

金阿波羅股份有限公司

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GOLD APOLLO

Service Manual

MODEL: VP-200Pro

FREQUENCY: 33-512 Mhz

RF_PCB VERSION: VP2WVHFR01

RF_PCB VERSION: VP2WVUHFR05

DIGIT_PCB VERSION: VP200NB_A V1.0

DIGIT_PCB VERSION: VP200NB_B V1.0

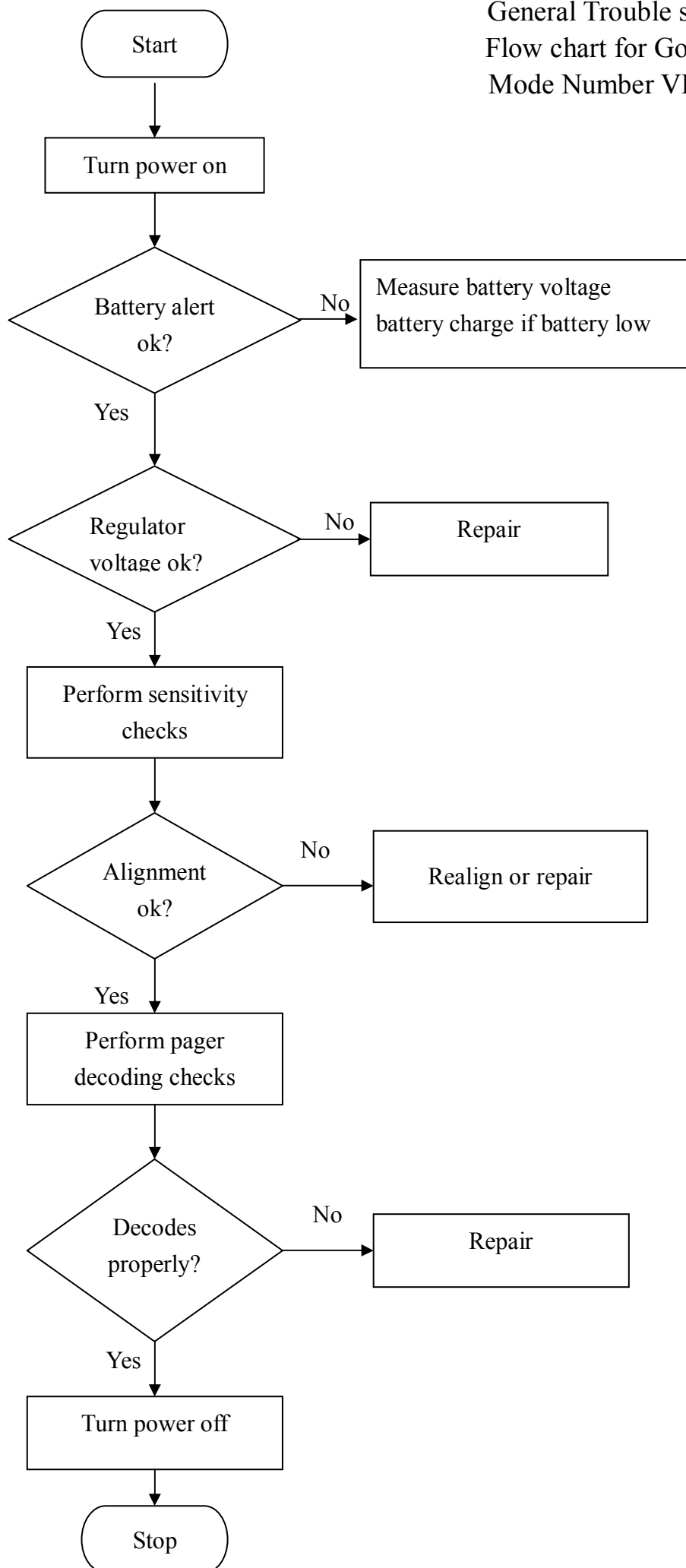
DIGIT_PCB VERSION: VP200_C V1.1

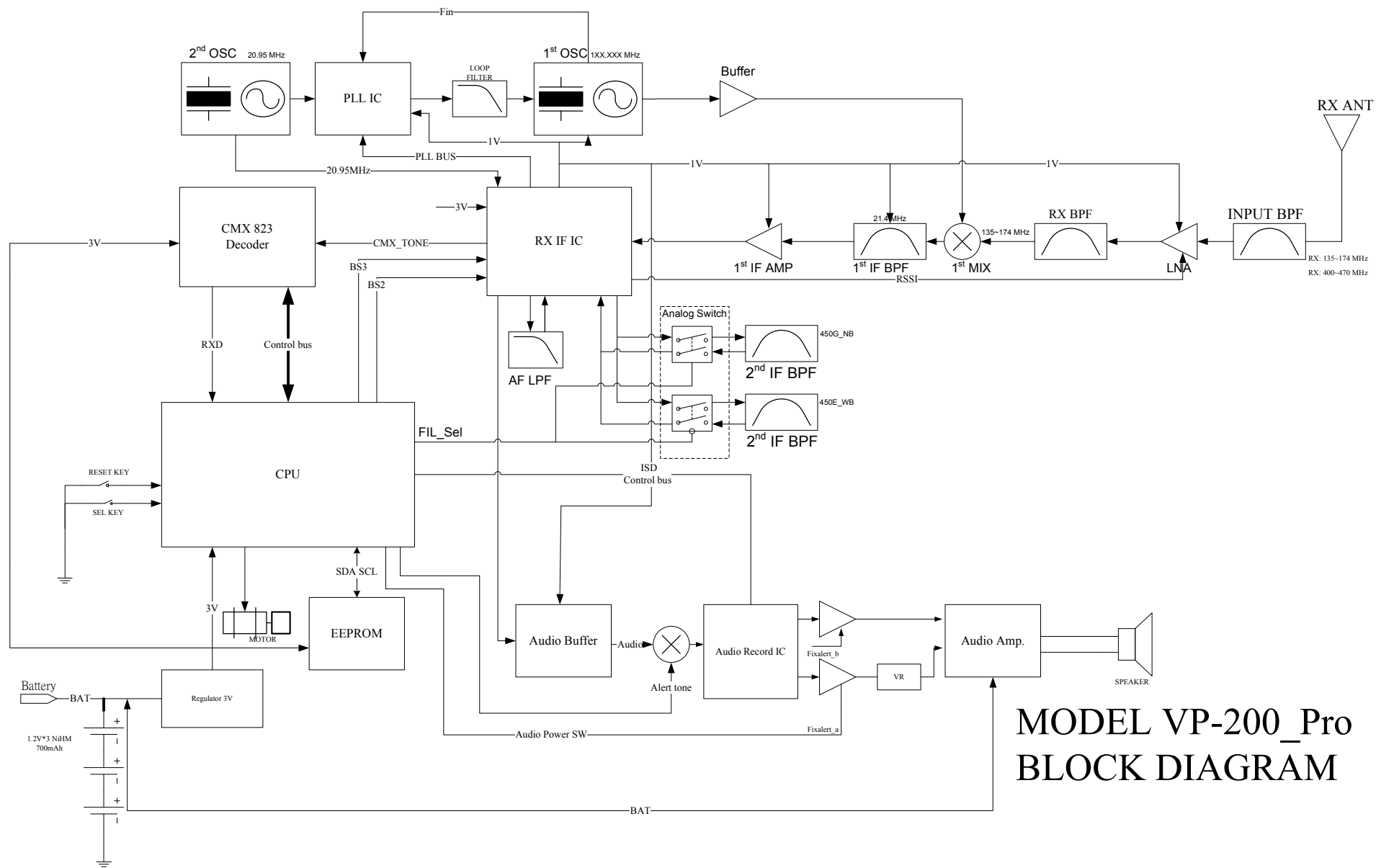
DIGIT_PCB VERSION: VP200_D V1.1

DIGIT_PCB VERSION: VP200_E V1.1

APPROVED DATE : 03/17/2011

General Trouble shooting
Flow chart for Gold Apollo Voice Pager
Mode Number VP200Pro





**MODEL VP-200_Pro
BLOCK DIAGRAM**

DIGITAL A BOARD B.O.M.

Voice Pager ~VP200NB two tone voice pager all in one B.O.M

ECN-0908-001

VP200NB_A Digit PCB BOM V1.3

DATE: Aug.,3,2009

ITEM	DISCRPTION	Q'TY	REFERENCE NUMBER	Tolerance/Rating	Manufacture or UL File No.
1	IC,TPA751DGN (MSOP)	PCS	1 U3		TI
2	IC,BR24L08F-WE2 1.8V (SOP-8)	PCS	1 U5	1.8V	ROHM
3	IC,Decoder CMX823E4(TSSOP-16)	PCS	1 U8		CML
4	IC,M38C29FFAHP#U0 (Flash)(64P6Q-A)	PCS	1 U7		RENESAS
5	IC,74HC4066DT(SO14)	PCS	1 U2		PHILIPS
6	IC,Detector RN5VD25AA-TR-F(SOT-23-5)	PCS	1 U6	2.5V	RICOH
7	IC,XC6204B302MRN(SOT-25)	PCS	1 U4	3V	TOREX
8	T/R,DTC114YUA(SC-70)	PCS	1 Q1		ROHM
9	T/R,2SA1362-GR(SC-59)	PCS	1 Q4		TOSHIBA
10	T/R,BC847BW(SC-70)	PCS	2 Q2,Q5		PHILIPS
11	Switching Diode DA204U(SC-70)	PCS	6 D2,D3,D5~D8		ROHM
12	C/R, 0 (0603)	PCS	3 R8,R11,R34	+/-5% 1/10W	PHYCOMP
13	C/R, 0 (0805)	PCS	1 R5	+/-5% 1/8W	PHYCOMP
14	C/R, 1 (0603)	PCS	1 R1	+/-5% 1/10W	PHYCOMP
15	C/R,10 (0603)	PCS	2 R18,R37	+/-5% 1/10W	PHYCOMP
16	C/R, 10K (0603)	PCS	6 R10,R15,R30,R35,R48,R68	+/-5% 1/10W	PHYCOMP
17	C/R, 100K (0603)	PCS	8 R3,R4,R38~R40,R43,R44,R66	+/-5% 1/10W	PHYCOMP
18	C/R, 330K (0603)	PCS	1 R21	+/-5% 1/10W	PHYCOMP
19	C/R, 10M (0603)	PCS	1 R19	+/-5% 1/10W	PHYCOMP
20	C/R, 1M (0603)	PCS	1 R17	+/-5% 1/10W	PHYCOMP
21	C/R, 150 (0603)	PCS	1 R25	+/-5% 1/10W	PHYCOMP
22	C/R, 150K (0603)	PCS	2 R20,R41	+/-5% 1/10W	PHYCOMP
23	C/R, 2.2K (0603)	PCS	3 C38,R50,R29	+/-5% 1/10W	PHYCOMP
24	C/R, 22K (0603)	PCS	1 R24	+/-5% 1/10W	PHYCOMP
25	C/R, 270K (0603)	PCS	1 R22	+/-5% 1/10W	PHYCOMP
26	C/R, 39K (0603)	PCS	1 R2	+/-5% 1/10W	PHYCOMP
27	C/R, 4.7K (0603)	PCS	2 R12,R31	+/-5% 1/10W	PHYCOMP
28	C/R, 51K (0603)	PCS	1 R23	+/-5% 1/10W	PHYCOMP
29	C/R, 75K (0603)	PCS	1 R9	+/-5% 1/10W	PHYCOMP
30	C/R, 8.2K (0603)	PCS	1 R28	+/-5% 1/10W	PHYCOMP
31	C/C, 0.1u (0603)	PCS	16 C3,C6~C8,C10,C21~C25,C27,C32,C34,C35,C42,C48	+80/-20	MURATA
32	C/C, 1u/10V (0603)	PCS	2 C33,C36	+80/-20	MURATA
33	C/C, 1u/16V (0805)	PCS	1 C28	+80/-20	MURATA
34	C/C, 20P/50V (0603)	PCS	2 C11,C12	+/-5%	MURATA
35	C/C, 22P/50V (0603)	PCS	3 C15,C16,C17	+/-5%	MURATA
37	C/C, 0.22u/16V (0603)	PCS	1 C1	+/-5%	MURATA
38	C/C, 0.33u/16V (0603)	PCS	1 C19	+80/-20	MURATA
39	C/C, 5.6p/50V (0603)	PCS	1 C5	+/-0.25pF	MURATA
40	C/C, 0.01u/50V (0603)	PCS	1 C18	+/-10%	MURATA
41	C/C, 100P (0603)	PCS	4 C54,C55,C56,C57	+/-5%	MURATA
42	C/C, 470P (0603)	PCS	2 C26,C30	+/-5%	MURATA
43	T/C, 100U/6V (B)	PCS	2 C4,C39	+/-20%	ELNA
44	T/C, 47U/10V (B)	PCS	1 C37	+/-20%	ELNA
45	BLM18AG102SN1D,BEAD 1000ohm	PCS	11 L1~L6,L14,L15,L17,L18,R13	+/-25%	MURATA
46	BLA31AG102SN4D,BEAD 1000ohm	PCS	7 L19~L25		MURATA
47	Resonator CSTCR4M00G53-B0,4MHz	PCS	1 Y2	+/-0.5%	MURATA
48	Connector, 3-174821-6(公)1.25mm	PCS	1 J1		TYCO
49	Connector, 4-174821-4(公)1.25mm	PCS	1 J4		TYCO
50	Connector, 2*7 14PIN(Male)PH P1.27	PCS	2 J21,J22		E90350
51	Motor CONNECTOR VP-200,2011-0030000	PCS	1 M1		T.A & M. I
52	PCB VP200NB_A V1.0,1.0mm	PCS	1 PCB		E225413
53	Crystal,3.579545Mhz ,3*9mm,20pf	PCS	1 Y3		Yat - Sen
54	Crystal,76.8Khz ,2*6mm,CL:12.5pf	PCS	1 Y1		EPSON
55	TACT SW,SKHHLPA010	PCS	2 S2,S3		ALPS
56	P/JACK,JY-2522-hl-355	PCS	1 J3		E130155
57	VP200 speaker&connector socket,51021-0200	PCS	1 SP1		FST
58	VP200soft line,10PIN length 30mm	PCS	1 J2		
59	VP200_white switch brace,PC 8.2*7.0*10mm	PCS	2		
60	separate cover(1),VP-500, tinplate 27.7*25.2*t3.1mm	PCS	1 S1		
61	separate cover(2),VP-500, tinplate 28.2*25.7*t2.7mm	PCS	1 S1 behind stratum		
*Note : One CHANNEL:resistance to put R14 a place,Two CHANNEL : resistance to put R30 a place					

/15	TITLE:			
	VP200Pro-A SCH			
	CODE:	SIZE:	DRAWING NO:	REV:
		A1	VP200Pro-DC100-000000-110	V1.







DIGITAL B BOARD B.O.M.

Voice Pager ~VP200NB two tone voice pager all in one B.O.M

ENC-0812-009

VP200NB_B Digit PCB BOM V1.1

DATE: Dec.,16,2008

ITEM	DISCRIPTION		Q'TY	REFERENCE NUMBER	Manufacture or UL File No.	Tolerance/Rating
1	IC,ISD5116EY (TSOP)	PCS	1	U3	Winbond	
2	IC,Regulator XC6201P302PRN(SOT-89)	PCS	1	U2	TOREX	3V
3	C/M.L 10uH (CL160808-100K-NP)	PCS	9	L1,R7,R8,R37,R55,R74,R75, L11,R9	FIC	+/-10%
4	C/IND-Laser Cut 100nH SPI(0603)	PCS	5	L2,L3,L4,L5,L6	SPI	+/-5%
5	C/R, 0R (0603)	PCS	1	R63	PHYCOMP	+/-5% 1/10W
6	C/R, 10K (0603)	PCS	4	R58,R59,R60,R61	PHYCOMP	+/-5% 1/10W
7	C/R, 1M (0603)	PCS	4	R16,R43,R45,R57	PHYCOMP	+/-5% 1/10W
8	C/R,56 (0603)	PCS	1	R39	PHYCOMP	+/-5% 1/10W
9	C/R, 4.7 (0603)	PCS	2	R3,R4	PHYCOMP	+/-5% 1/10W
10	C/R, 0R (0805)	PCS	1	R1	PHYCOMP	+/-5% 1/8W
11	C/R, 0.27 (0805)	PCS	1	R30	PHYCOMP	+/-5% 1/8W
12	T/C, 100U/6V (B)	PCS	5	C14,C24,C26,C32,C50	ELNA	+/-20%
13	T/C, 47U/10V (B)	PCS	2	C51,C22	ELNA	+/-20%
14	T/C, 10U/10V (A)	PCS	1	C29	ELNA	+/-20%
15	C/C, 105 (0603)	PCS	1	C48	MURATA	10V,+80/-20,Y5V
16	C/C, 104 (0603)	PCS	2	C23,C30	MURATA	25V,+80/-20,Y5V
17	C/C, 102 (0603)	PCS	4	C4,C7,C25,C27	MURATA	50V,+/-10%,X7R
19	Connector, 2*7_14PIN(Male)PH P1.27	PCS	2	J19,J20	ARC	PIN 5P1.253A4-2D100.207
20	PCB VP200NB_B V1.0,1.0mm	PCS	1	PCB	E225413	
21	VR,RD097111107K-20K(2B)(GGE)	PCS	1	R2	FORWARD	20Kohm 9Φ
22	Rotary SW (SRBM140700) ALPS,10 PIN(DIP)	PCS	1	S7	ALPS	
23	VP200 probe,H289M1,7.0*φ1.5mm	PCS	3	J5,J6,J16	C.C.P Contact	
24	VP-200 B board separate cover	PCS	1		旭勝	phosphorus & copper 22.1*13.6*2.1mm

