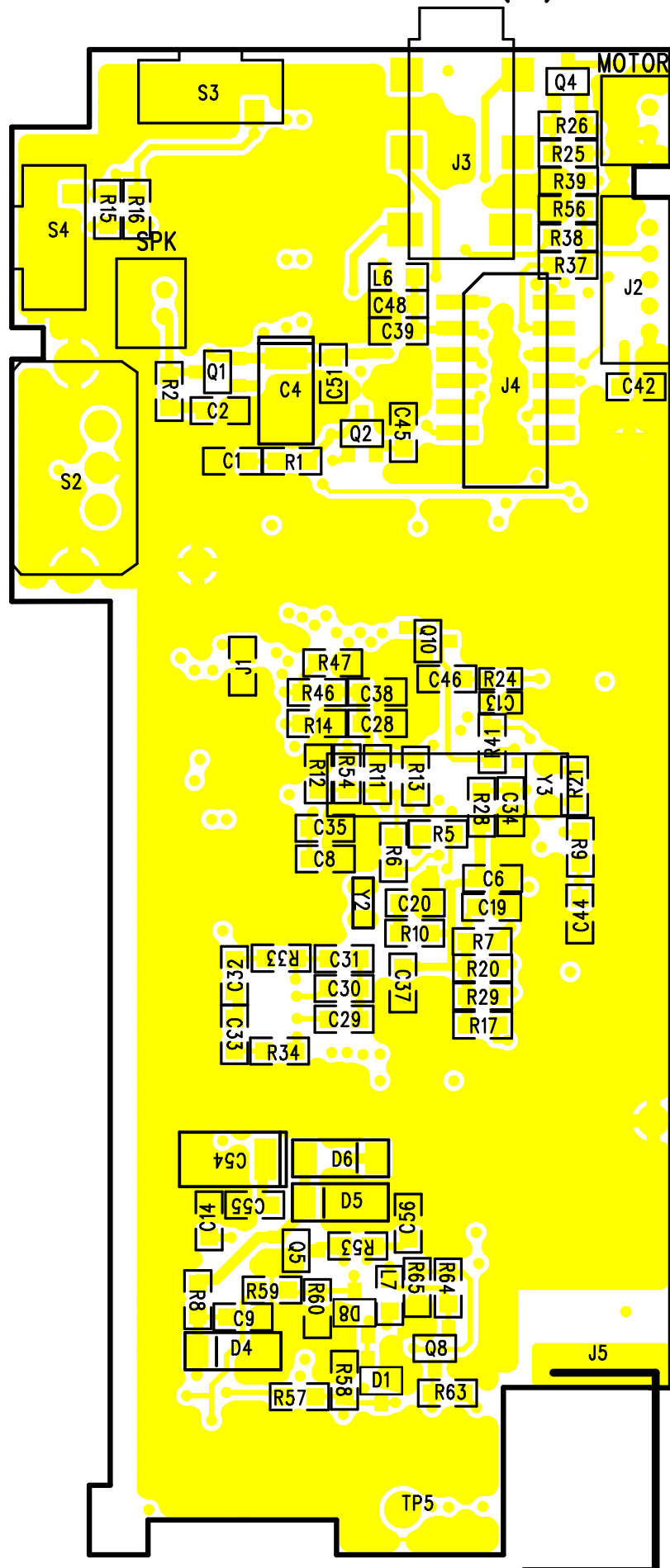


Voice Pager ~VP101 全頻呼叫器材料表					
ECN-0908-004					
		VP101 Digit PCB BOM V1.4			DATE: Aug.,03,2009
ITEM	PART NUMBER	DISCRIPTION		Q'TY	REFERENCE NUMBER
1	111-38290-07Z0	IC,CPU M38C29FFA	PCS	1	U7
2	111-08234-0Tz0	IC,Decoder CMX823	PCS	1	U8
3	111-74406-0dG0	IC,74HC4066DT	PCS	1	U4
4	111-02076-0QU0	IC,OP NJM2076M	PCS	1	U1
5	111-02402-0Sz0	IC,EEPROM 24LC02B	PCS	1	U5
6	113-5301M30A20	IC,DC/DC RN5RK301A	PCS	1	U2
7	113-0522A22A20	IC,Reset RN5VD25AA	PCS	1	U6
8	111-04002-02z0	IC,Record ISD4002-120E/TSOP	PCS	1	U3
9	112-0847N-9HG0	T/R, BC847BW	PCS	1	Q10,
10	112-0857P-AHG0	T/R, BC857BW	PCS	3	Q4,Q6,Q7
11	112-0807P-0HG0	T/R, BC807BW	PCS	3	Q1,Q2,Q3
12	112-0114N-0HH0	T/R, DTC114YUA	PCS	2	Q5,Q8
13	124-0513HR00DG	LED, (LT5K13-AA-UR91-T01(紅))	PCS	1	D3
14	124-0523YG00DG	LED,(LT5K23-AA-RU96-SA8(Green))	PCS	1	D2
15	121-0721S-Jz00	Diode, MA721	PCS	1	D7
16	121-0204W-HH00	Diode, DA204U	PCS	2	D1,D8
17	121-4148W-EH00	Diode, 1N4148	PCS	1	D6
18	158-104A-7M00	Inductor,100uH (LQH4C101K04)	PCS	1	L1
19	156-1025-6z00	Bead,1000 ohm /1A at 100Mhz (0603)	PCS	15	L2,L3,L4,L5,L6,L7,R42,R43,R48,R49,R50,R52,R54,R57,R59
20	130-00065-2610	C/R, 0 (0603)	PCS	3	R8,R28,R46
21	130-10065-2610	C/R, 10 (0603)	PCS	1	R30
22	130-10165-2610	C/R, 100 (0603)	PCS	1	R39
23	130-10365-2610	C/R, 10K (0603)	PCS	11	R7,R9,R10,R15,R16,R17,R20,R29,R37,R53,R63
24	130-10465-2610	C/R, 100K (0603)	PCS	2	R38,R65
25	130-10665-2610	C/R, 10M (0603)	PCS	1	R19
26	130-15165-2610	C/R, 150 (0603)	PCS	3	R25,R36,R40
27	130-10265-2610	C/R, 1K (0603)	PCS	3	R3,R5,R6
28	130-10565-2610	C/R, 1M (0603)	PCS	5	R4,R21,R41,R44,R51
29	130-2R265-2610	C/R, 2.2 (0603)	PCS	2	R1,R2
30	130-22365-2610	C/R, 22K (0603)	PCS	1	R33
31	130-22365-1410	C/R, 22K (0402)	PCS	1	R24
32	130-27365-2610	C/R, 27K (0603)	PCS	1	R35
33	130-27465-1410	C/R, 270K (0402)	PCS	1	R22
34	130-4R765-2610	C/R, 4.7 (0603)	PCS	1	R31
35	130-47265-2610	C/R, 4.7K (0603)	PCS	3	R12,R13,R34
36	130-51365-2610	C/R, 51K (0603)	PCS	1	R23
37	130-56065-2610	C/R, 56 (0603)	PCS	1	R18
38	130-56165-2610	C/R, 560 (0603)	PCS	1	R27
39	130-68365-2610	C/R, 68K (0603)	PCS	1	R64
40	149-10767-BBH0	T/C, 100U/6V (B)	PCS	7	C4,C22,C24,C26,C40,C41,C43
41	149-47667-2BH0	T/C, 47U/10V (B)	PCS	3	C7,C10,C54
42	149-10667-2AH0	T/C, 10U/10V (A)	PCS	1	C3
43	140-10458-56M0	C/C, 104 (0603)	PCS	24	C5,C6,C8,C9,C14,C21,C23,C25,C27,C28,C30,C32,C33,C34,C36,C37,C38,C39,C42,C44,C45,C47,C51,C55,
44	140-10458-34M0	C/C, 104 (0402)	PCS	1	C13
45	140-18065-64M0	C/C, 18P (0402)	PCS	2	C15,C16
46	140-10558-26M0	C/C, 1U (0603)	PCS	3	C1,C2,C29
47	140-20065-66M0	C/C, 20P (0603)	PCS	2	C11,C12
48	140-22065-64M0	C/C, 22P (0402)	PCS	1	C17
49	140-10358-56M0	C/C, 10n (0603)	PCS	1	C18
50	140-33458-36M0	C/C, 334 (0603)	PCS	1	C19
51	172-0400-15RM0	Resonator, 4Mhz(CSTCR4M00G53-B0)	PCS	1	Y1
52	236-14001-0	Connector, AMP14PIN(Male)	PCS	1	J4
53	214-000E010zG	TACT Switch(SKQTLBE010)	PCS	2	S3,S4
54	161-VD10101180	PCB VP101-1.5,4L,FR-4,1.2mm	PCS	1	
55	161-VD10110080	PCB VP101_VR1.0,2L,FR-4,0.8mm	PCS	1	
56	161-VD10120080	PCB VP101_EXT Board,2L,FR-4,0.8mm	PCS	1	
57	232-00009-G	Earphone Jack (PJ-2865AD)	PCS	1	J3
58	662-00031-G	電池彈片(負極)221022-M051-C	PCS	1	J6
59	662-00016-0	電池彈片(正極)磷銅鍍金9.5*8.7*t0.2mm	PCS	1	J5
60	268-00003-G	Connector GP40AAAM2BMX	PCS	2	J17,J18
61	674-00015-0	VP100-Shield_Box	PCS	1	S1
62	1710357954DF3v	X'TAL, 3.579545 Mhz (3*9mm)	PCS	1	Y3
63	1710007680CC2s	X'TAL, 76.8 Khz	PCS	1	Y2
64	211-0110300zG	Slide Switch (SSAA110300)	PCS	1	S2
65	237-05002-G	5PIN WAFER接頭 VP101 (DIP)母	PCS	1	J2
66	432-00009-G	軟排線 VP101 5PIN淺灰(2端剝線)	PCS	1	J7
67	321-00011-G	Speaker, (CE-C363NT-4 4ohm)(36CB-50B)	PCS	1	
68	676-00018-G	銅箔絕緣貼紙 VP-100	PCS	1	
69	131-20310709zG	VR,RD097111107K-20K(2B)(GGE)	PCS	1	
70	454-00011-G	連接線 VP101 5PIN接頭+線	PCS	1	
NOTE :					