6 5 4 3 2 1

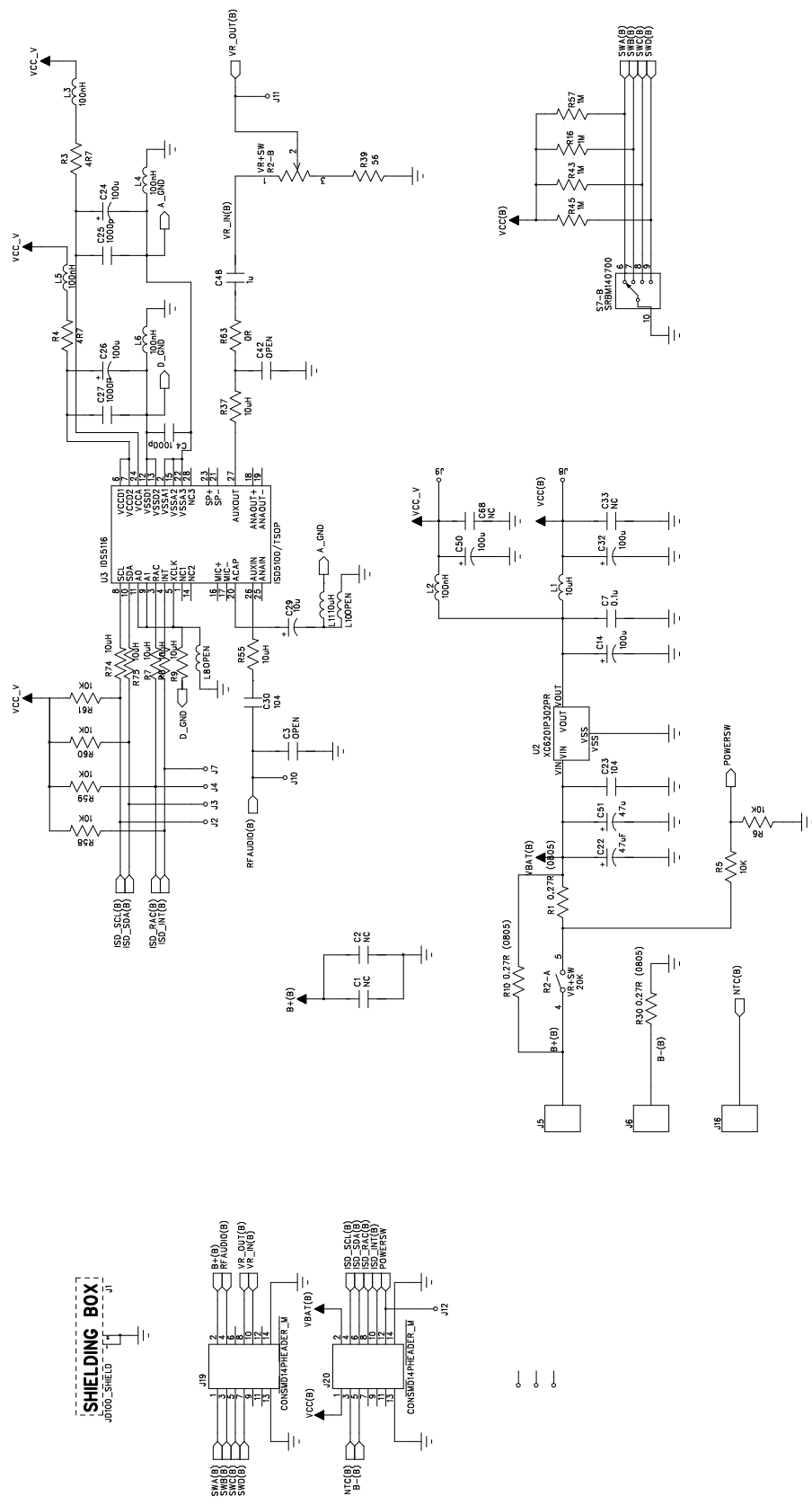
REVISION RECORD		
LTR	ECO NO:	APPROVED: DATE:

D

C

B

A



VoicePager [VP200Pro]/B,C V1.1 /08'12'16

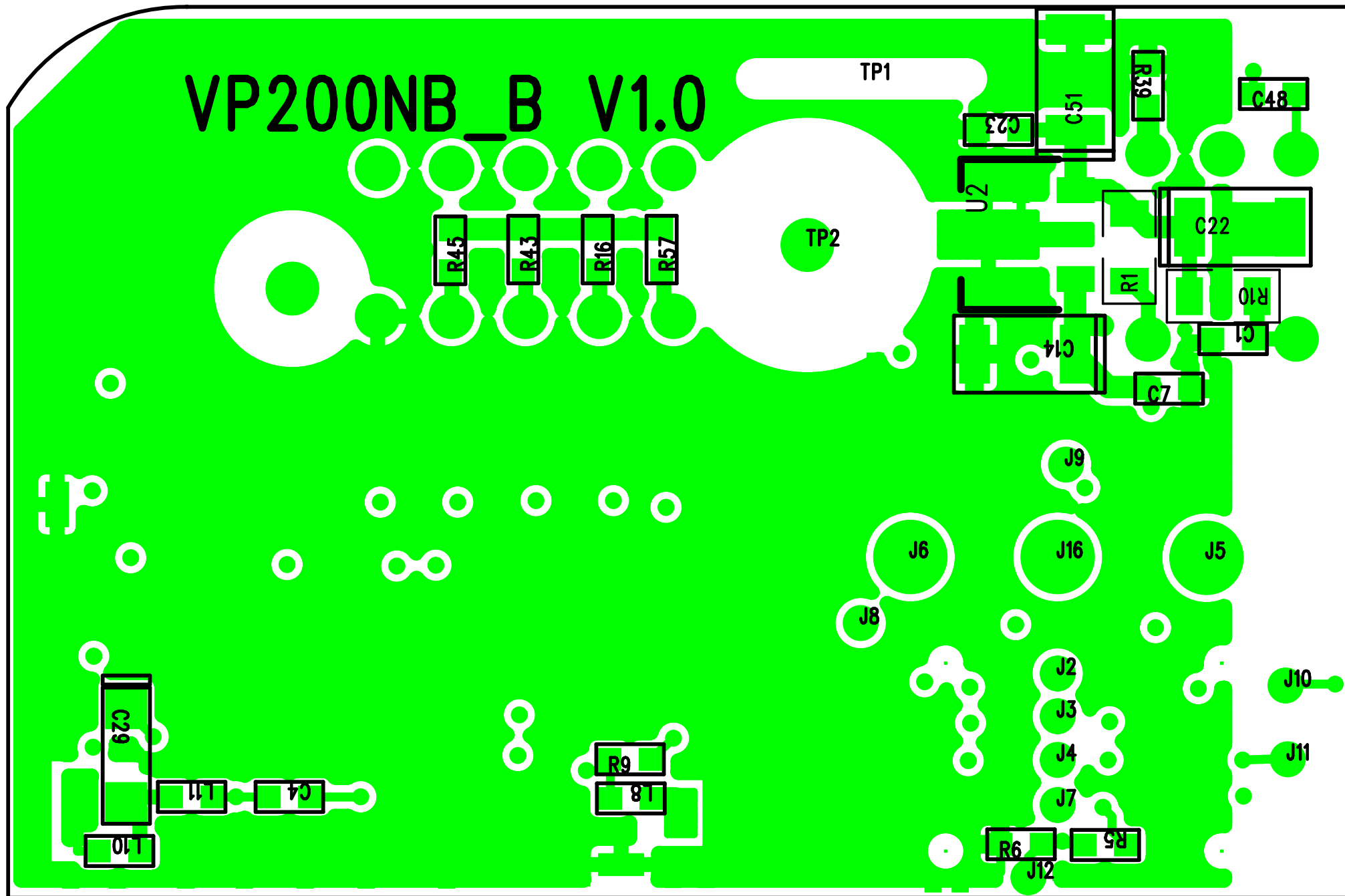
COMPANY: GOLD APOLLO

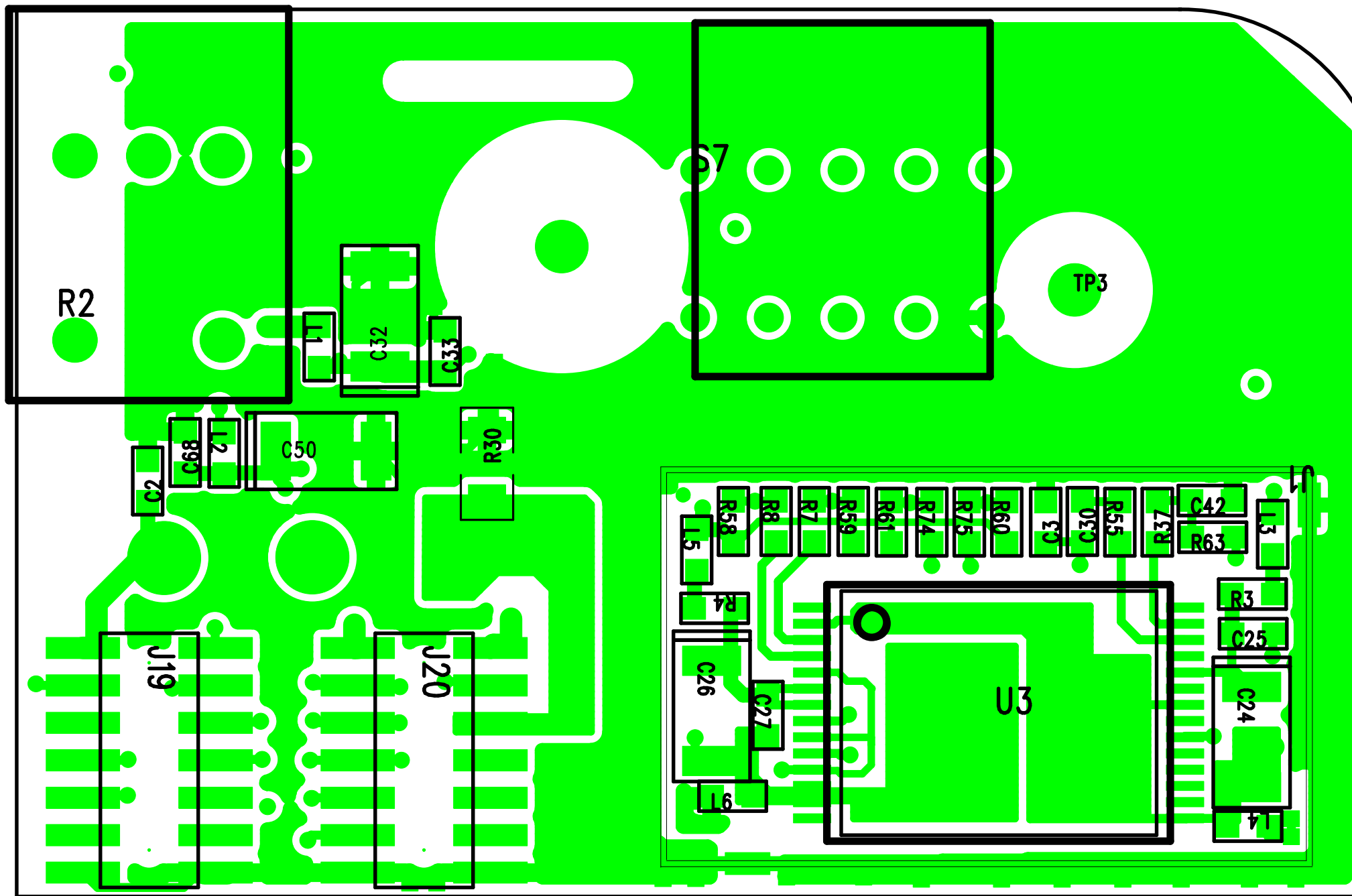
TITLE: VP200Pro-B V1.1

DRAWN: Tommy Lin	DATE: 20081216
CHECKED:	DATE:
QUALITY CONTROL:	DATE:
RELEASED:	DATE:

REV: V1.1

SHEET: 1 OF 1





DIGITAL C,D,E BOARD B.O.M.

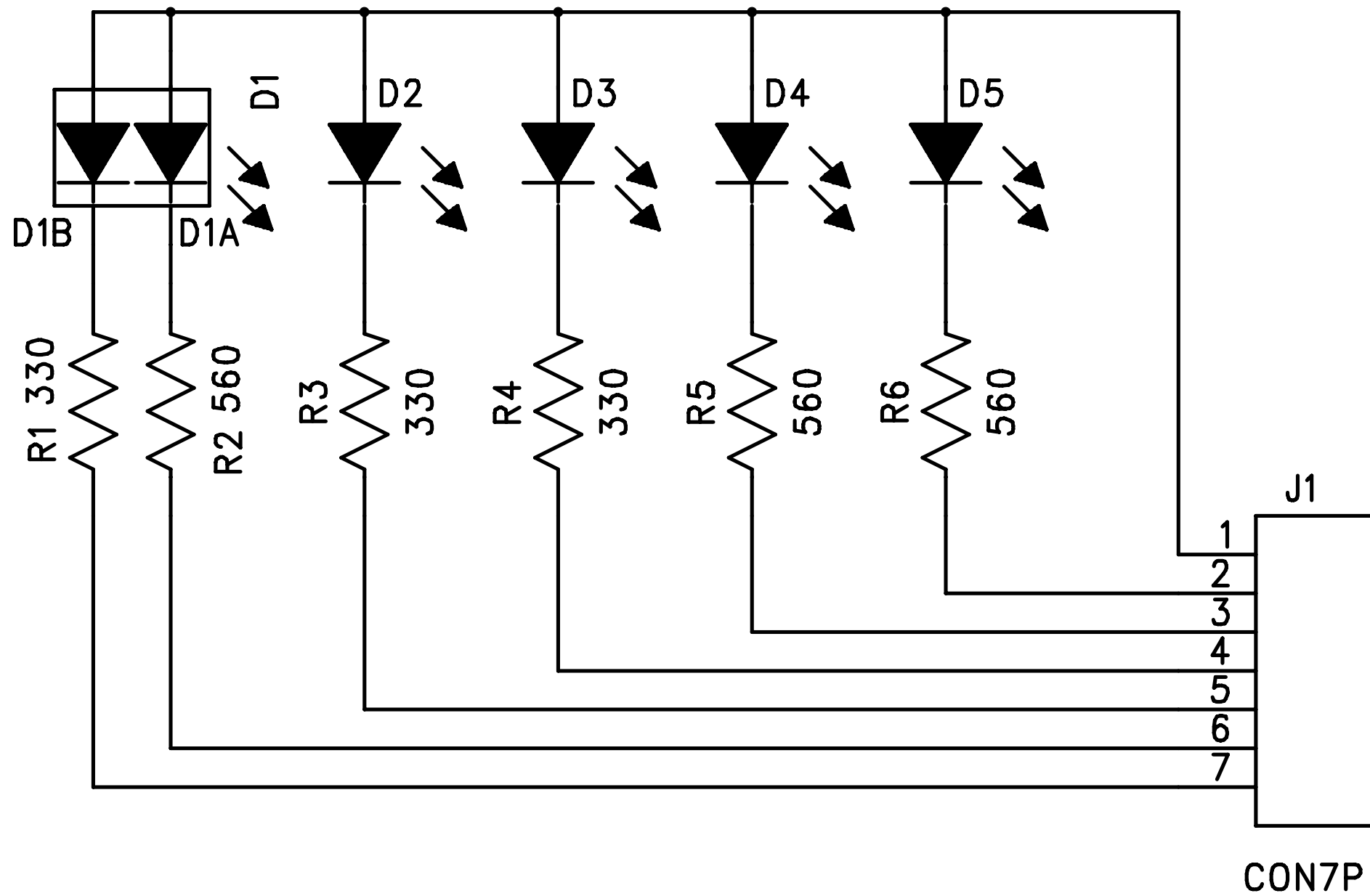
Voice Pager ~VP200Pro two tone voice pager all in one B.O.M

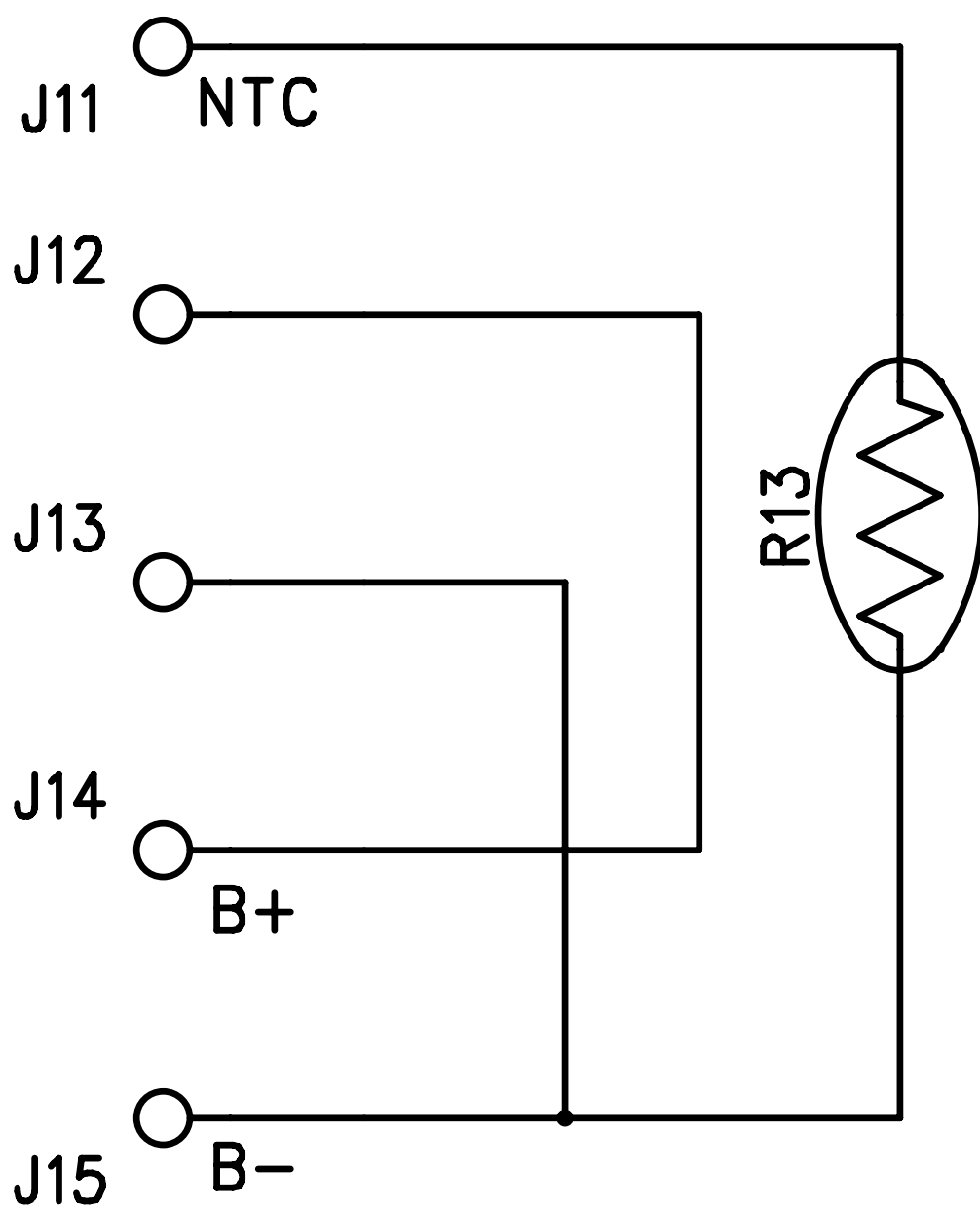
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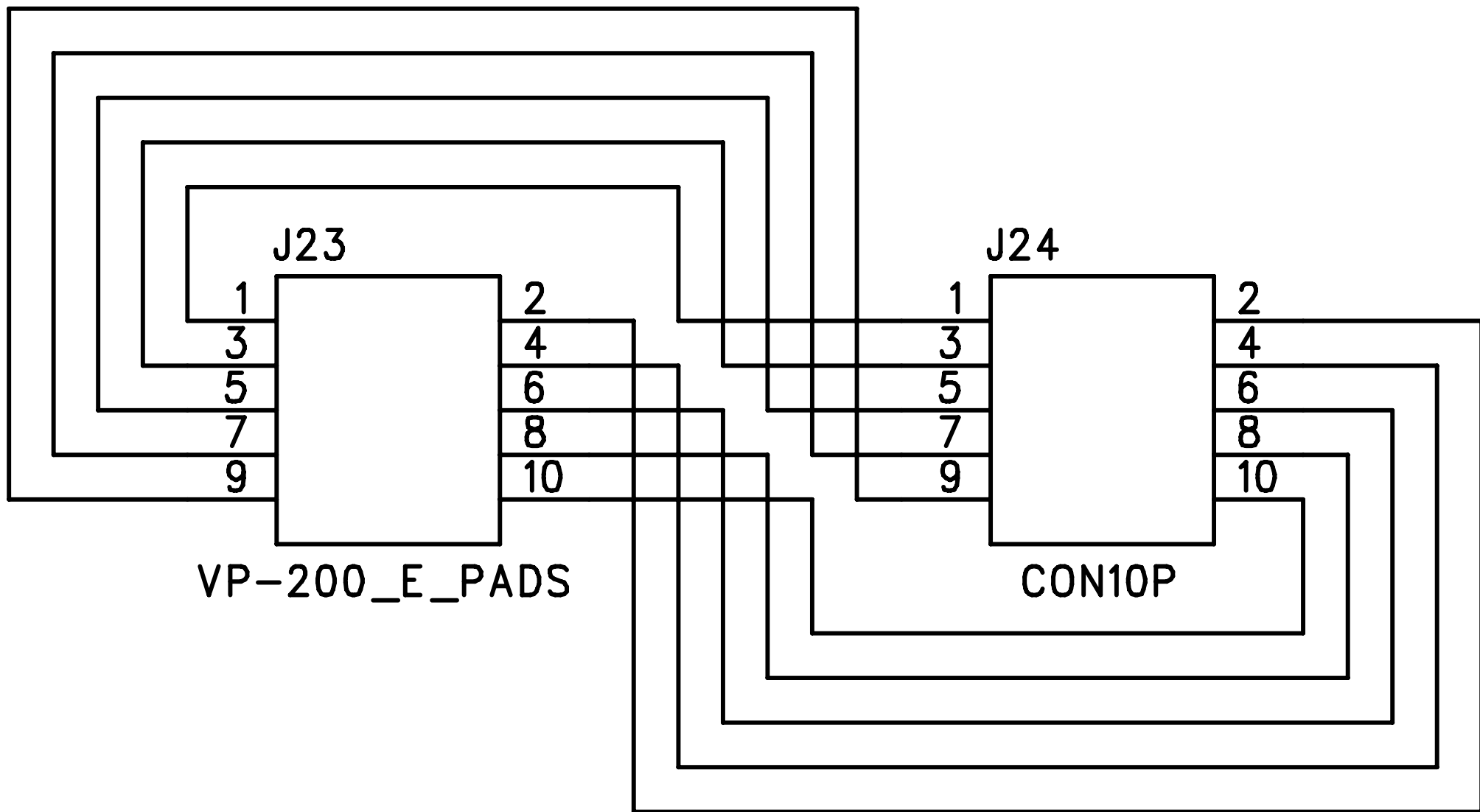
VP200_C,D,E Digit PCB BOM V1.1

DATE: Jul,30,2007

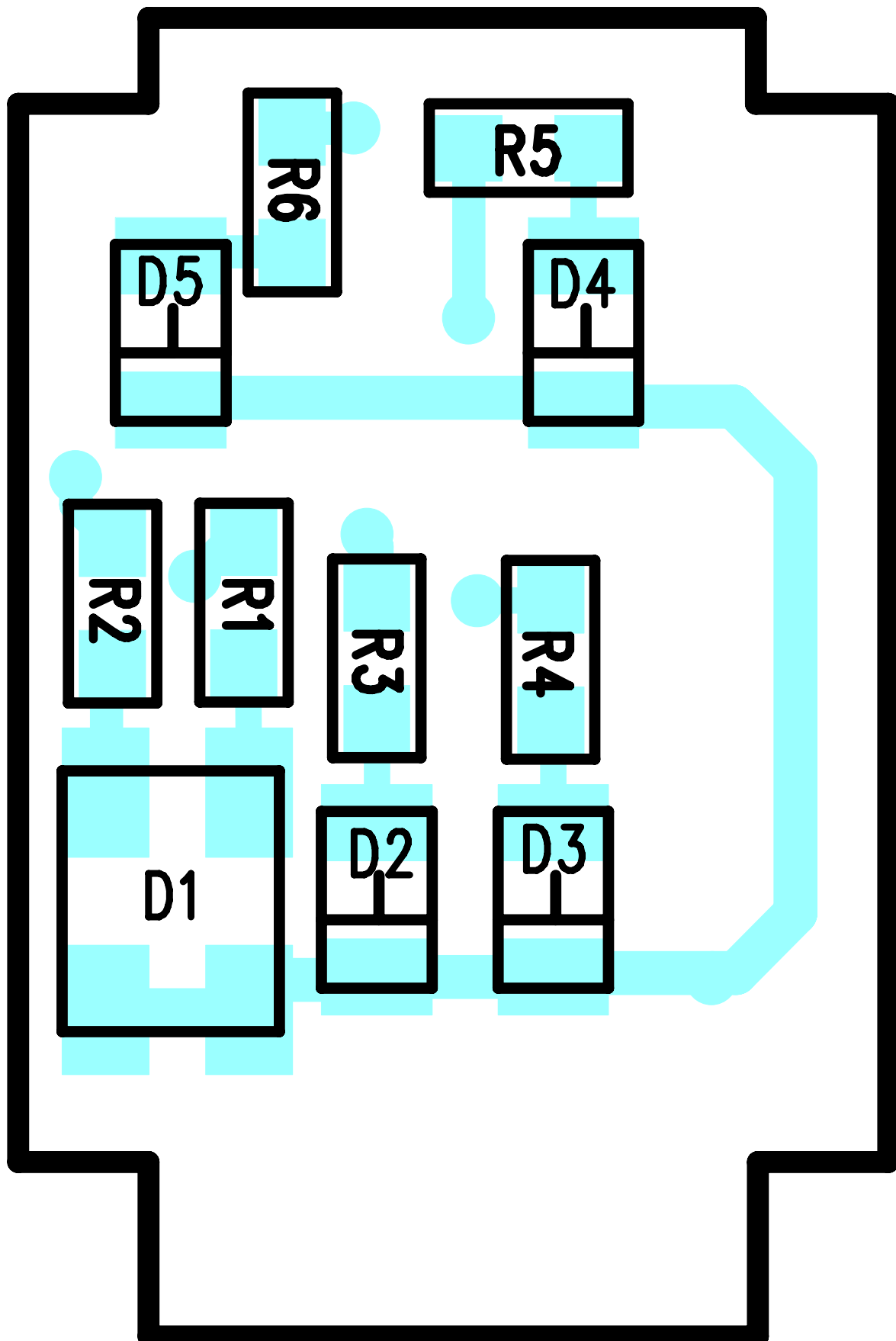
ITEM	DISCRIPTION		Q'TY	REFERENCE NUMBER	Manufacture or UL File No.	Tolerance/Rating
1	LED, LT8A13-41-UB91-T4,RED (0805)	PCS	2	D1A,D4	LEDTECH	
2	LED, LT8A23-41-UA96-T4,GREEN (0805)	PCS	3	D1B,D2,D3	LEDTECH	
3	LED, LT8A33-41-UB91-T4,YELLOW (0805)	PCS	1	D5	LEDTECH	
4	C/R, 330 (0603)	PCS	3	R1,R3,R4	PHYCOMP	+/-5% 1/10W
5	C/R, 560 (0603)	PCS	3	R2,R5,R6	PHYCOMP	+/-5% 1/10W
6	PCB-D VP200_C V1.1,板厚1.0mm	PCS	1	PCB	E225413	
7	PCB-D VP200_D V1.1,板厚1.0mm	PCS	1	PCB	E225413	
8	PCB-D VP200_E V1.1,板厚1.0mm	PCS	1	PCB	E225413	
9	NTC, TTSLA103F34DIEY (DIP)	PCS	1	R13-NTC (PCB:VP200_D V1.1)	TKS	+/-1% Φ 1.6 2.5cm