SILK SCREEN (T)



SILK SCREEN (B)

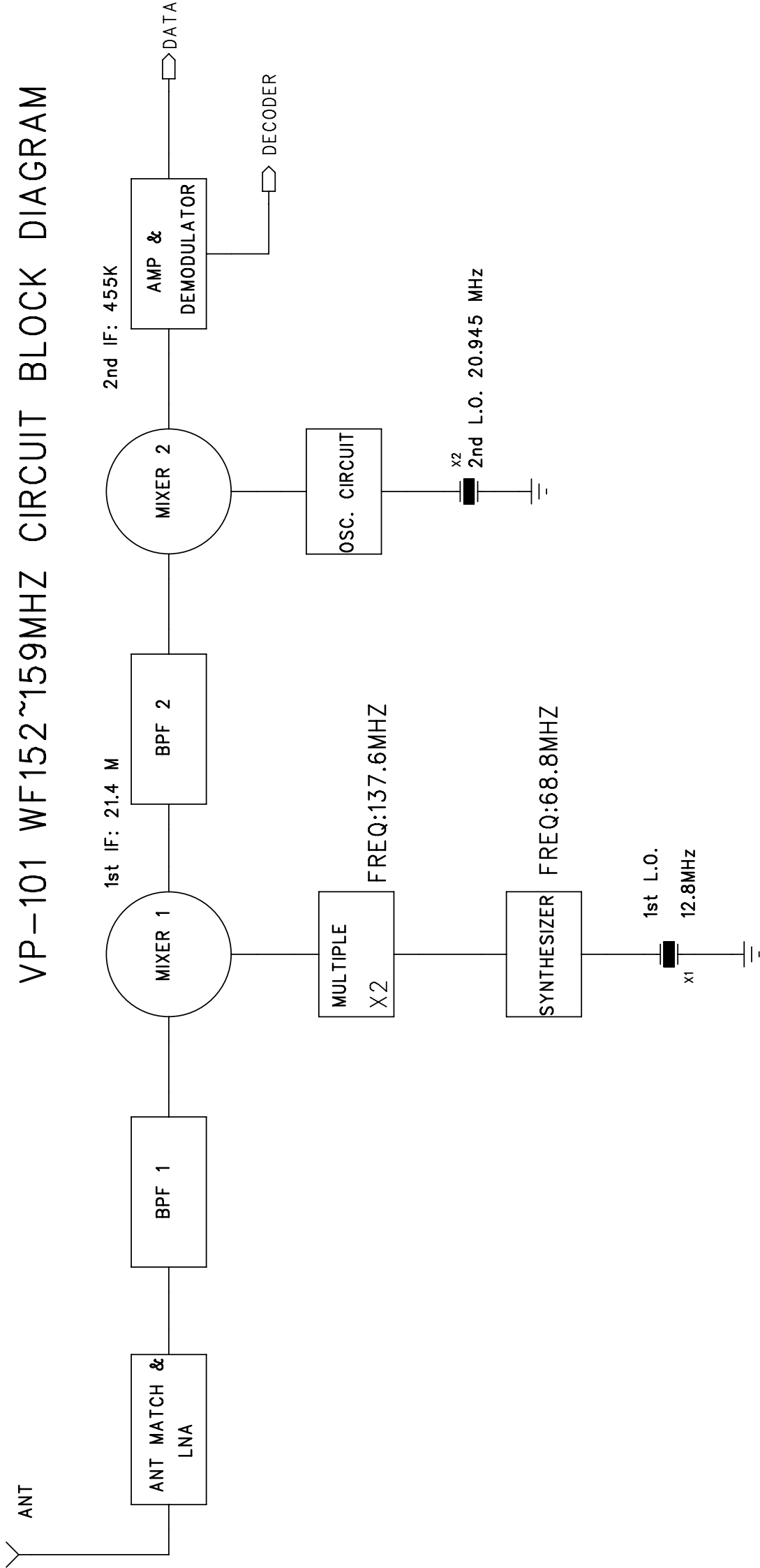


VP-101 Alignment Procedure

For synthesizer RF board(152~159MHZ)

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 TC1 to get IF (455kHz) power maximum.
7. Disconnect Vdd & RE.