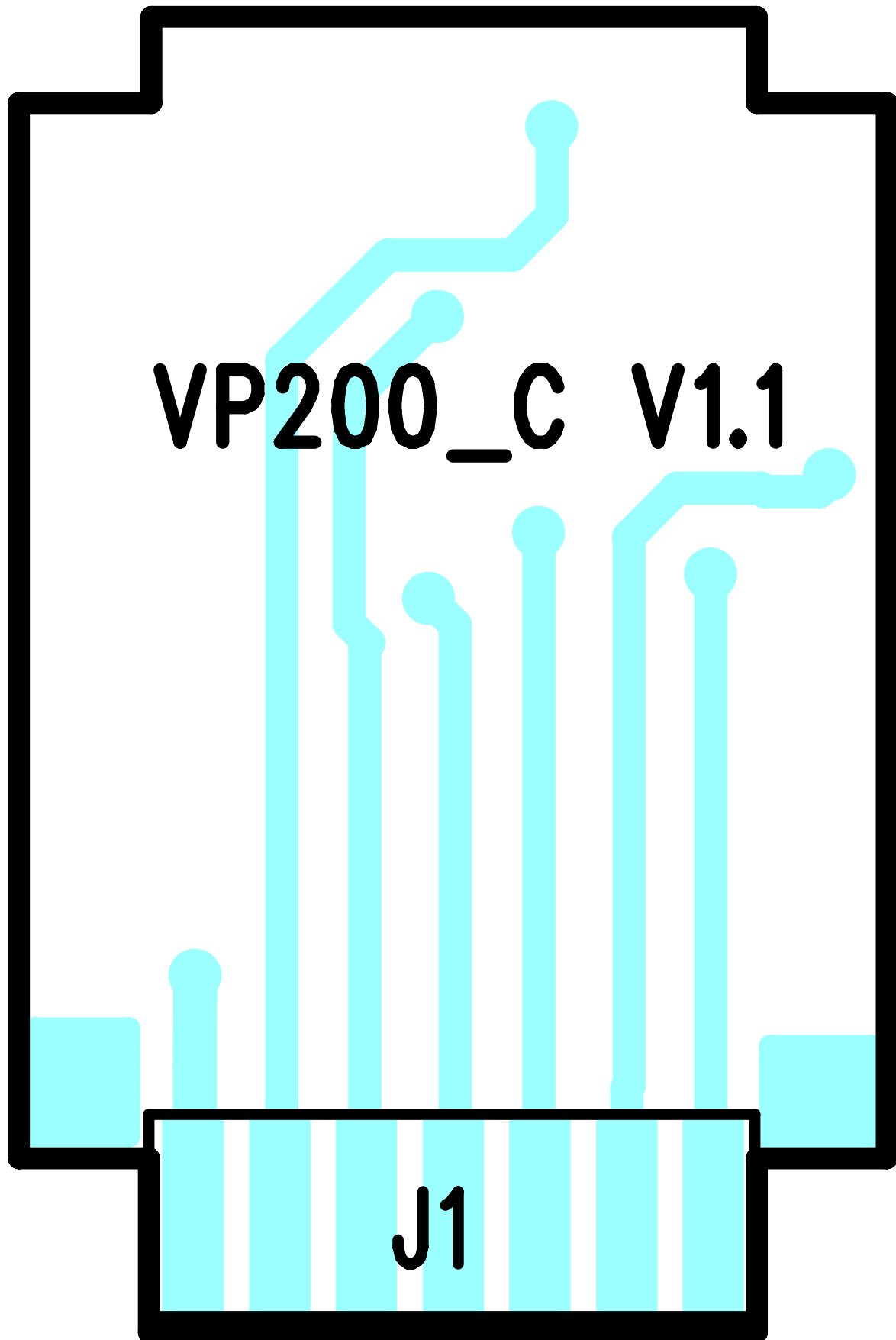




TOP COMPONENT



BOTTOM COMPONENT

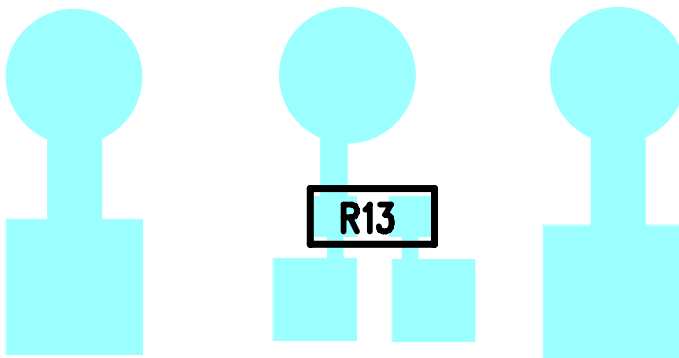


TOP COMPONENT

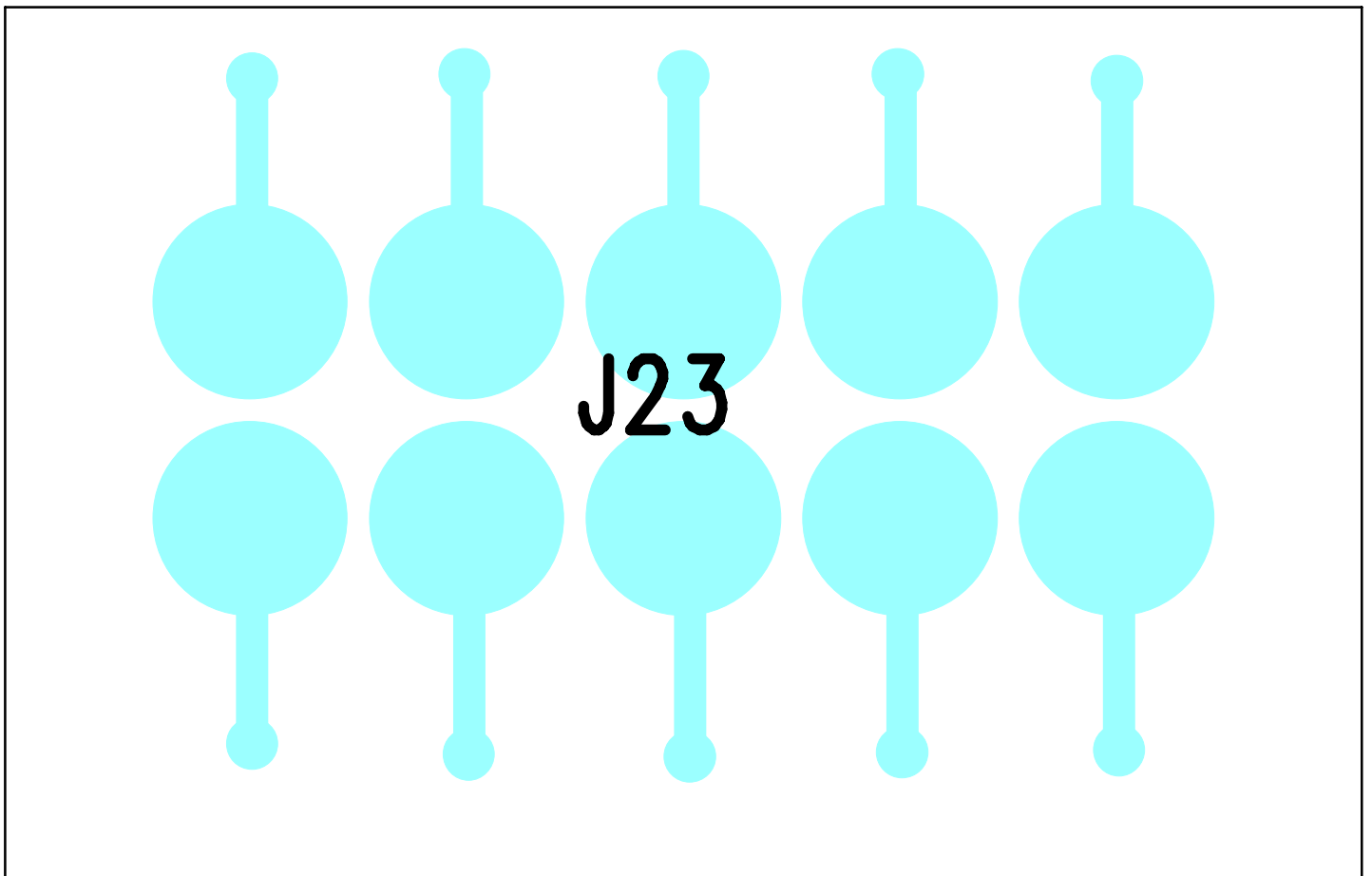


BOTTOM COMPONENT

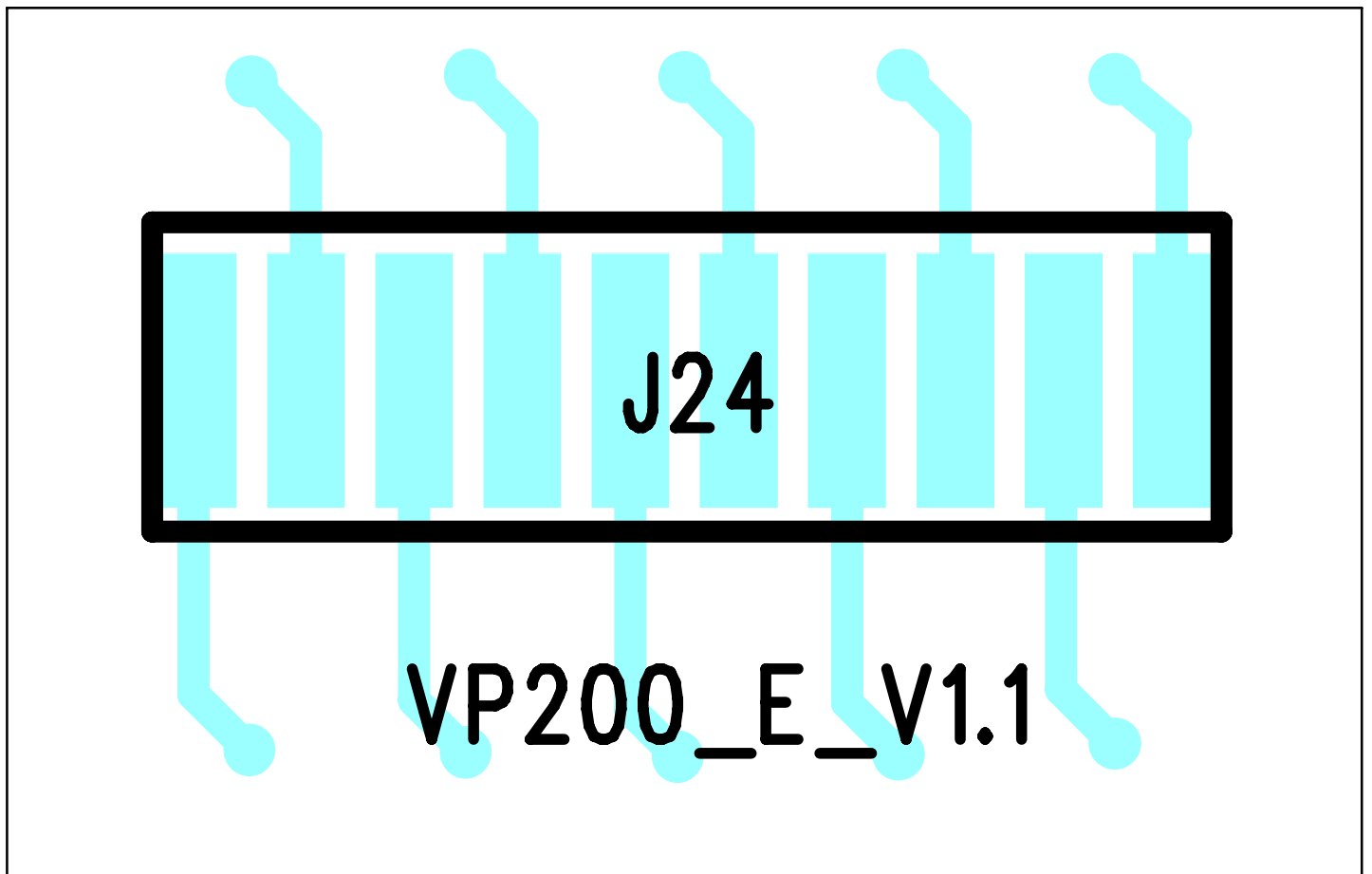
VP200_D_V1.1



TOP COMPONENT



BOTTOM COMPONENT



RF BOARD B.O.M.

033-037Mhz

&

041-046Mhz

VP-200Pro Alignment Procedure

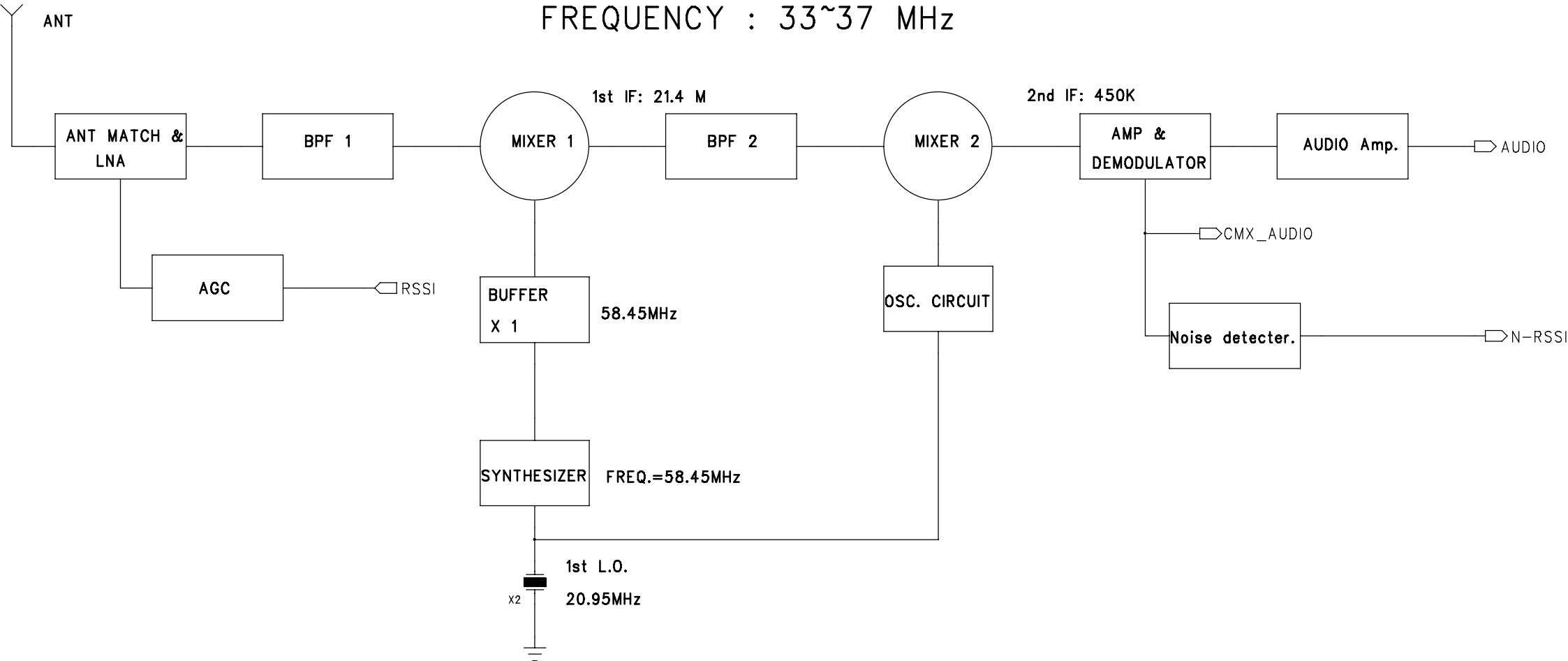
For synthesizer RF board (33~37MHz)

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 (37.05MHz=2.6V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K+/-50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY : 33~37 MHz



NOTE : TESTING FREQ : 37.05 MHz

MODEL : VP200Pro

DATE : 2011年01月14日

FREQ : 33 ~37 MHz

VER : 1.11

ECN NO : ECN-1101-016

Ref	VALUE	Description	TOL	TYPE	Manufacturer
ANT1	671-00014-G	VP200 loop antenna big			DELTA
ANT2		VP200 loop antenna small			
C1	12p	CAP0603	5.00%	NPO	
C2	0R	RES0603	5.00%		
C3	47p	CAP0603	5.00%	NPO	
C4	100p	CAP0603	5.00%	NPO	
C5	27p	CAP0603	5.00%	NPO	
C6	1000p	CAP0603	10.00%	X7R	
C7	OPEN	IND0805	5.00%		
C8	47p	CAP0603	5.00%	NPO	
C9	0.1u	CAP0603	10.00%	X7R	
C10	20p	CAP0603	5.00%	NPO	
C11	0.1u	CAP0603	10.00%	X7R	
C12	1000p	CAP0603	10.00%	X7R	
C13	1.5p	CAP0603	0.1p	NPO	
C14	12p	CAP0603	5.00%	NPO	
C15	0.01u	CAP0603	10.00%	X7R	
C16	10u	TAN-A	20.00%		
C17	47p	CAP0603	5.00%	NPO	
C18	OPEN				
C19	0.1u	CAP0603	10.00%	X7R	
C20	10u	TAN-A	20.00%		
C21	0.1u	CAP0603	10.00%	X7R	
C22	3.3p	CAP0603	0.25p	NPO	
C23	10u	TAN-A	20.00%		
C24	2.2u	CAP0805	+80-20%	Y5V	
C25	0.1u	CAP0603	10.00%	X7R	
C26	3900p	CAP0603	10.00%	X7R	
C27	560p	CAP0603		NPO	
C28	1000p	CAP0603	10.00%	X7R	
C29	2.2u	CAP0805	+80-20%	Y5V	
C30	0.1u	CAP0603	10.00%	X7R	
C31	OPEN				
C32	560p	CAP0603		NPO	
C33	220p	CAP0603	5.00%	NPO	
C34	56p	CAP0603	5.00%	NPO	
C35	1000p	CAP0603	10.00%	X7R	
C36	39p	CAP0603	5.00%	NPO	
C37	82p	CAP0603	5.00%	NPO	
C38	0.1u	CAP0603	10.00%	X7R	
C39	1000p	CAP0603	10.00%	X7R	
C40	OPEN	CAP0603			
C41	220p	CAP0603	5.00%	NPO	
C42	220p	CAP0603	5.00%	NPO	
C43	3300p	CAP0603	+80-20%	Y5V	
C44	0.1u	CAP0603	10.00%	X7R	
C45	OPEN				
C47	24p	CAP0603	5.00%	NPO	
C48	0.047u	CAP0603	10.00%	X7R	
C49	OPEN				
C50	0.1u	CAP0603	10.00%	X7R	
C51	OPEN				
C52	1000p	CAP0603	10.00%	X7R	
C53	OPEN	CAP0603			
C54	OPEN				
C55	18p	CAP0603	5.00%	NPO	

MODEL : VP200Pro

DATE : 2011年01月14日

FREQ : 33 ~37 MHz

VER : 1.11

ECN NO : ECN-1101-016

Ref	VALUE	Description	TOL	TYPE	Manufacturer
C56	*				
C57	0.1u	TAN-A	20.00%		
C58	0.1u	TAN-A	20.00%		
C59	1000p	CAP0603	10.00%	X7R	
C60	1.5p	CAP0603	0.1p	NPO	
C61	1000p	CAP0603	10.00%	X7R	
C62	20p	CAP0603	5.00%	NPO	
C63	OPEN				
C64	13p	CAP0603	5.00%	NPO	
C65	OPEN	CAP0603			
C66	1000p	CAP0603	10.00%	X7R	
C67	OPEN				
C68	2.2u	CAP0805	+80-20%	Y5V	
C69	OPEN				
C70	0.1u	CAP0603	10.00%	X7R	
C71	OPEN				
C72	0.1u	CAP0603	10.00%	X7R	
C73	2.2u	CAP0805	+80-20%	Y5V	
C74	470p	CAP0603	5.00%	NPO	
C75	OPEN	CAP0603			
C76	1p	CAP0603	0.1p	NPO	
C77	OPEN	RES0603			
C78	0.1u	CAP0603	10.00%	X7R	
C79	0.1u	CAP0603	10.00%	X7R	
C80	2.2u	CAP0805	+80-20%	Y5V	
C81	470p	CAP0603	5.00%	NPO	
C82	39p	CAP0603	5.00%	NPO	
C83	1000p	CAP0603	10.00%	X7R	
C84	220p	CAP0603	5.00%	NPO	
C85	220p	CAP0603	5.00%	NPO	
C86	47p	CAP0603	5.00%	NPO	
C87	*				
C88	1000p	CAP0603	10.00%	X7R	
C89	6.8p	CAP0603	0.25p	NPO	
C90	1000p	CAP0603	10.00%	X7R	
D1	RL4148	Switch Diode			
D2	BB202	variable capacitance diode		L2	PHILIPS
D3	BB202	variable capacitance diode		L2	PHILIPS
D4	RB706F-40	Schottky barrier diode		3J	ROHM
D5	BB202	variable capacitance diode		L2	PHILIPS
D6	BB202	variable capacitance diode		L2	PHILIPS
D7	OPEN	variable capacitance diode		L2	PHILIPS
D8	BB202	variable capacitance diode		L2	PHILIPS
FIL2	21.4MHz(21T15A)	Crystal Filter		UM-5	
FIL3	CFWM450E	Ceramic Filter			
FIL5	OPEN				
J1	4-174639-4	AMP FEMALE/14PINS			
J2	3-174639-6	AMP FEMALE/6PINS			
L1	820nH	IND0805	5.00%		DELTA
L2	1200nH	IND0805	5.00%		DELTA
L3	3.3uH	IND0805	10.00%	ML	SWI
L4	10uH	IND0603	10.00%	ML	FIC
L5	82nH	IND0805	5.00%	0805CS-820EJTS	DELTA
L6	10uH	IND0603	10.00%	ML	FIC
L7	470nH	IND0805	5.00%		DELTA

MODEL : VP200Pro

DATE : 2011年01月14日

FREQ : 33 ~37 MHz

VER : 1.11

ECN NO : ECN-1101-016

Ref	VALUE	Description	TOL	TYPE	Manufacturer
L8	220nH	IND0805	5.00%		DELTA
L9	OPEN	IND0805	5.00%		DELTA
L10	1000p	CAP0603	10.00%	X7R	
L11	1uH	IND0603	10.00%	ML	FIC
L12	220nH	IND0805	5.00%		DELTA
L13	3.3uH	IND0805	5.00%		DELTA
L14	OPEN	IND0805	5.00%		DELTA
PCB1	VP2WVHFR01	Printing Circuit Board			采鑫
Q1	2SC4226	RF Transistor		R25	NEC
Q2	2SC4226	RF Transistor		R25	NEC
Q3	2SC3356	RF Transistor		R25	NEC
Q4	DTA114YUA	PNP 開關電晶體			54 ROHM
Q5	DTC114YUA	NPN 開關電晶體			64 ROHM
Q6	OPEN	RF Transistor			TOSHIBA
Q7	2SC4226	RF Transistor		R25	NEC
Q8	BC857BW	PNP AF TRANSISTOR		3F	PHILIPS
Q9	*	RF Transistor			
Q10	2SC4226	RF Transistor		R25	NEC
Q11	2SC4226	RF Transistor		R25	NEC
Q12	2SA1162GR	AF Transistor		SG	TOSHIBA
Q13	2SC4226	RF Transistor		R25	NEC
Q14	*	RF Transistor			
Q15	OPEN	NPN 開關電晶體			64 ROHM
R1	470k	RES0603	5.00%		
R2	1.5k	RES0603	5.00%		
R3	470R	RES0603	5.00%		
R4	2.2k	RES0603	5.00%		
R5	560k	RES0603	5.00%		
R6	2.2k	RES0603	5.00%		
R7	560R	RES0603	5.00%		
R8	680R	RES0603	5.00%		
R9	3.9k	RES0603	5.00%		
R10	0R	RES0603	5.00%		
R11	10p	CAP0603	5.00%	NPO	
R12	3.9k	RES0603	5.00%		
R13	OPEN	RES0603	5.00%		
R14	22k	RES0603	5.00%		
R15	10k	RES0603	5.00%		
R16	33k	RES0603	5.00%		
R17	OPEN	RES0603	5.00%		
R18	OPEN	RES0603	5.00%		
R19	OPEN	RES0603	5.00%		
R20	100k	RES0603	5.00%		
R21	220R	RES0603	5.00%		
R22	470k	RES0603	5.00%		
R23	470k	RES0603	5.00%		
R24	33k	RES0603	5.00%		
R25	33k	RES0603	5.00%		
R26	56k	RES0603	5.00%		
R27	3.3k	RES0603	5.00%		
R28	20k	SVR 3mm			
R29	22k	RES0603	5.00%		
R30	470k	RES0603	5.00%		
R31	33k	RES0603	5.00%		
R32	33k	RES0603	5.00%		

MODEL : VP200Pro

DATE : 2011年01月14日

FREQ : 33 ~37 MHz

VER : 1.11

ECN NO : ECN-1101-016

Ref	VALUE	Description	TOL	TYPE	Manufacturer
R33	4.7k	RES0603	5.00%		
R34	560k	RES0603	5.00%		
R35	1k	RES0603	5.00%		
R36	470k	RES0603	5.00%		
R37	OPEN	RES0603	5.00%		
R38	47k	RES0603	5.00%		
R39	0R	RES0603	5.00%		
R40	680k	RES0603	5.00%		
R41	1M	RES0603	5.00%		
R42	1k	RES0603	5.00%		
R43	1k	RES0603	5.00%		
R44	0R	RES0603	5.00%		
R45	OPEN	RES0603	5.00%		
R46	5.6k	RES0603	5.00%		
R47	OPEN	RES0603	5.00%		
R48	1.5k	RES0603	5.00%		
R49	2.2k	RES0603	5.00%		
R50	2.2k	RES0603	5.00%		
R51	22R	RES0603	5.00%		
R52	33k	RES0603	5.00%		
R53	33k	RES0603	5.00%		
R54	33k	RES0603	5.00%		
R55	1k	RES0603	5.00%		
R56	220R	RES0603	5.00%		
R57	0R	RES0603	5.00%		
R58	470k	RES0603	5.00%		
R59	47k	RES0603	5.00%		
R60	22R	RES0603	5.00%		
R61	OPEN	RES0603	5.00%		
R62	33k	RES0603	5.00%		
R63	47k	RES0603	5.00%		
R64	10k	RES0603	5.00%		
R65	22k	RES0603	5.00%		
R66	1k	RES0603	5.00%		
R67	OPEN	RES0603	5.00%		
R68	4.7k	RES0603	5.00%		
R69	33k	RES0603	5.00%		
R70	OPEN	RES0603	5.00%		
R71	OPEN	RES0603	5.00%		
R72	OPEN	RES0603	5.00%		
R73	0R	RES0603	5.00%		
S1	674-00018-G	Shielding box			
TC1	5-20p	Trimmer CAP 3mm			
TC2	5-20p	Trimmer CAP 3mm			
TC3	5-20p	Trimmer CAP 3mm			
TP1	510AT200WR0000	VP200 ANTENNA Holder			
U1	TA31145	IF IC			TOSHIBA
U2	CDBM450C40	Ceramic Discriminator			MURATA
U3	NJU7043M	OP AMP			JRC
U4	SM5170	PLL IC			NPC
U5	OPEN				
X2	20.95MHz	X'TAL SIZE UM5	10ppm	UM-5	

NOTE: VCO = 2.6V @ 37.05MHz

VP-200Pro Alignment Procedure

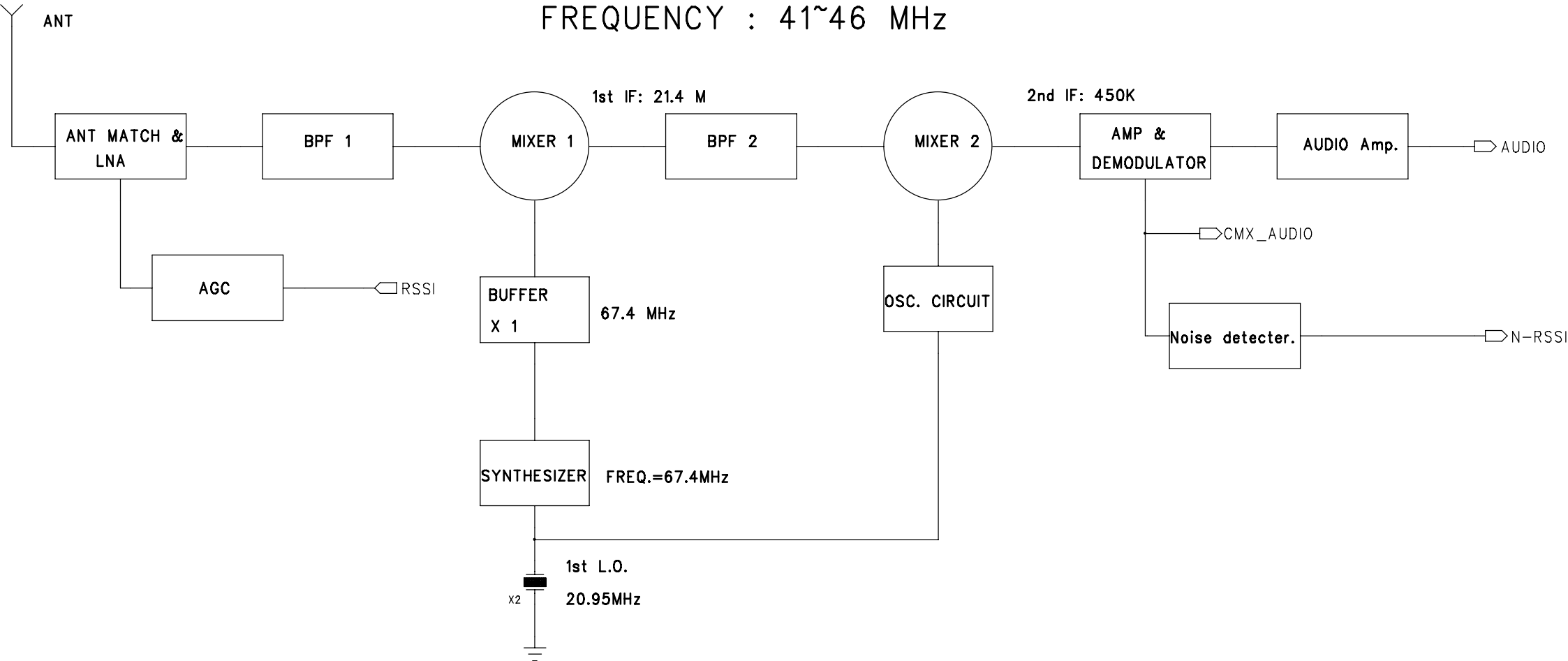
For synthesizer RF board (41~46MHz)

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 (46MHz=2.6V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K+/-50HZ.
6. Tuning TC1 to get IF (450kHz) power maximum.
7. Disconnect Vdd & RE.

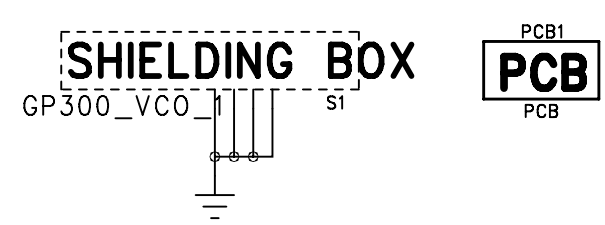
Note: After soldering crystal or other components of RF P.C.B must be waiting 10 minutes for RF P.C.B heat stability, then go to alignment process.

VP-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY : 41~46 MHz



NOTE : TESTING FREQ : 46 MHz



DRAWN: Marconi	DATED: 2010/9/2
RELEASE DATE:	

MODEL : VP200Pro
 FREQ : 41-46 MHz
 ECN NO : ECN-1009-032

DATE : 2010年09月23日
 VER : 1.1

Ref	VALUE	Description	TOL	TYPE	Manufacturer
ANT1	671-00014-G	VP200 loop antenna big			DELTA
ANT2		VP200 loop antenna small			
C1	6.8p	CAP0603	5.00%	NPO	
C2	0R	RES0603	5.00%		
C3	47p	CAP0603	5.00%	NPO	
C4	47p	CAP0603	5.00%	NPO	
C5	15p	CAP0603	5.00%	NPO	
C6	1000p	CAP0603	10.00%	X7R	
C7	OPEN	IND0805	5.00%		
C8	47p	CAP0603	5.00%	NPO	
C9	0.1u	CAP0603	10.00%	X7R	
C10	10p	CAP0603	5.00%	NPO	
C11	0.1u	CAP0603	10.00%	X7R	
C12	1000p	CAP0603	10.00%	X7R	
C13	1.5p	CAP0603	0.1p	NPO	
C14	12p	CAP0603	5.00%	NPO	
C15	0.01u	CAP0603	10.00%	X7R	
C16	10u	TAN-A	20.00%		
C17	47p	CAP0603	5.00%	NPO	
C18	OPEN				
C19	0.1u	CAP0603	10.00%	X7R	
C20	10u	TAN-A	20.00%		
C21	0.1u	CAP0603	10.00%	X7R	
C22	3.3p	CAP0603	0.25p	NPO	
C23	10u	TAN-A	20.00%		
C24	2.2u	CAP0805	+80-20%	Y5V	
C25	0.1u	CAP0603	10.00%	X7R	
C26	3900p	CAP0603	10.00%	X7R	
C27	560p	CAP0603		NPO	
C28	1000p	CAP0603	10.00%	X7R	
C29	2.2u	CAP0805	+80-20%	Y5V	
C30	0.1u	CAP0603	10.00%	X7R	
C31	OPEN				
C32	560p	CAP0603		NPO	
C33	220p	CAP0603	5.00%	NPO	
C34	56p	CAP0603	5.00%	NPO	
C35	1000p	CAP0603	10.00%	X7R	
C36	20p	CAP0603	5.00%	NPO	
C37	43p	CAP0603	5.00%	NPO	
C38	0.1u	CAP0603	10.00%	X7R	
C39	1000p	CAP0603	10.00%	X7R	
C40	OPEN	CAP0603			
C41	220p	CAP0603	5.00%	NPO	
C42	220p	CAP0603	5.00%	NPO	
C43	3300p	CAP0603	+80-20%	Y5V	
C44	0.1u	CAP0603	10.00%	X7R	
C45	OPEN				
C47	24p	CAP0603	5.00%	NPO	
C48	0.047u	CAP0603	10.00%	X7R	
C49	OPEN				
C50	0.1u	CAP0603	10.00%	X7R	
C51	OPEN				
C52	1000p	CAP0603	10.00%	X7R	
C53	OPEN	CAP0603			
C54	OPEN				
C55	18p	CAP0603	5.00%	NPO	
C56	*				
C57	0.1u	TAN-A	20.00%		

MODEL : VP200Pro
FREQ : 41-46 MHz
ECN NO : ECN-1009-032

DATE : 2010年09月23日
VER : 1.1

Ref	VALUE	Description	TOL	TYPE	Manufacturer
C58	0.1u	TAN-A	20.00%		
C59	1000p	CAP0603	10.00%	X7R	
C60	1.5p	CAP0603	0.1p	NPO	
C61	1000p	CAP0603	10.00%	X7R	
C62	20p	CAP0603	5.00%	NPO	
C63	OPEN				
C64	6.8p	CAP0603	5.00%	NPO	
C65	OPEN	CAP0603			
C66	1000p	CAP0603	10.00%	X7R	
C67	OPEN				
C68	2.2u	CAP0805	+80-20%	Y5V	
C69	OPEN				
C70	0.1u	CAP0603	10.00%	X7R	
C71	OPEN				
C72	0.1u	CAP0603	10.00%	X7R	
C73	2.2u	CAP0805	+80-20%	Y5V	
C74	68p	CAP0603	5.00%	NPO	
C75	OPEN				
C76	1p	CAP0603	0.1p	NPO	
C77	OPEN	RES0603			
C78	0.1u	CAP0603	10.00%	X7R	
C79	0.1u	CAP0603	10.00%	X7R	
C80	2.2u	CAP0805	+80-20%	Y5V	
C81	OPEN	CAP0603	5.00%	NPO	
C82	5.6p	CAP0603	5.00%	NPO	
C83	1000p	CAP0603	10.00%	X7R	
C84	220p	CAP0603	5.00%	NPO	
C85	220p	CAP0603	5.00%	NPO	
C86	68p	CAP0603	5.00%	NPO	
C87	*				
C88	1000p	CAP0603	10.00%	X7R	
C89	6.8p	CAP0603	0.25p	NPO	
C90	1000p	CAP0603	10.00%	X7R	
D1	RL4148	Switch Diode			
D2	BB202	variable capacitance diode		L2	PHILIPS
D3	BB202	variable capacitance diode		L2	PHILIPS
D4	RB706F-40	Schottky barrier diode		3J	ROHM
D5	BB202	variable capacitance diode		L2	PHILIPS
D6	BB202	variable capacitance diode		L2	PHILIPS
D7	OPEN	variable capacitance diode		L2	PHILIPS
D8	OPEN	variable capacitance diode		L2	PHILIPS
FIL2	21.4MHz(21T15A)	Crystal Filter		UM-5	
FIL3	CFWM450E	Ceramic Filter			
FIL5	OPEN				
J1	4-174639-4	AMP FEMALE/14PINS			
J2	3-174639-6	AMP FEMALE/6PINS			
L1	820nH	IND0805	5.00%		DELTA
L2	820nH	IND0805	5.00%		DELTA
L3	3.3uH	IND0805	10.00%	ML	SWI
L4	10uH	IND0603	10.00%	ML	FIC
L5	82nH	IND0805	5.00%	0805CS-820EJTS	DELTA
L6	10uH	IND0603	10.00%	ML	FIC
L7	470nH	IND0805	5.00%		DELTA
L8	220nH	IND0805	5.00%		DELTA
L9	OPEN	IND0805	5.00%		DELTA
L10	1000p	CAP0603	10.00%	X7R	
L11	1uH	IND0603	10.00%	ML	FIC

MODEL : VP200Pro
 FREQ : 41-46 MHz
 ECN NO : ECN-1009-032

DATE : 2010年09月23日
 VER : 1.1

Ref	VALUE	Description	TOL	TYPE	Manufacturer
L12	220nH	IND0805	5.00%		DELTA
L13	2.7uH	IND0805	5.00%		DELTA
L14	OPEN	IND0805	5.00%		DELTA
PCB1	VP2WVHFR01	Printing Circuit Board			采鑫
Q1	2SC4226	RF Transistor		R25	NEC
Q2	2SC4226	RF Transistor		R25	NEC
Q3	2SC3356	RF Transistor		R25	NEC
Q4	DTA114YUA	PNP 開關電晶體			54ROHM
Q5	DTC114YUA	NPN 開關電晶體			64ROHM
Q6	OPEN	RF Transistor			TOSHIBA
Q7	2SC4226	RF Transistor		R25	NEC
Q8	BC857BW	PNP AF TRANSISTOR		3F	PHILIPS
Q9	*	RF Transistor			
Q10	2SC4226	RF Transistor		R25	NEC
Q11	2SC4226	RF Transistor		R25	NEC
Q12	2SA1162GR	AF Transistor		SG	TOSHIBA
Q13	2SC4226	RF Transistor		R25	NEC
Q14	*	RF Transistor			
Q15	OPEN	NPN 開關電晶體			64ROHM
R1	470k	RES0603	5.00%		
R2	1.5k	RES0603	5.00%		
R3	470R	RES0603	5.00%		
R4	2.2k	RES0603	5.00%		
R5	560k	RES0603	5.00%		
R6	2.2k	RES0603	5.00%		
R7	560R	RES0603	5.00%		
R8	680R	RES0603	5.00%		
R9	3.9k	RES0603	5.00%		
R10	0R	RES0603	5.00%		
R11	10p	CAP0603	5.00%	NPO	
R12	3.9k	RES0603	5.00%		
R13	OPEN	RES0603	5.00%		
R14	22k	RES0603	5.00%		
R15	10k	RES0603	5.00%		
R16	33k	RES0603	5.00%		
R17	OPEN	RES0603	5.00%		
R18	OPEN	RES0603	5.00%		
R19	OPEN	RES0603	5.00%		
R20	100k	RES0603	5.00%		
R21	220R	RES0603	5.00%		
R22	470k	RES0603	5.00%		
R23	470k	RES0603	5.00%		
R24	33k	RES0603	5.00%		
R25	33k	RES0603	5.00%		
R26	56k	RES0603	5.00%		
R27	3.3k	RES0603	5.00%		
R28	20k	SVR 3mm			
R29	22k	RES0603	5.00%		
R30	470k	RES0603	5.00%		
R31	33k	RES0603	5.00%		
R32	33k	RES0603	5.00%		
R33	4.7k	RES0603	5.00%		
R34	560k	RES0603	5.00%		
R35	1k	RES0603	5.00%		
R36	470k	RES0603	5.00%		
R37	OPEN	RES0603	5.00%		