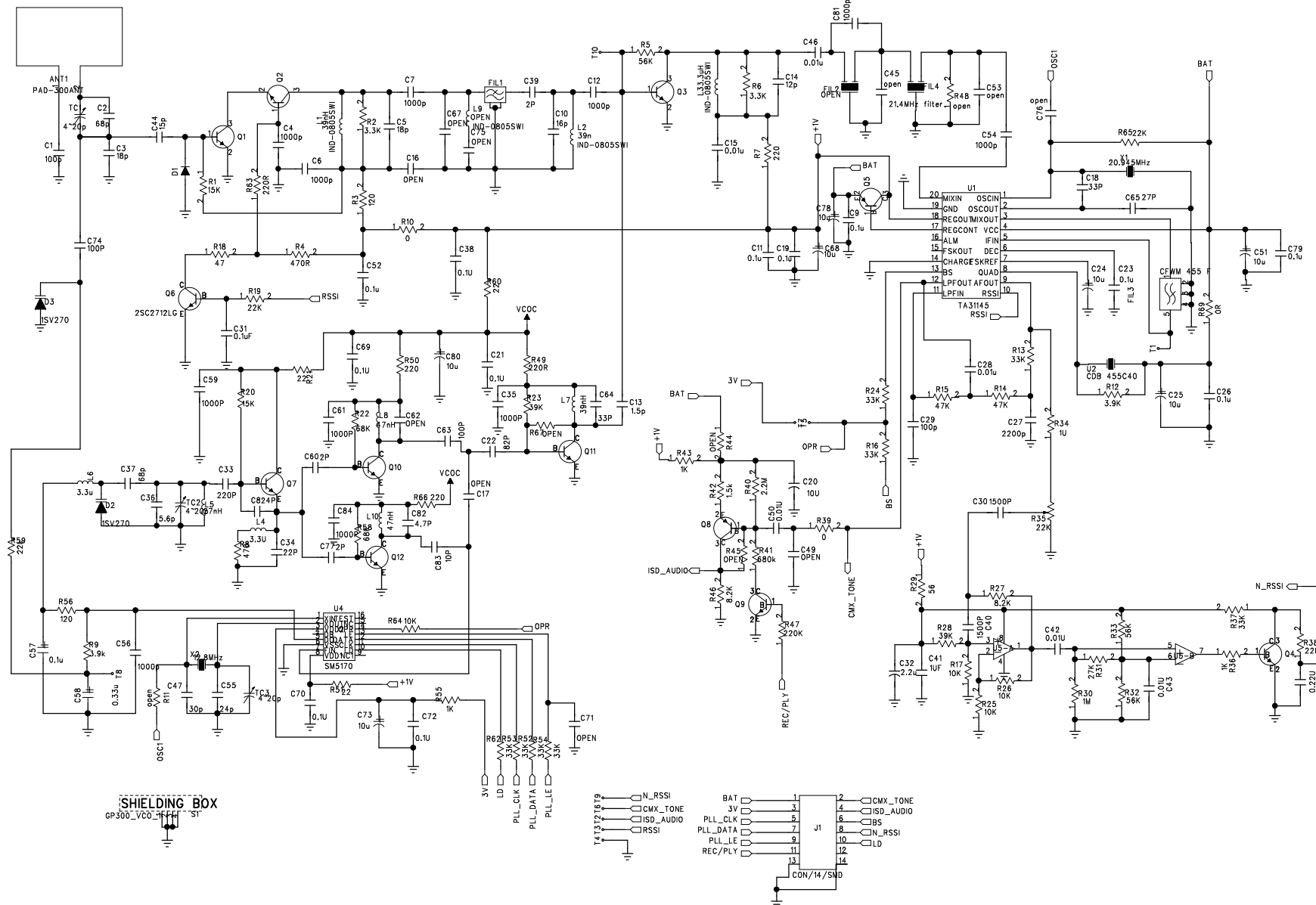
Note: After soldering crystal or other components of RF P.C.B must be waiting 10 minutes for RF P.C.B heat stability ,then go to alignment process.



DENOTE:TEST FREQUENCY 159MHZ

REVISION RECORD				
LTR	ECO	NOI	APPROVE	

VP101WF152~159MHz VER 1.0 2008/04/17



COMPANY: Gold Apollo	
TITLE: VP101 Digital Circuit	
SIZE:	
DRAWING NO: VP101-RC1G0-152159-100	
SHEET: 1 OF 1	
VERSION:	

DRAWN: Tommy Lin	DATED: 2008/04/17
RELEASE DATE:	

VP101-WF B.O.M.

DATE:2008/4/17

FREQ:152~159(156~162)MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	2SC3356 /R25		Agilent	RF Transistor
Q3	2SC3356 /R25		Agilent	RF Transistor
Q4	BC847BW		PHILIPS	RF Transistor
Q5	2SA1162GR		TOSHIBA	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	BC847BW		PHILIPS	RF Transistor
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SC4226 /R25		NEC	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB455C40		嶺富	
U4	SM5170		NPC	PLL IC
U5	NJU7015R		NJR	OP AMP
D1	1N4148			
D2	1SV270		TOSHIBA	
D3	1SV270		TOSHIBA	

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C1	100P		SMD Capacitor size 0603
C2	68P		
C3	18P		SMD Capacitor size 0603
C4	1000P		SMD Capacitor size 0603
C5	18P		SMD Capacitor size 0603
C6	1000P		SMD Capacitor size 0603
C7	1000P		SMD Capacitor size 0603
C8	24P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1u	+80% -20% Y5V	SMD Capacitor size 0603
C10	16P		SMD Capacitor size 0603
C11	0.1u	+80% -20% Y5V	SMD Capacitor size 0603
C12	1000P		SMD Capacitor size 0603
C13	1.5P	+/- 0.1p NPO	SMD Capacitor size 0603
C14	12P	+/- 5% NPO	SMD Capacitor size 0603
C15	0.01u	+/- 10% X7R	SMD Capacitor size 0603
C16	OPEN		
C17	OPEN		
C18	33P	+/- 5% NPO	SMD Capacitor size 0603

VP101-WF B.O.M.

DATE:2008/4/17

FREQ:152~159(156~162)MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C19	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C20	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C21	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C22	82P	+/- 5% NPO		SMD Capacitor size 0603
C23	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C24	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C25	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C26	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C27	2200p	+/- 10% X7R		SMD Capacitor size 0603
C28	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C29	100p	+/- 5% NPO		SMD Capacitor size 0603
C30	1500P	+/- 10% X7R		SMD Capacitor size 0603
C31	0.1uF	+80% -20% Y5V		SMD Capacitor size 0603
C32	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	22P	+/- 5% NPO		SMD Capacitor size 0603
C35	1000P	+/- 10% X7R		SMD Capacitor size 0603
C36	5.6P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	68P	+/- 5% NPO		SMD Capacitor size 0603
C38	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C39	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C40	1500P	+/- 10% X7R		SMD Capacitor size 0603
C41	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C42	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C43	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C44	15p	+/- 5% NPO		SMD Capacitor size 0603
C45	OPEN			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.22U	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.01U	+80% -20% Y5V		SMD Capacitor size 0603
C51	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C52	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C53	open			
C54	1000p	+/- 10% X7R		SMD Capacitor size 0603
C55	24P	+/- 5% NPO		SMD Capacitor size 0603
C56	1000P	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.33u	+/- 10% TAN-A		TAN Capacitor size "A"

VP101-WF B.O.M.