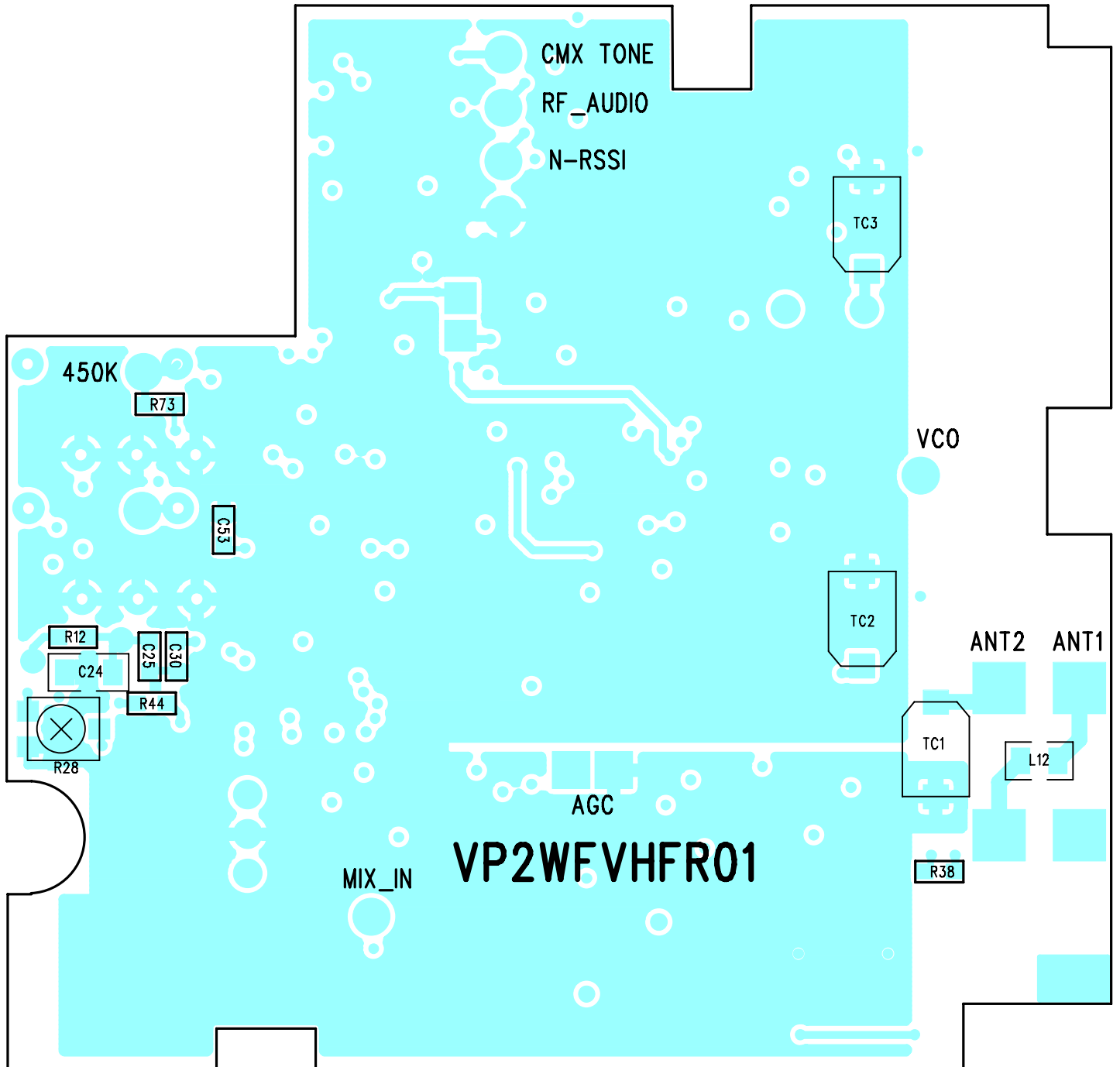
MODEL : VP200Pro
 FREQ : 41 –46 MHz
 ECN NO : ECN-1009-032

DATE : 2010年09月23日
 VER : 1.1

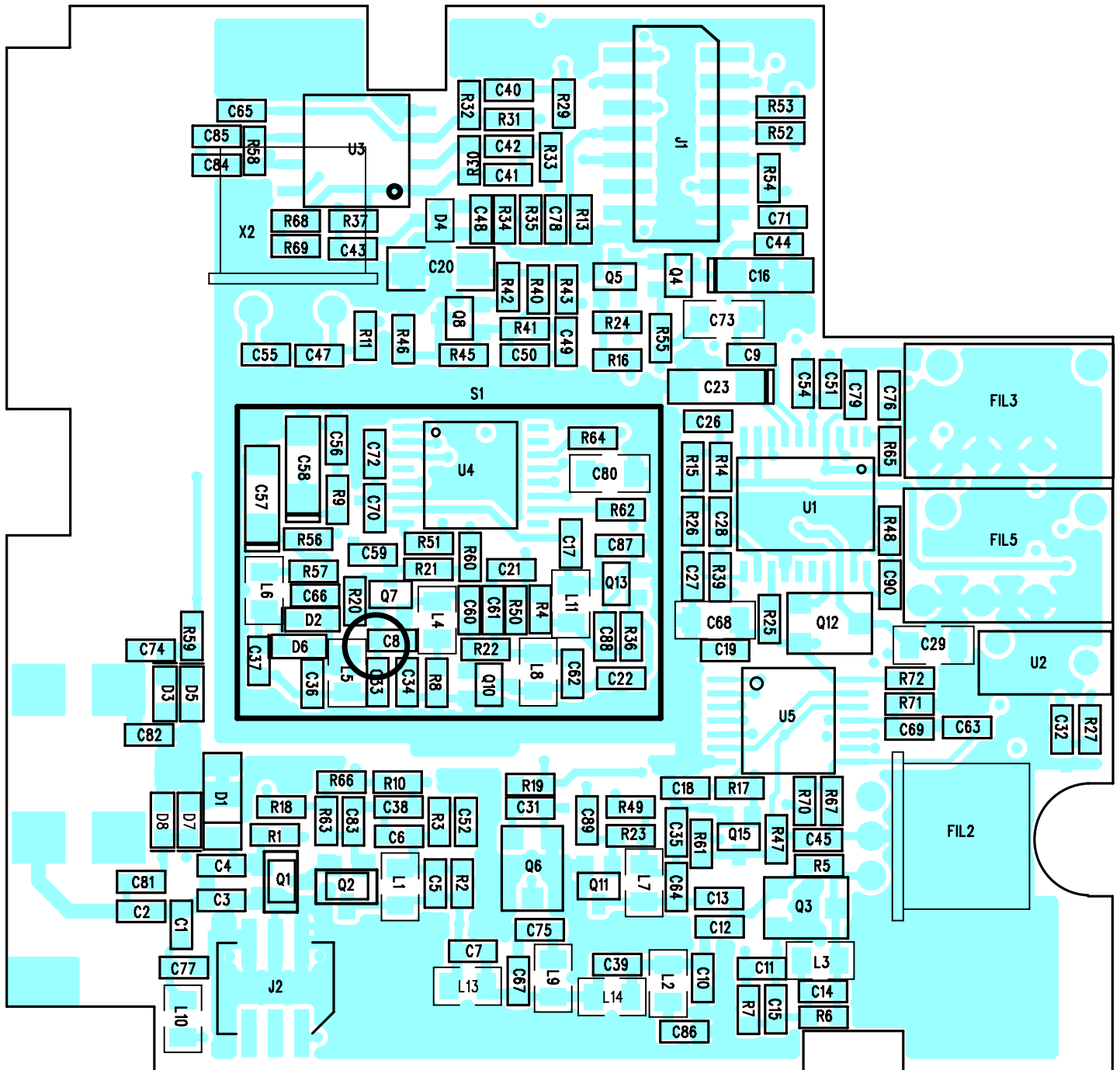
Ref	VALUE	Description	TOL	TYPE	Manufacturer
R38	OPEN	RES0603	5.00%		
R39	0R	RES0603	5.00%		
R40	680k	RES0603	5.00%		
R41	1M	RES0603	5.00%		
R42	1k	RES0603	5.00%		
R43	1k	RES0603	5.00%		
R44	0R	RES0603	5.00%		
R45	OPEN	RES0603	5.00%		
R46	5.6k	RES0603	5.00%		
R47	OPEN	RES0603	5.00%		
R48	1.5k	RES0603	5.00%		
R49	2.2k	RES0603	5.00%		
R50	2.2k	RES0603	5.00%		
R51	22R	RES0603	5.00%		
R52	33k	RES0603	5.00%		
R53	33k	RES0603	5.00%		
R54	33k	RES0603	5.00%		
R55	1k	RES0603	5.00%		
R56	220R	RES0603	5.00%		
R57	0R	RES0603	5.00%		
R58	470k	RES0603	5.00%		
R59	47k	RES0603	5.00%		
R60	22R	RES0603	5.00%		
R61	OPEN	RES0603	5.00%		
R62	33k	RES0603	5.00%		
R63	47k	RES0603	5.00%		
R64	10k	RES0603	5.00%		
R65	22k	RES0603	5.00%		
R66	1k	RES0603	5.00%		
R67	OPEN	RES0603	5.00%		
R68	4.7k	RES0603	5.00%		
R69	33k	RES0603	5.00%		
R70	OPEN	RES0603	5.00%		
R71	OPEN	RES0603	5.00%		
R72	OPEN	RES0603	5.00%		
R73	0R	RES0603	5.00%		
S1	674-00018-G	Shielding box			
TC1	5-20p	Trimmer CAP 3mm			
TC2	5-20p	Trimmer CAP 3mm			
TC3	5-20p	Trimmer CAP 3mm			
TP1	510AT200WR0000	VP200 ANTENNA Holder			
U1	TA31145	IF IC			TOSHIBA
U2	CDBM450C40	Ceramic Discriminator			MURATA
U3	NJU7043M	OP AMP			JRC
U4	SM5170	PLL IC			NPC
U5	OPEN				
X2	20.95MHz	X'TAL SIZE UM5	10ppm	UM-5	

NOTE: VCO = 2.6V @ 46MHz

Silkscreen top



Silkscreen bottom



RF BOARD VHF B.O.M.

135-142Mhz

&

142-152Mhz

&

152-162Mhz

&

162-174Mhz

VP-200Pro Alignment Procedure

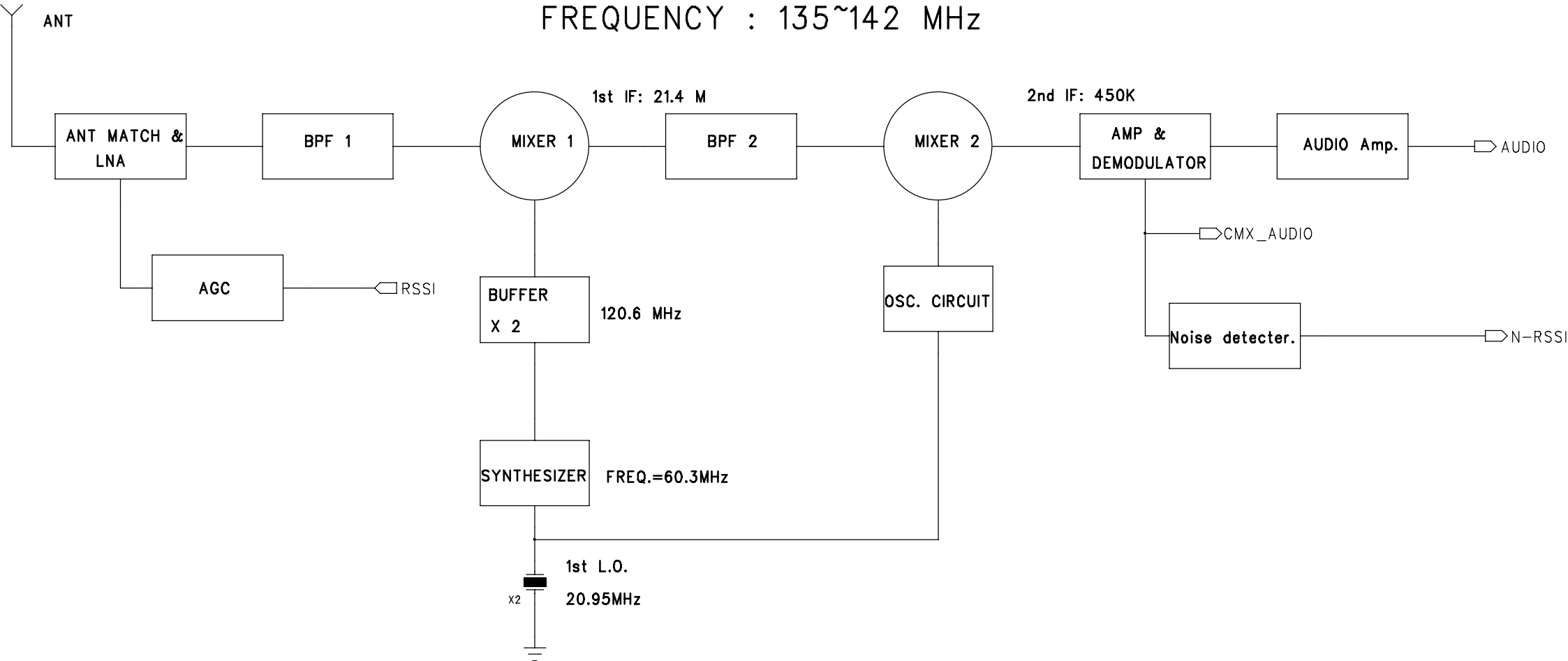
For synthesizer RF board (135~142MHz)

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 (142MHz=2.6V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K+/-50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY : 135~142 MHz



NOTE : TESTING FREQ : 142 MHz

VP200Pro-WF B.O.M.

FREQ:135~142MHz

ECN-0911-010

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	2SC3356 /R25		NEC	RF Transistor
Q3	2SC3356 /R25		NEC	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	BB202		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	27P	+/- 5% NPO	SMD Capacitor size 0603
C3	39p	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	27P	+/- 5% NPO	SMD Capacitor size 0603
C6	1000P	+/- 10% X7R	SMD Capacitor size 0603
C7	1000P	+/- 10% X7R	SMD Capacitor size 0603
C8	56P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	20P	+/- 5% NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:135~142MHz

ECN-0911-010

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	30p	+/- 5% NPO		SMD Capacitor size 0603
C35	1000P	+/- 10% X7R		SMD Capacitor size 0603
C36	3P	+/- 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	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C40	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:135~142MHz

ECN-0911-010

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 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	0.1U	+/- 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	0.1U			
C64	24P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	150P	+/- 5% NPO		SMD Capacitor size 0603
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	24P	+/- 5% NPO		SMD Capacitor size 0603
C83	1000P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	39p	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:135~142MHz

ECN-0911-010

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
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	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	33nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	68nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	270K	+/- 5%		SMD Resistor size 0603
R2	330R	+/- 5%		SMD Resistor size 0603
R3	470R	+/- 5%		SMD Resistor size 0603
R4	2.2K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	12K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	100K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	560K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:135~142MHz

ECN-0911-010

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	560K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	560K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	2.2K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	220R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:135~142MHz

ECN-0911-010

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 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	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 10ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 135~142MHz 142MHz : 2.6V

VP-200Pro Alignment Procedure

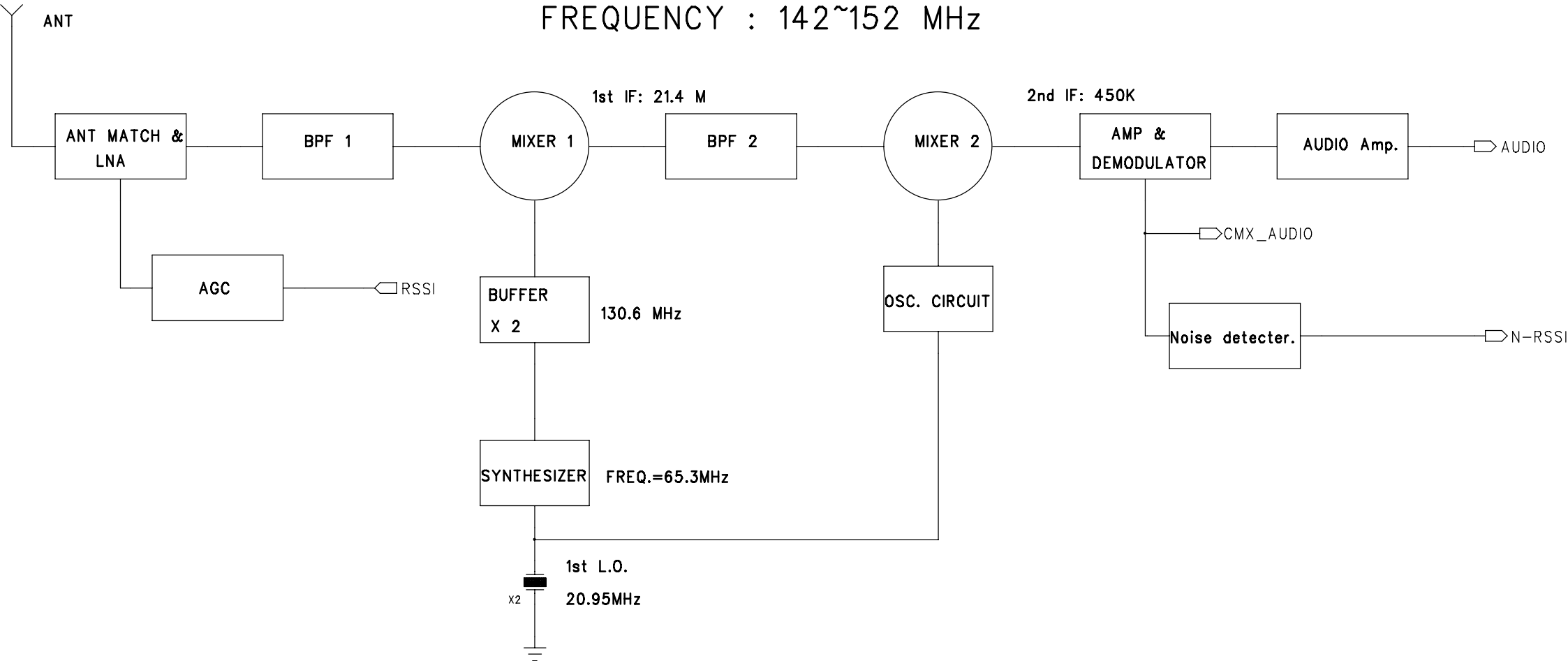
For synthesizer RF board (142~152MHz)

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 (152MHz=2.6V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K+/-50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY : 142~152 MHz



NOTE : TESTING FREQ : 152 MHz

VP200Pro-WF B.O.M.