DATE:2008/4/17

FREQ:152~159(156~162)MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C59	1000P	+/- 10% X7R		SMD Capacitor size 0603
C60	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C61	1000P	+/- 10% X7R		SMD Capacitor size 0603
C62	OPEN			
C63	100P	+/- 5% NPO		SMD Capacitor size 0603
C64	33P	+/- 5% NPO		SMD Capacitor size 0603
C65	27P	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C69	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C70	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C71	OPEN			
C72	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C73	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C74	100P	+/- 5% NPO		SMD Capacitor size 0603
C75	OPEN			
C76	open			
C77	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C78	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C81	1000P	+/- 10% X7R		SMD Capacitor size 0603
C82	4.7P	+/- 0.1p NPO		SMD Capacitor size 0603
C83	10p	+/- 5% NPO		SMD Capacitor size 0603
C84	1000P	+/- 10% X7R		SMD Capacitor size 0603

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L1	39nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	39nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	3.3uH	+/- 5%	DELTA	SMD Inductor size 1008
L5	27nH	+/- 5%	DELTA	SMD Inductor size 0805
L6	3.3uH	+/- 10%		M/C Inductor size 0805
L7	39nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	47nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	47nH	+/- 5%	DELTA	SMD Inductor size 0805

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VP101-WF B.O.M.

DATE:2008/4/17

FREQ:152~159(156~162)MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R1	15K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	120R	+/- 5%		SMD Resistor size 0603
R4	470R	+/- 5%		SMD Resistor size 0603
R5	56K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	220	+/- 5%		SMD Resistor size 0603
R8	470	+/- 5%		SMD Resistor size 0603
R9	3.9K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	OPEN	+/- 5%		SMD Resistor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	33K	+/- 5%		SMD Resistor size 0603
R14	47K	+/- 5%		SMD Resistor size 0603
R15	47K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	10K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	15K	+/- 5%		SMD Resistor size 0603
R21	22	+/- 5%		SMD Resistor size 0603
R22	68K	+/- 5%		SMD Resistor size 0603
R23	47K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603
R25	10K	+/- 5%		SMD Resistor size 0603
R26	10K	+/- 5%		SMD Resistor size 0603
R27	8.2K	+/- 5%		SMD Resistor size 0603
R28	39K	+/- 5%		SMD Resistor size 0603
R29	56	+/- 5%		SMD Resistor size 0603
R30	1M	+/- 5%		SMD Resistor size 0603
R31	27K	+/- 5%		SMD Resistor size 0603
R32	56K	+/- 5%		SMD Resistor size 0603
R33	56K	+/- 5%		SMD Resistor size 0603
R34	1UF	+80% -20% Y5V		SMD Capacitor size 0603
R35	22K			VR 30
R36	1K	+/- 5%		SMD Resistor size 0603
R37	33K	+/- 5%		SMD Resistor size 0603
R38	22K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	2.2M	+/- 5%		SMD Resistor size 0603

VP101-WF B.O.M.

DATE:2008/4/17

FREQ:152~159(156~162)MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R41	680K	+/- 5%		SMD Resistor size 0603
R42	1.5K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	OPEN	+/- 5%		SMD Resistor size 0603
R45	OPEN	+/- 5%		SMD Resistor size 0603
R46	8.2K	+/- 5%		SMD Resistor size 0603
R47	220K	+/- 5%		SMD Resistor size 0603
R48	OPEN	+/- 5%		SMD Resistor size 0603
R49	220R	+/- 5%		SMD Resistor size 0603
R50	220	+/- 5%		SMD Resistor size 0603
R51	22	+/- 5%		SMD Resistor size 0603
R52	33K	+/- 5%		SMD Resistor size 0603
R53	33K	+/- 5%		SMD Resistor size 0603
R54	33K	+/- 5%		SMD Resistor size 0603
R55	1K	+/- 5%		SMD Resistor size 0603
R56	120R	+/- 5%		SMD Resistor size 0603
R57	OPEN			
R58	68K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22	+/- 5%		SMD Resistor size 0603
R61	OPEN			
R62	33K	+/- 5%		SMD Resistor size 0603
R63	220R	+/- 5%		SMD Resistor size 0603
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	220	+/- 5%		SMD Resistor size 0603
R67	OPEN			
R69	0R	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	4~20p	光茂	SMD Trimmer Capacitor
TC2	4~20p	光茂	SMD Trimmer Capacitor
TC3	4~20p	光茂	SMD Trimmer Capacitor

濾波器

FIL1	銅製跳線		
FIL2	OPEN		
FIL3	CFWM455		Ceramic filter
FIL4	21.4MHz		XTAL-FIL-F-UM_5

<

VP101-WF B.O.M.

DATE:2008/4/17

FREQ:152~159(156~162)MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
石英晶體				
X1	20.945M	+/- 15ppm		X'TAL Size 3*9
X2	12.8MHz	+/- 3ppm		X'TAL Size UM5
ANT1	VP101 LOOP ANTENNA(671-00016-G)			Small loop antenna
PCB	VPWFUHR1.7			Printed circuit board
J1	AMP FEMALE/14PINS			SMD Connector
S1	GP-300 銅隔離罩			

VCO: 152~159MHz 159MHz : 2.2V
 156~162MHz 162MHz : 2.2V

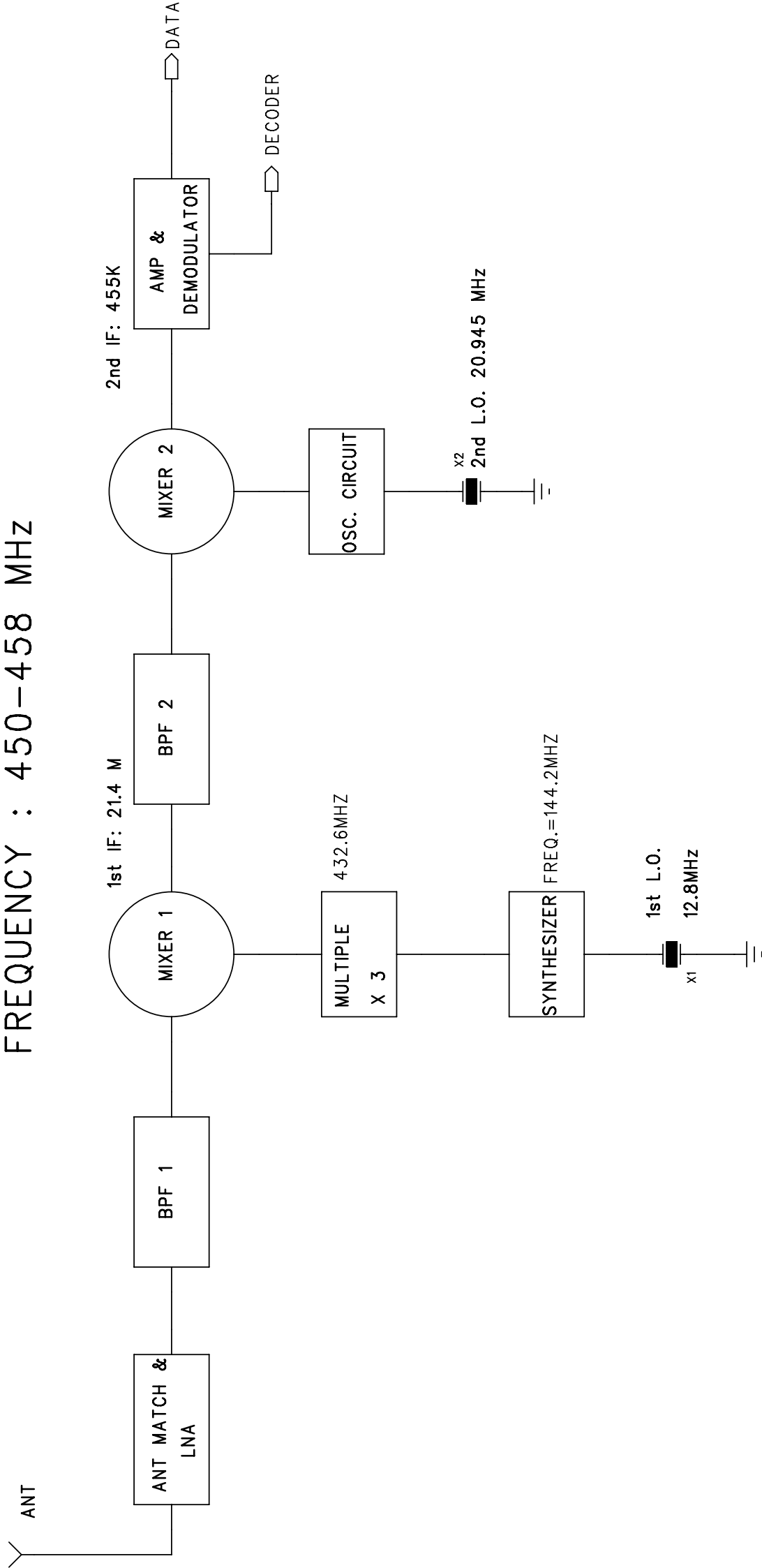
For synthsize RF boar(450~458MHZ)

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 (454MHZ=1.5V)
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. 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.

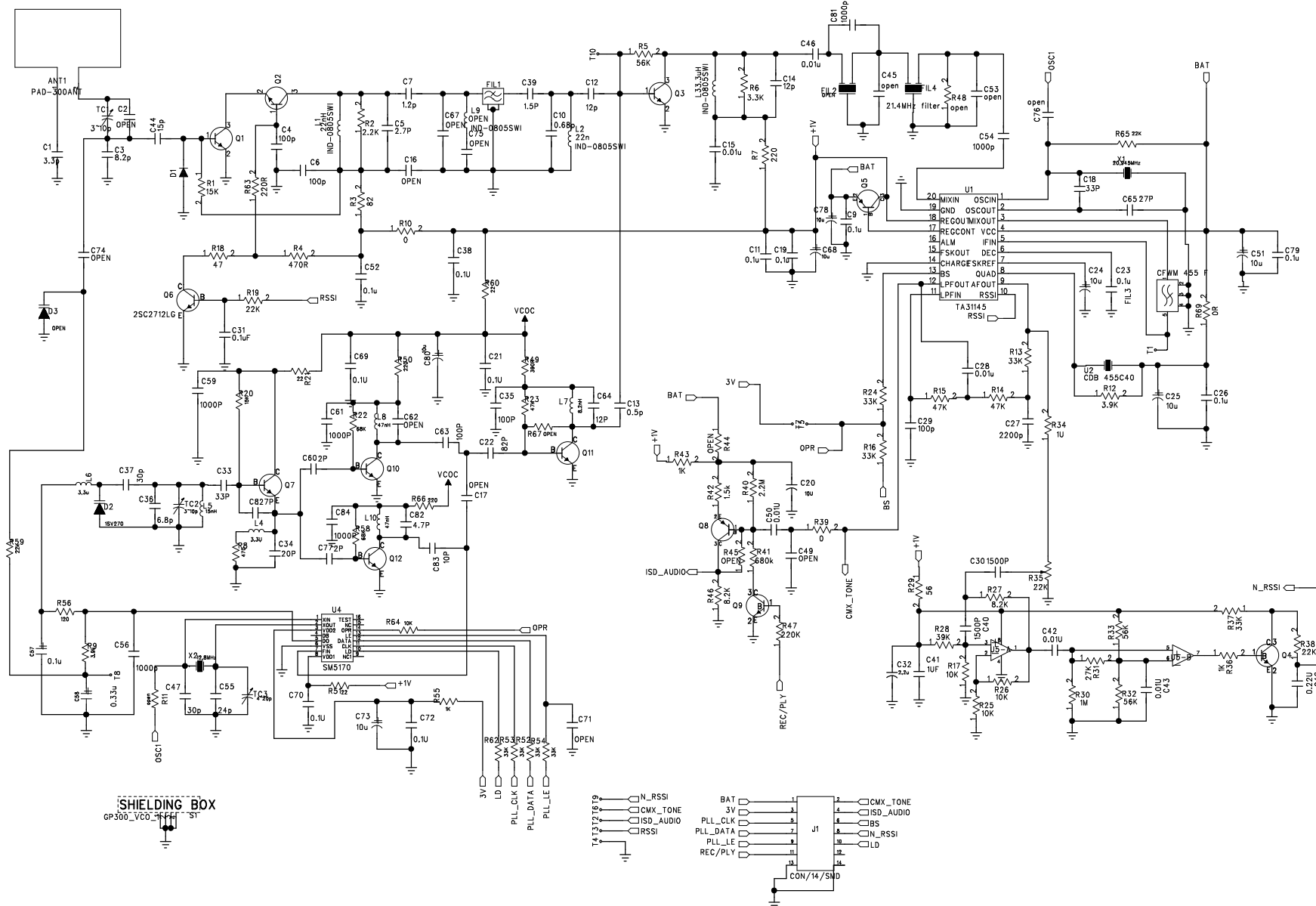
VP-101 RF BLOCK DIAGRAM

FREQUENCY : 450-458 MHZ



NOTE: TESTING SAMPLE FREQ: 454 MHZ

VP101 WF 450~458MHz VER1.0 2008/04/17



COMPANY: Gold Apollo	
TITLE: VP101 Digital Circuit	
SIZE:	
DRAWN: Tommy Lin	DATED: 2008/04/17
DRAWING NO: VP101-RC1G0-450458-100	
RELEASE DATE:	SHEET: 1 OF 1 VERSION:

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:450~458MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	BC847BW		PHILIPS	RF Transistor
Q5	2SA1162GR		TOSHIBA	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	BC847BW		PHILIPS	RF Transistor
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SC4226 /R25		NEC	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB455C40		蘄富	
U4	SM5170		NPC	PLL IC
U5	NJU7015R		NJR	OP AMP
D1	1N4148			
D2	1SV270		TOSHIBA	
D3	OPEN		TOSHIBA	

陶瓷電容類				
C1	3.3p	+/- 0.1p NPO		SMD Capacitor size 0603
C2	OPEN			
C3	8.2p	+/- 0.1p NPO		SMD Capacitor size 0603
C4	100P	+/- 5% NPO		SMD Capacitor size 0603
C5	2.7P	+/- 0.1p NPO		SMD Capacitor size 0603
C6	100P	+/- 5% NPO		SMD Capacitor size 0603
C7	1.2P	+/- 0.1p NPO		SMD Capacitor size 0603
C8	27P	+/- 5% NPO		SMD Capacitor size 0603
C9	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C10	0.68P	+/- 0.1p NPO		SMD Capacitor size 0603
C11	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C12	12P	+/- 5% NPO		SMD Capacitor size 0603
C13	0.5P	+/- 0.1p NPO		SMD Capacitor size 0603
C14	12P	+/- 5% NPO		SMD Capacitor size 0603
C15	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C16	OPEN			
C17	OPEN			
C18	33P	+/- 5% NPO		SMD Capacitor size 0603
C19	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C20	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C21	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C22	82P	+/- 5% NPO		SMD Capacitor size 0603
C23	0.1u	+80% -20% Y5V		SMD Capacitor size 0603