FREQ:142~152MHz

ECN-0912-023

DATE:2009/11/09

VER:1.1

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	2SC3356 /R25		NEC	RF Transistor
Q3	2SC3356 /R25		NEC	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	BB202		PHILIPS	

陶瓷電容類				
C1	5.6P	+/- 5% NPO		SMD Capacitor size 0603
C2	27P	+/- 5% NPO		SMD Capacitor size 0603
C3	18p	+/- 5% NPO		SMD Capacitor size 0603
C4	15p	+/- 5% NPO		SMD Capacitor size 0603
C5	22P	+/- 5% NPO		SMD Capacitor size 0603
C6	1000P	+/- 10% X7R		SMD Capacitor size 0603
C7	1000P	+/- 10% X7R		SMD Capacitor size 0603
C8	56P	+/- 5% NPO		SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C10	16P	+/- 5% NPO		SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:142~152MHz

ECN-0912-023

DATE:2009/11/09

VER:1.1

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	30p	+/- 5% NPO		SMD Capacitor size 0603
C35	1000P	+/- 10% X7R		SMD Capacitor size 0603
C36	4.7P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	43P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:142~152MHz

ECN-0912-023

DATE:2009/11/09

VER:1.1

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 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	0.1U	+/- 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	0.1U			
C64	20P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	150P	+/- 5% NPO		SMD Capacitor size 0603
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	22P	+/- 5% NPO		SMD Capacitor size 0603
C83	1000P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	30p	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:142~152MHz

ECN-0912-023

DATE:2009/11/09

VER:1.1

Ref	Value	Tolerance	Manufacturer	Description
電感類				
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	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	27nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	68nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	270K	+/- 5%		SMD Resistor size 0603
R2	330R	+/- 5%		SMD Resistor size 0603
R3	470R	+/- 5%		SMD Resistor size 0603
R4	2.2K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	12K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	100K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	560K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:142~152MHz

ECN-0912-023

DATE:2009/11/09

VER:1.1

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	560K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	560K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	2.2K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	220R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:142~152MHz

ECN-0912-023

DATE:2009/11/09

VER:1.1

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 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	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 3ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 142~152MHz 152MHz : 2.6V

VP-200Pro Alignment Procedure

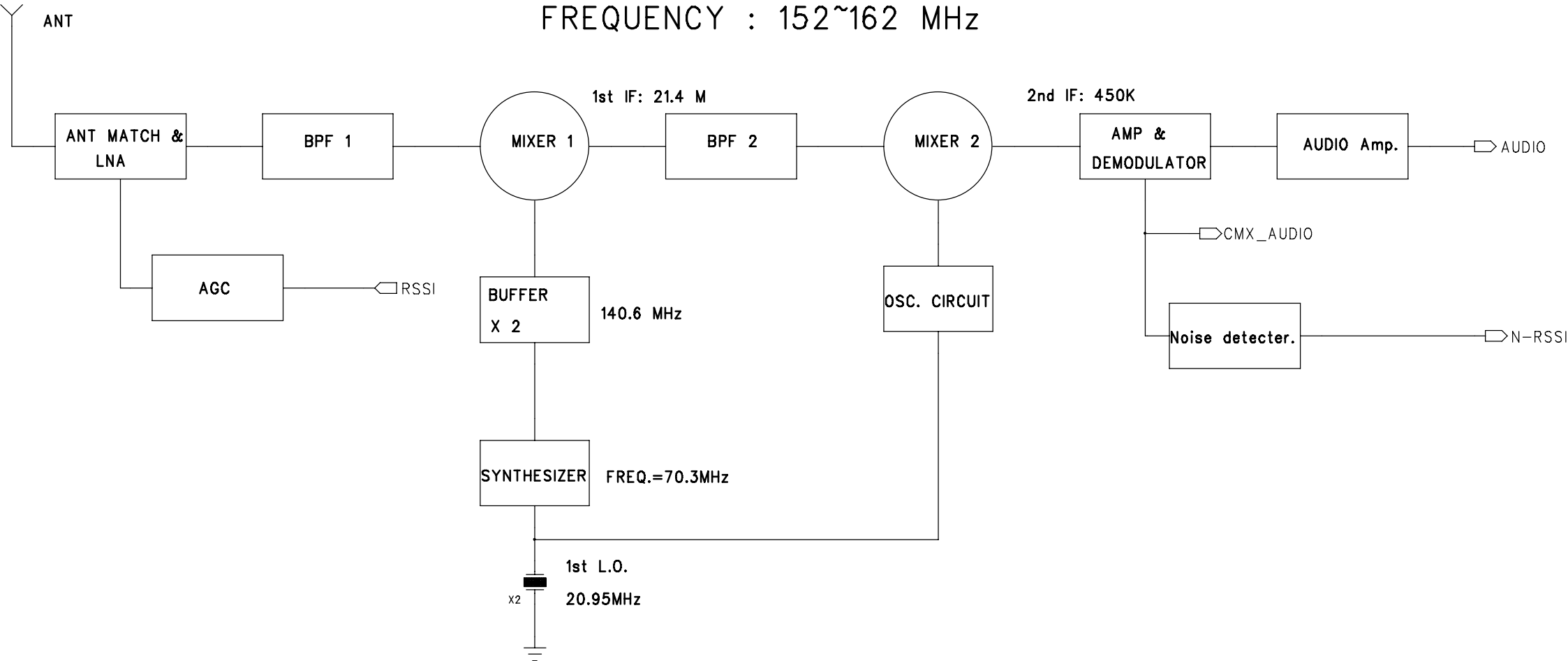
For synthesizer RF board (152~162MHz)

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 (162MHz=2.6V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K $\pm$ 50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY : 152~162 MHz



NOTE : TESTING FREQ : 162 MHz

VP200Pro-WF B.O.M.

FREQ:152~162MHz

ECN-1010-020

DATE:2010/10/12

VER:1.2

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	2SC3356 /R25		NEC	RF Transistor
Q3	2SC3356 /R25		NEC	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	BB202		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	27P	+/- 5% NPO	SMD Capacitor size 0603
C3	15p	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	18P	+/- 5% NPO	SMD Capacitor size 0603
C6	1000P	+/- 10% X7R	SMD Capacitor size 0603
C7	1000P	+/- 10% X7R	SMD Capacitor size 0603
C8	56P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	13P	+/- 5% NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:152~162MHz

ECN-1010-020

DATE:2010/10/12

VER:1.2

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	30p	+/- 5% NPO		SMD Capacitor size 0603
C35	1000P	+/- 10% X7R		SMD Capacitor size 0603
C36	2P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	33P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:152~162MHz

ECN-1010-020

DATE:2010/10/12

VER:1.2

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 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	0.1U	+/- 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	0.1U			
C64	33P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	82P	+/- 5% NPO		SMD Capacitor size 0603
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	18P	+/- 5% NPO		SMD Capacitor size 0603
C83	1000P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	30p	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:152~162MHz

ECN-1010-020

DATE:2010/10/12

VER:1.2

Ref	Value	Tolerance	Manufacturer	Description
電感類				
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	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	27nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	39nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	270K	+/- 5%		SMD Resistor size 0603
R2	330R	+/- 5%		SMD Resistor size 0603
R3	470R	+/- 5%		SMD Resistor size 0603
R4	2.2K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	12K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	100K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	560K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:152~162MHz

ECN-1010-020

DATE:2010/10/12

VER:1.2

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	680K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	560K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	2.2K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	220R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:152~162MHz

ECN-1010-020

DATE:2010/10/12

VER:1.2

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 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	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 10ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 152~162MHz 162MHz : 2.6V

VP-200Pro Alignment Procedure

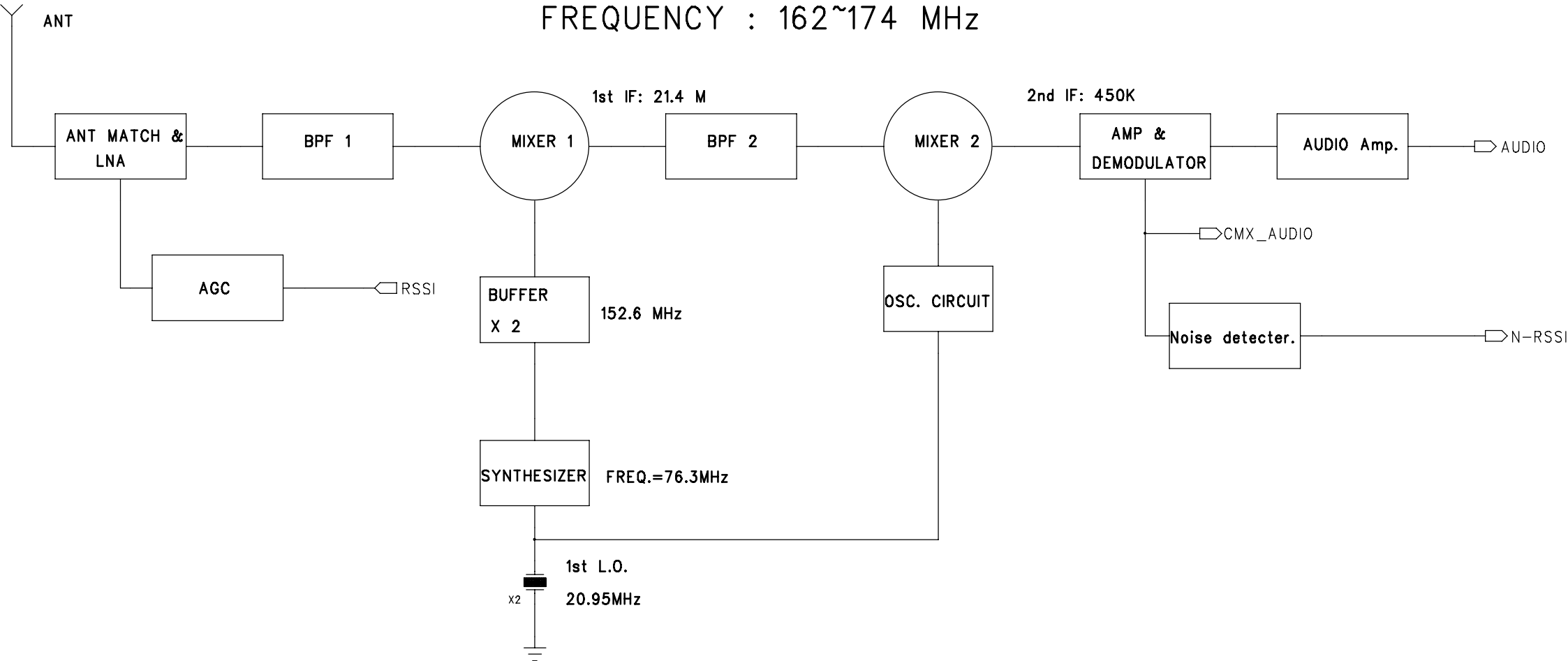
For synthesizer RF board (162~174MHz)

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 (174MHz=2.6V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K $\pm$ 50HZ.
6. Tuning TC1 to get IF (450kHz) power maximum.
7. Disconnect Vdd & RE.

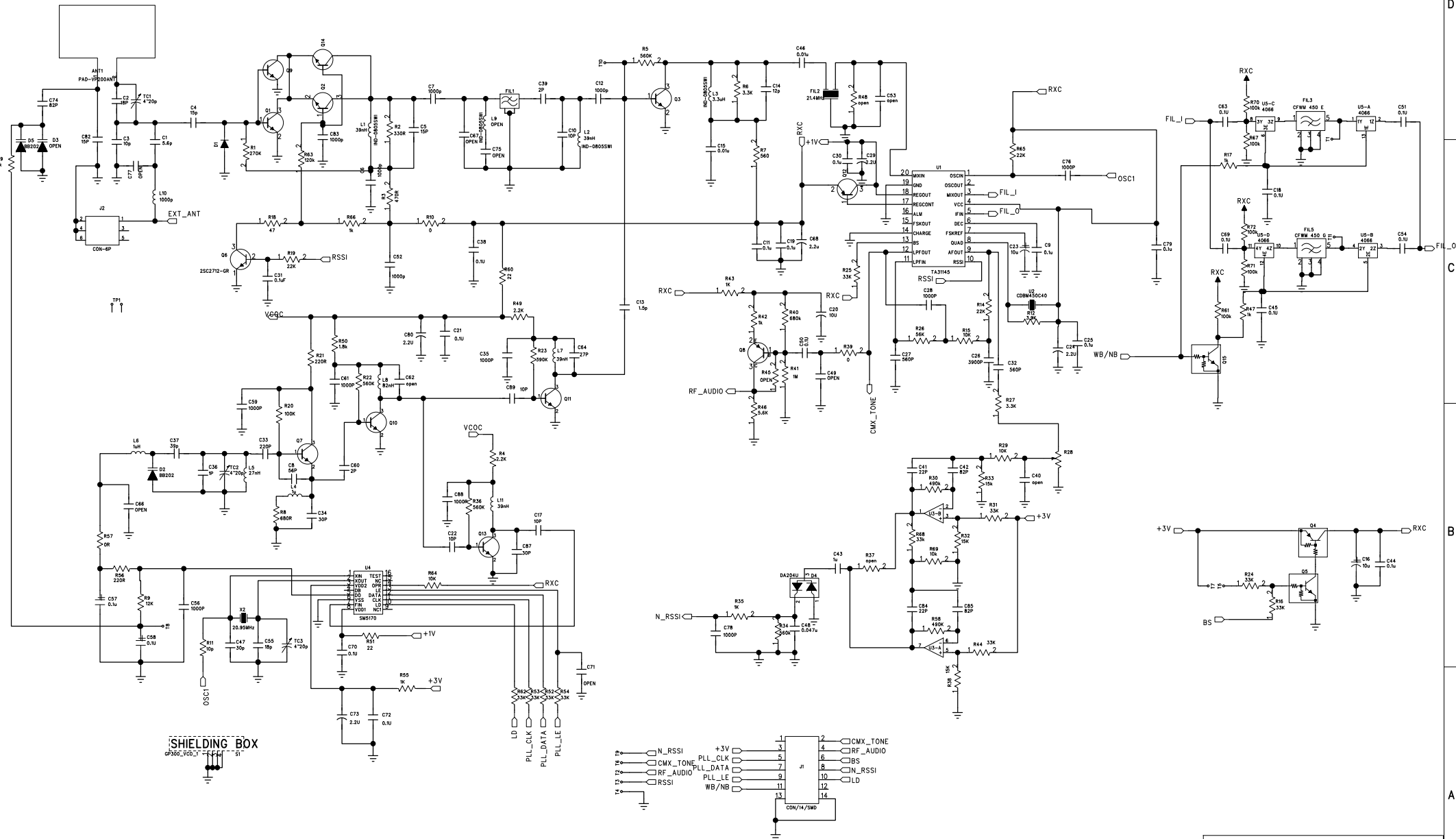
Note: After soldering crystal or other components of RF P.C.B must be waiting 10 minutes for RF P.C.B heat stability, then go to alignment process.

VP-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY : 162~174 MHz



NOTE : TESTING FREQ : 174 MHz



COMPANY: Gold Apollo

TITLE: VP2WVUHF05 162~174MHz SCH

SIZE: A1

DRAWING NO: VP200Pro-RC1G0-162174-100

SHEET: 1 OF 1 VERSION: V1.1

DRAWN: Tommy Lin
 DATED: 2009/10/13
 RELEASE DATE:

VP200Pro-WF B.O.M.

DATE:2009/10/13

FREQ:162~174MHz

VER:1.0

ECN-0910-011

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	2SC3356 /R25		NEC	RF Transistor
Q2	2SC3356 /R25		NEC	RF Transistor
Q3	2SC3356 /R25		NEC	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	BB202		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	18P	+/- 5% NPO	SMD Capacitor size 0603
C3	10p	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	15p	+/- 5% NPO	SMD Capacitor size 0603
C6	1000P	+/- 10% X7R	SMD Capacitor size 0603
C7	1000P	+/- 10% X7R	SMD Capacitor size 0603
C8	56P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	10p	+/- 5% NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:162~174MHz

ECN-0910-011

DATE:2009/10/13

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	30p	+/- 5% NPO		SMD Capacitor size 0603
C35	1000P	+/- 10% X7R		SMD Capacitor size 0603
C36	1p	+/- 0.1p NPO		SMD Capacitor size 0603
C37	39p	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:162~174MHz

ECN-0910-011

DATE:2009/10/13

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 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	0.1U	+/- 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	0.1U			
C64	27p	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	82P	+/- 5% NPO		SMD Capacitor size 0603
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	15p	+/- 5% NPO		SMD Capacitor size 0603
C83	1000P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	30p	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:162~174MHz

ECN-0910-011

DATE:2009/10/13

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
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	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	27nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	39nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	270K	+/- 5%		SMD Resistor size 0603
R2	330R	+/- 5%		SMD Resistor size 0603
R3	470R	+/- 5%		SMD Resistor size 0603
R4	2.2K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	12K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	100K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	560K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:162~174MHz

ECN-0910-011

DATE:2009/10/13**VER:1.0**

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	560K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	560K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	2.2K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	220R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	22K	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:162~174MHz

ECN-0910-011

DATE:2009/10/13

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 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	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 10ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 152~162MHz 162MHz : 2.6V

RF BOARD UHF B.O.M.