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:450~458MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C24	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C25	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C26	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C27	2200p	+/- 10% X7R		SMD Capacitor size 0603
C28	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C29	100p	+/- 5% NPO		SMD Capacitor size 0603
C30	1500P	+/- 10% X7R		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C33	33P	+/- 5% NPO		SMD Capacitor size 0603
C34	20P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	6.8p	+/- 0.1p NPO		SMD Capacitor size 0603
C37	30p	+/- 5% NPO		SMD Capacitor size 0603
C38	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C39	1.5P	+/- 0.1p NPO		SMD Capacitor size 0603
C40	1500P	+/- 10% X7R		SMD Capacitor size 0603
C41	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C42	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C43	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C44	15p	+/- 5% NPO		SMD Capacitor size 0603
C45	OPEN			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.22U	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.01U	+80% -20% Y5V		SMD Capacitor size 0603
C51	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C52	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C53	open			
C54	1000p	+/- 10% X7R		SMD Capacitor size 0603
C55	24P	+/- 5% NPO		SMD Capacitor size 0603
C56	1000P	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.33u	+/- 10% TAN-A		TAN Capacitor size "A"
C59	1000P	+/- 10% X7R		SMD Capacitor size 0603
C60	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C61	1000P	+/- 10% X7R		SMD Capacitor size 0603
C62	OPEN			
C63	100P	+/- 5% NPO		SMD Capacitor size 0603
C64	12P	+/- 5% NPO		SMD Capacitor size 0603
C65	27P	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	10u	+/- 10% TAN-A		TAN Capacitor size "A"

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:450~458MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C69	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C70	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C71	OPEN			
C72	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C73	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C74	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C75	OPEN			
C76	open			
C77	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C78	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C81	1000P	+/- 10% X7R		SMD Capacitor size 0603
C82	4.7P	+/- 0.1p NPO		SMD Capacitor size 0603
C83	10p	+/- 5% NPO		SMD Capacitor size 0603
C84	1000P	+/- 10% X7R		SMD Capacitor size 0603

電感類

L1	22nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	22nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	3.3uH	+/- 5%	DELTA	SMD Inductor size 1008
L5	15nH	+/- 5%	DELTA	SMD Inductor size 0805
L6	3.3uH	+/- 10%		M/C Inductor size 0805
L7	8.2nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	47nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	47nH	+/- 5%	DELTA	SMD Inductor size 0805

電阻類

R1	15K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	82	+/- 5%		SMD Resistor size 0603
R4	470R	+/- 5%		SMD Resistor size 0603
R5	56K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	220R	+/- 5%		SMD Resistor size 0603
R8	470R	+/- 5%		SMD Resistor size 0603
R9	3.9K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	OPEN	+/- 5%		SMD Resistor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	33K	+/- 5%		SMD Resistor size 0603
R14	47K	+/- 5%		SMD Resistor size 0603
R15	47K	+/- 5%		SMD Resistor size 0603

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:450~458MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R16	33K	+/- 5%		SMD Resistor size 0603
R17	10K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	15K	+/- 5%		SMD Resistor size 0603
R21	22	+/- 5%		SMD Resistor size 0603
R22	68K	+/- 5%		SMD Resistor size 0603
R23	47K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603
R25	10K	+/- 5%		SMD Resistor size 0603
R26	10K	+/- 5%		SMD Resistor size 0603
R27	8.2K	+/- 5%		SMD Resistor size 0603
R28	39K	+/- 5%		SMD Resistor size 0603
R29	56	+/- 5%		SMD Resistor size 0603
R30	1M	+/- 5%		SMD Resistor size 0603
R31	27K	+/- 5%		SMD Resistor size 0603
R32	56K	+/- 5%		SMD Resistor size 0603
R33	56K	+/- 5%		SMD Resistor size 0603
R34	1UF	+80% -20% Y5V		SMD Capacitor size 0603
R35	22K			VR 30
R36	1K	+/- 5%		SMD Resistor size 0603
R37	33K	+/- 5%		SMD Resistor size 0603
R38	22K	+/- 5%		SMD Resistor size 0603
R39	0R	+/- 5%		SMD Resistor size 0603
R40	2.2M	+/- 5%		SMD Resistor size 0603
R41	680K	+/- 5%		SMD Resistor size 0603
R42	1.5K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	OPEN	+/- 5%		SMD Resistor size 0603
R45	OPEN	+/- 5%		SMD Resistor size 0603
R46	8.2K	+/- 5%		SMD Resistor size 0603
R47	220K	+/- 5%		SMD Resistor size 0603
R48	OPEN	+/- 5%		SMD Resistor size 0603
R49	390	+/- 5%		SMD Resistor size 0603
R50	220R	+/- 5%		SMD Resistor size 0603
R51	22	+/- 5%		SMD Resistor size 0603
R52	33K	+/- 5%		SMD Resistor size 0603
R53	33K	+/- 5%		SMD Resistor size 0603
R54	33K	+/- 5%		SMD Resistor size 0603
R55	1K	+/- 5%		SMD Resistor size 0603
R56	120R	+/- 5%		SMD Resistor size 0603
R57	OPEN			
R58	68K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22	+/- 5%		SMD Resistor size 0603

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:450~458MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R61	OPEN			
R62	33K	+/- 5%		SMD Resistor size 0603
R63	220R	+/- 5%		SMD Resistor size 0603
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	220R	+/- 5%		SMD Resistor size 0603
R67	OPEN			
R69	0R	+/- 5%		SMD Resistor size 0603
半可調電容				
TC1	3~10p		光茂	SMD Trimmer Capacitor
TC2	3~10p		光茂	SMD Trimmer Capacitor
TC3	4~20p		光茂	SMD Trimmer Capacitor
濾波器				
FIL1	TA454E1			
FIL2	OPEN			
FIL3	CFWM455			Ceramic filter
FIL4	21.4MHz			XTAL-FIL-F-UM_5
石英晶體				
X1	20.945M	+/- 15ppm		X'TAL Size 3*9
X2	12.8MHz	+/- 3ppm		X'TAL Size UM5
ANT1	VP101 LOOP ANTENNA(671-00016-G)			Small loop antenna
PCB	VPWFUHR1.7			Printed circuit board
J1	AMP FEMALE/14PINS			SMD Connector
S1	GP-300 銅隔離罩			

VCO: 454.5MHz : 1.5V

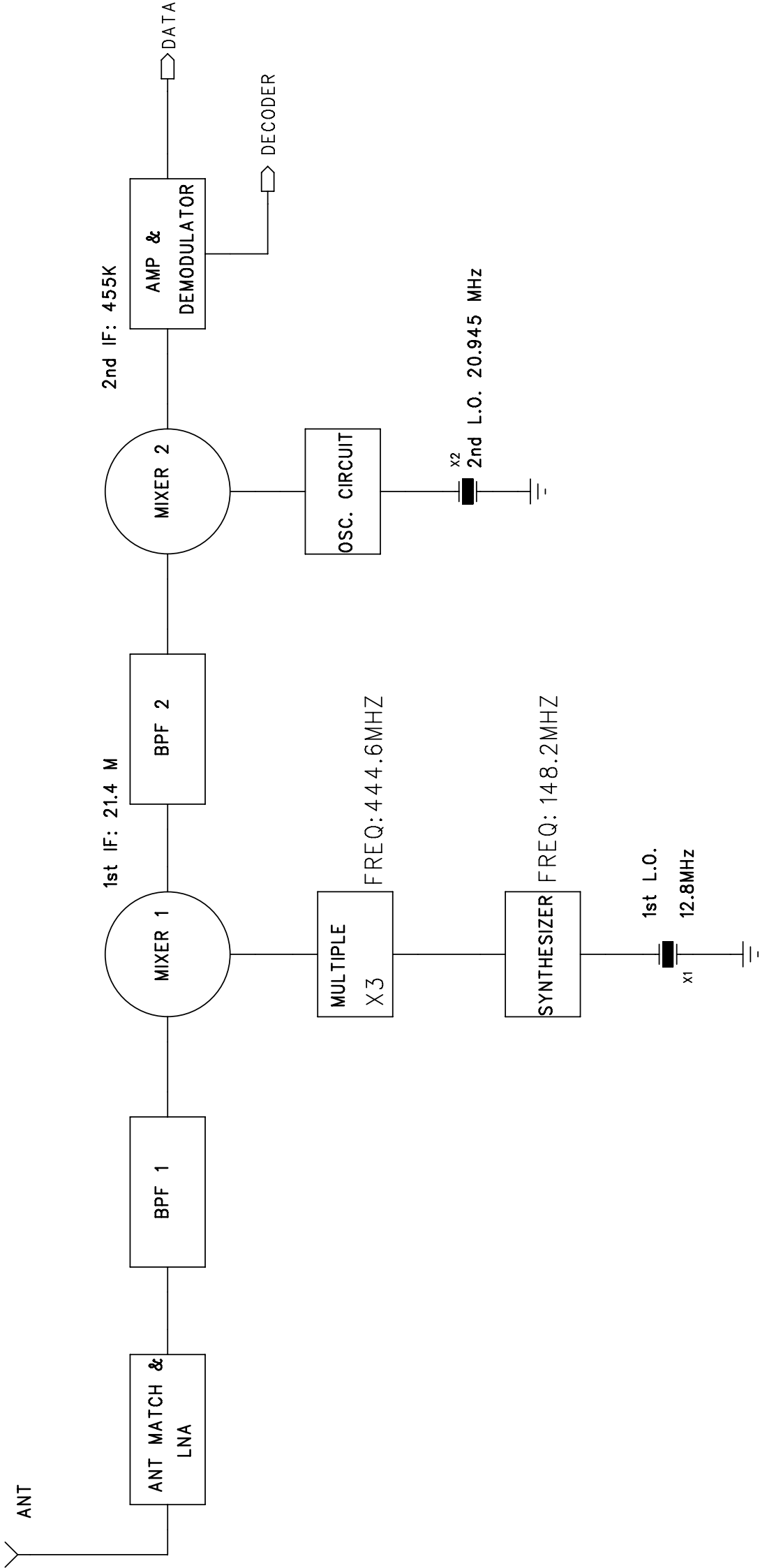
VP-101 Alignment Procedure

For synthesizer RF board (462~470MHz)

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 (466MHz=1.5V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 455K $\pm$ 50HZ.
6. Tuning TC1 to get IF (455kHz) power maximum.
7. Disconnect Vdd & RE.

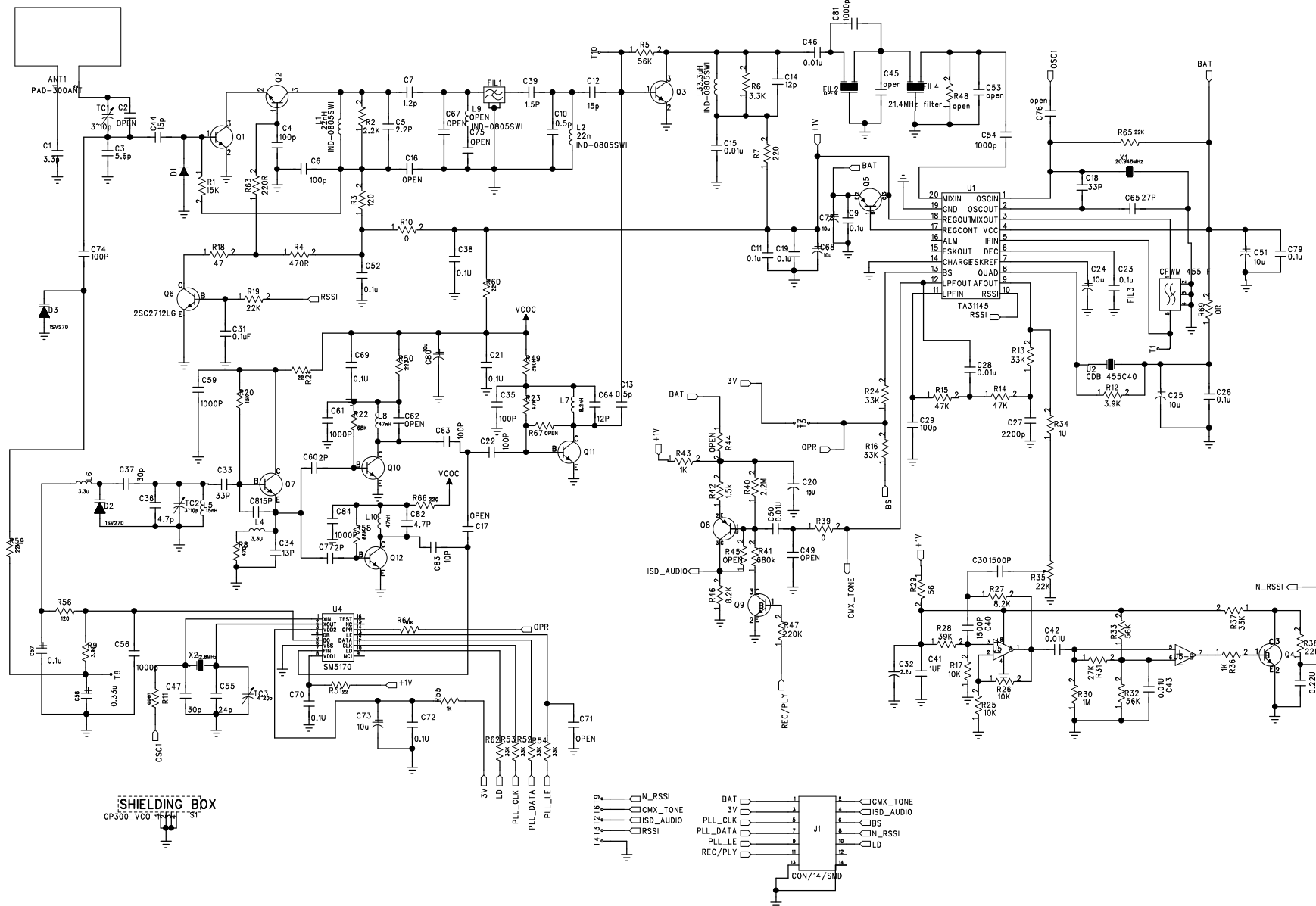
Note: After soldering crystal or other components of RF P.C.B must be waiting 10 minutes for RF P.C.B heat stability, then go to alignment process.

VP-101 WF462~470MHZ CIRCUIT BLOCK DIAGRAM



REVISION RECORD			
LTR	ECO	NOI	APPROVAL

VP101 WF 462~470MHz VER 1.0 2008/04/17



VP101-WF B.O.M.

DATE:2008/04/17

FREQ:462~470MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	BC847BW		PHILIPS	RF Transistor
Q5	2SA1162GR		TOSHIBA	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	BC847BW		PHILIPS	RF Transistor
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SC4226 /R25		NEC	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB455C40		嶺富	
U4	SM5170		NPC	PLL IC
U5	NJU7015R		NJR	OP AMP
D1	1N4148			
D2	1SV270		TOSHIBA	
D3	OPEN		TOSHIBA	

陶瓷電容類

C1	3.3p	+/- 0.1p NPO	SMD Capacitor size 0603
C2	OPEN		
C3	5.6p	+/- 0.1p NPO	SMD Capacitor size 0603
C4	100P	+/- 5% NPO	SMD Capacitor size 0603
C5	2.2P	+/- 0.1p NPO	SMD Capacitor size 0603
C6	100P	+/- 5% NPO	SMD Capacitor size 0603
C7	1.2P	+/- 0.1p NPO	SMD Capacitor size 0603
C8	15p	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1u	+80% -20% Y5V	SMD Capacitor size 0603
C10	0.5P	+/- 0.1p NPO	SMD Capacitor size 0603
C11	0.1u	+80% -20% Y5V	SMD Capacitor size 0603
C12	15p	+/- 5% NPO	SMD Capacitor size 0603
C13	0.5P	+/- 0.1p NPO	SMD Capacitor size 0603
C14	12P	+/- 5% NPO	SMD Capacitor size 0603
C15	0.01u	+/- 10% X7R	SMD Capacitor size 0603
C16	OPEN		
C17	OPEN		
C18	33P	+/- 5% NPO	SMD Capacitor size 0603

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:462~470MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C19	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C20	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C21	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C22	82P	+/- 5% NPO		SMD Capacitor size 0603
C23	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C24	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C25	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C26	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C27	2200p	+/- 10% X7R		SMD Capacitor size 0603
C28	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C29	100p	+/- 5% NPO		SMD Capacitor size 0603
C30	1500P	+/- 10% X7R		SMD Capacitor size 0603
C31	0.1uF	+80% -20% Y5V		SMD Capacitor size 0603
C32	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C33	33P	+/- 5% NPO		SMD Capacitor size 0603
C34	13P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	4.7P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	30p	+/- 5% NPO		SMD Capacitor size 0603
C38	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C39	1.5P	+/- 0.1p NPO		SMD Capacitor size 0603
C40	1500P	+/- 10% X7R		SMD Capacitor size 0603
C41	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C42	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C43	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C44	15p	+/- 5% NPO		SMD Capacitor size 0603
C45	OPEN			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.22U	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.01U	+80% -20% Y5V		SMD Capacitor size 0603
C51	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C52	0.1u	+80% -20% Y5V		SMD Capacitor size 0603
C53	open			
C54	1000p	+/- 10% X7R		SMD Capacitor size 0603
C55	24P	+/- 5% NPO		SMD Capacitor size 0603
C56	1000P	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.33u	+/- 10% TAN-A		TAN Capacitor size "A"

VP101-WF B.O.M.

DATE:2008/04/17

FREQ:462~470MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C59	1000P	+/- 10% X7R		SMD Capacitor size 0603
C60	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C61	1000P	+/- 10% X7R		SMD Capacitor size 0603
C62	OPEN			
C63	100P	+/- 5% NPO		SMD Capacitor size 0603
C64	12P	+/- 5% NPO		SMD Capacitor size 0603
C65	27P	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C69	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C70	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C71	OPEN			
C72	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C73	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C74	OPEN			
C75	OPEN			
C76	open			
C77	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C78	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C81	1000P	+/- 10% X7R		SMD Capacitor size 0603
C82	4.7P	+/- 0.1p NPO		SMD Capacitor size 0603
C83	10p	+/- 5% NPO		SMD Capacitor size 0603
C84	1000P	+/- 10% X7R		SMD Capacitor size 0603

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L1	22nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	22nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	3.3uH	+/- 5%	DELTA	SMD Inductor size 1008
L5	15nH	+/- 5%	DELTA	SMD Inductor size 0805
L6	3.3uH	+/- 10%		M/C Inductor size 0805
L7	8.2nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	47nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	47nH	+/- 5%	DELTA	SMD Inductor size 0805

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VP101-WF B.O.M.

DATE:2008/04/17

FREQ:462~470MHz

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R1	15K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	82	+/- 5%		SMD Resistor size 0603
R4	470R	+/- 5%		SMD Resistor size 0603
R5	56K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	220	+/- 5%		SMD Resistor size 0603
R8	470	+/- 5%		SMD Resistor size 0603
R9	3.9K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	OPEN	+/- 5%		SMD Resistor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	33K	+/- 5%		SMD Resistor size 0603
R14	47K	+/- 5%		SMD Resistor size 0603
R15	47K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	10K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	15K	+/- 5%		SMD Resistor size 0603
R21	22	+/- 5%		SMD Resistor size 0603
R22	68K	+/- 5%		SMD Resistor size 0603
R23	47K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603
R25	10K	+/- 5%		SMD Resistor size 0603
R26	10K	+/- 5%		SMD Resistor size 0603
R27	8.2K	+/- 5%		SMD Resistor size 0603
R28	39K	+/- 5%		SMD Resistor size 0603
R29	56	+/- 5%		SMD Resistor size 0603
R30	1M	+/- 5%		SMD Resistor size 0603
R31	27K	+/- 5%		SMD Resistor size 0603
R32	56K	+/- 5%		SMD Resistor size 0603
R33	56K	+/- 5%		SMD Resistor size 0603
R34	1UF	+80% -20% Y5V		SMD Capacitor size 0603
R35	22K			VR 30
R36	1K	+/- 5%		SMD Resistor size 0603
R37	33K	+/- 5%		SMD Resistor size 0603
R38	22K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	2.2M	+/- 5%		SMD Resistor size 0603

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Ref	Value	Tolerance	Manufacturer	Description
R41	680K	+/- 5%		SMD Resistor size 0603
R42	1.5K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	OPEN	+/- 5%		SMD Resistor size 0603
R45	OPEN	+/- 5%		SMD Resistor size 0603
R46	8.2K	+/- 5%		SMD Resistor size 0603
R47	220K	+/- 5%		SMD Resistor size 0603
R48	OPEN	+/- 5%		SMD Resistor size 0603
R49	390	+/- 5%		SMD Resistor size 0603
R50	220	+/- 5%		SMD Resistor size 0603
R51	22	+/- 5%		SMD Resistor size 0603
R52	33K	+/- 5%		SMD Resistor size 0603
R53	33K	+/- 5%		SMD Resistor size 0603
R54	33K	+/- 5%		SMD Resistor size 0603
R55	1K	+/- 5%		SMD Resistor size 0603
R56	120R	+/- 5%		SMD Resistor size 0603
R57	OPEN			
R58	68K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22	+/- 5%		SMD Resistor size 0603
R61	OPEN			
R62	33K	+/- 5%		SMD Resistor size 0603
R63	220R	+/- 5%		SMD Resistor size 0603
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	220	+/- 5%		SMD Resistor size 0603
R67	OPEN			
R69	0R	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	3~10p	光茂	SMD Trimmer Capacitor
TC2	3~10p	光茂	SMD Trimmer Capacitor
TC3	4~20p	光茂	SMD Trimmer Capacitor

濾波器

FIL1	TA466E1		
FIL2	OPEN		
FIL3	CFWM455		Ceramic filter
FIL4	21.4MHz		XTAL-FIL-F-UM_5

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Ref	Value	Tolerance	Manufacturer	Description
石英晶體				
X1	20.945M	+/- 15ppm		X'TAL Size 3*9
X2	12.8MHz	+/- 3ppm		X'TAL Size UM5
ANT1	VP101 LOOP ANTENNA(671-00016-G)			Small loop antenna
PCB	VPWFUHR1.7			Printed circuit board
J1	AMP FEMALE/14PINS			SMD Connector
S1	GP-300 銅隔離罩			

VCO: 466MHz : 1.5V