406-410Mhz

&

450-460Mhz

&

460-470Mhz

&

470-480Mhz

&

500-512Mhz

VP-200Pro Alignment Procedure

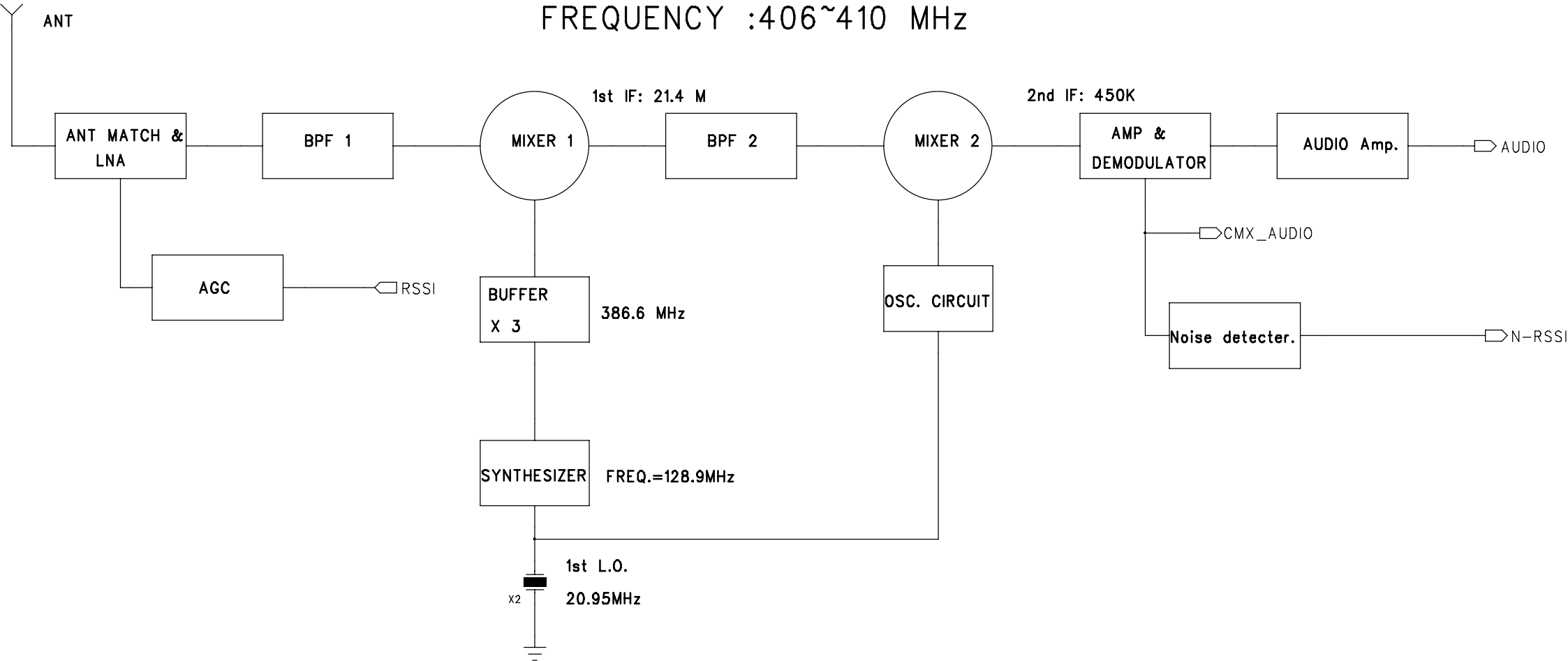
For synthesizer RF board (406~410MHz)

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 (408MHz=1.5V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K $\pm$ 50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY :406~410 MHz



NOTE : TESTING FREQ : 408 MHz

VP200Pro-WF B.O.M.

FREQ:406~410MHz

ECN-0911-006

DATE:2009/11/2

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	AT31033		Agilent	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	OPEN		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C3	1.0P	+/-0.1P NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	4.7P	+/- 5% NPO	SMD Capacitor size 0603
C6	100P	+/- 10% X7R	SMD Capacitor size 0603
C7	1.5P	+/- 10% X7R	SMD Capacitor size 0603
C8	18P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	3.9P	+/- 5% NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:406~410MHz

ECN-0911-006

DATE:2009/11/2

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	15P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	3.9P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	13P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:406~410MHz

ECN-0911-006

DATE:2009/11/2

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 5% NPO		SMD Capacitor size 0603
C56	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.1U	+/- 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	0.1U			
C64	12P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	OPEN			
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	2P	+/- 0.1P NPO		SMD Capacitor size 0603
C83	100P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	5.6P	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:406~410MHz

ECN-0911-006

DATE:2009/11/2

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
L1	18nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	18nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	150K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	220R	+/- 5%		SMD Resistor size 0603
R4	1K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	8.2K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	120K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	330K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:406~410MHz

ECN-0911-006

DATE:2009/11/2

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	680K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	330K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	1K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	100R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	OPEN	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:406~410MHz

ECN-0911-006

DATE:2009/11/2

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	1~3p	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	F408(406~410MHz)	昂欣	F-11 SAW FILTER
FIL2	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 3ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 406~410MHz 408MHz : 1.5V

VP-200Pro Alignment Procedure

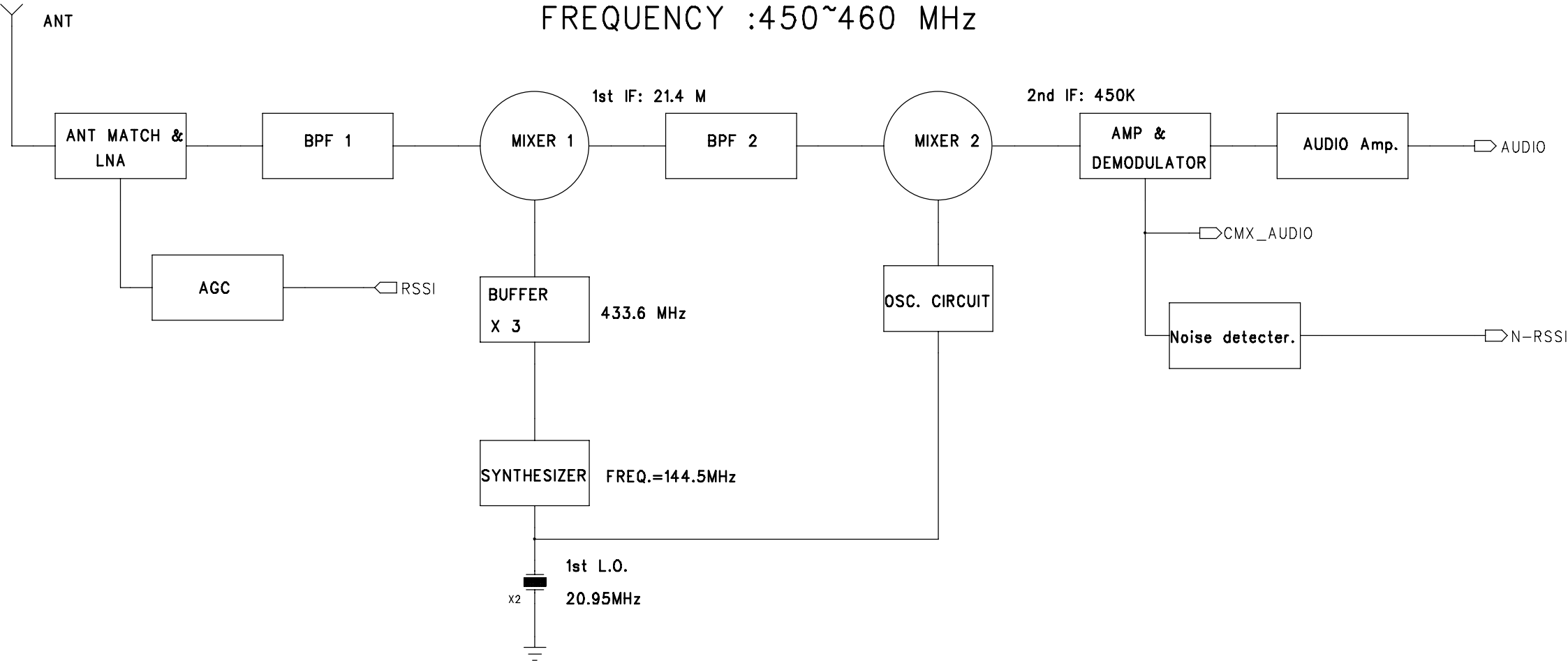
For synthesizer RF board (450~460MHz)

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 (455MHz=1.5V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K+/-50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY :450~460 MHz



NOTE : TESTING FREQ : 455 MHz

VP200Pro-WF B.O.M.

FREQ:450~460MHz

ECN-0901-011

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	AT31033		Agilent	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	OPEN		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C3	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	3P	+/- 5% NPO	SMD Capacitor size 0603
C6	100P	+/- 10% X7R	SMD Capacitor size 0603
C7	1.5P	+/- 10% X7R	SMD Capacitor size 0603
C8	18P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	3P	+/- 0.1p NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:450~460MHz

ECN-0901-011

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	15P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	3.9P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	13P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:450~460MHz

ECN-0901-011

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 5% NPO		SMD Capacitor size 0603
C56	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.1U	+/- 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	0.1U			
C64	8.2P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	OPEN			
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	1.2P	+/- 5% NPO		SMD Capacitor size 0603
C83	100P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	5.6P	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:450~460MHz

ECN-0901-011

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
L1	18nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	12nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	150K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	220R	+/- 5%		SMD Resistor size 0603
R4	1K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	8.2K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	330K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	330K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:450~460MHz

ECN-0901-011

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	680K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	330K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	1K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	100R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	OPEN	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:450~460MHz

ECN-0901-011

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	1~3p	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	TA454E1	TAI-SAW	F-11 SAW FILTER
FIL2	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 3ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 450~460MHz 455MHz : 1.5V

VP-200Pro Alignment Procedure

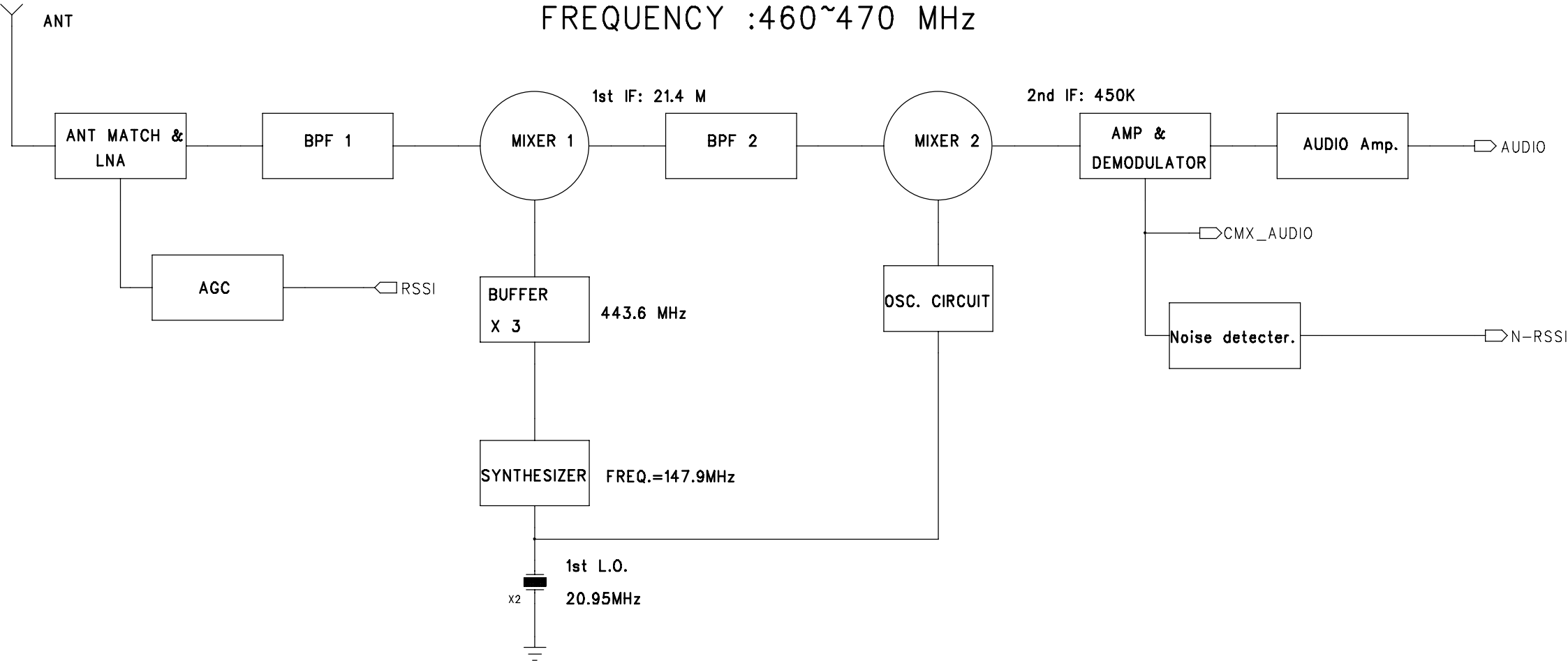
For synthesizer RF board (460~470MHz)

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 (465MHz=1.5V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K $\pm$ 50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY :460~470 MHz



NOTE : TESTING FREQ : 465 MHz

VP200Pro-WF B.O.M.

FREQ:460~470MHz

ECN-0901-010

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	AT31033		Agilent	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	OPEN		PHILIPS	

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C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C3	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	3P	+/- 5% NPO	SMD Capacitor size 0603
C6	100P	+/- 10% X7R	SMD Capacitor size 0603
C7	1.5P	+/- 10% X7R	SMD Capacitor size 0603
C8	18P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	2.7P	+/- 5% NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:460~470MHz

ECN-0901-010

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	15P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	3.9P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	13P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:460~470MHz

ECN-0901-010

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 5% NPO		SMD Capacitor size 0603
C56	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.1U	+/- 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	0.1U			
C64	6.8P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	OPEN			
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	1.2P	+/- 5% NPO		SMD Capacitor size 0603
C83	100P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	5.6P	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:460~470MHz

ECN-0901-010

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
L1	18nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	12nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	150K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	220R	+/- 5%		SMD Resistor size 0603
R4	1K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	8.2K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	330K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	330K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:460~470MHz

ECN-0901-010

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	680K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	330K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	1K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	100R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	OPEN	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:460~470MHz

ECN-0901-010

DATE:2009/01/16

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	1~3p	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	TA466E1	TAI-SAW	F-11 SAW FILTER
FIL2	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 3ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 460~470MHz 465MHz : 1.5V

VP-200Pro Alignment Procedure

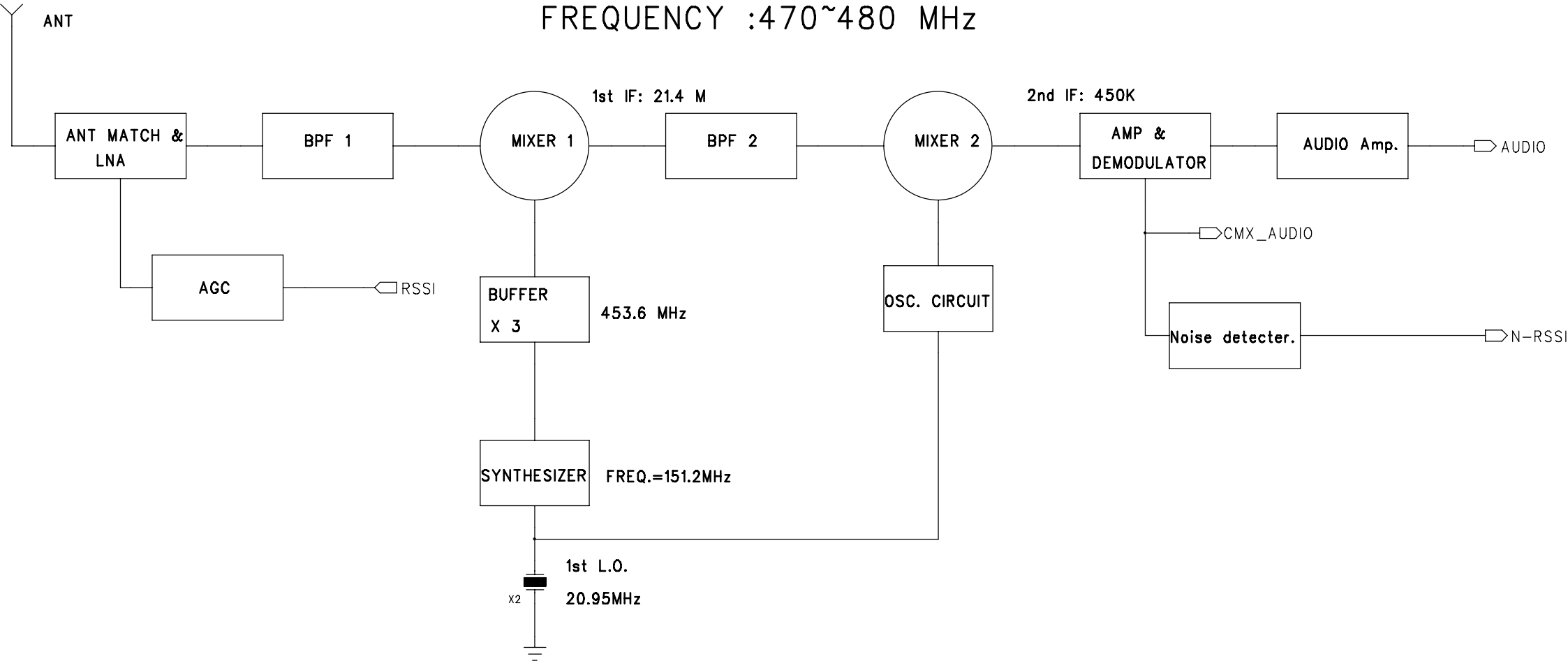
For synthesizer RF board (470~480MHz)

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 (475MHz=1.5V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K $\pm$ 50HZ.
6. Tuning TC1 to get IF (450kHz) power maximum.
7. Disconnect Vdd & RE.

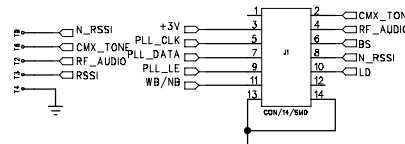
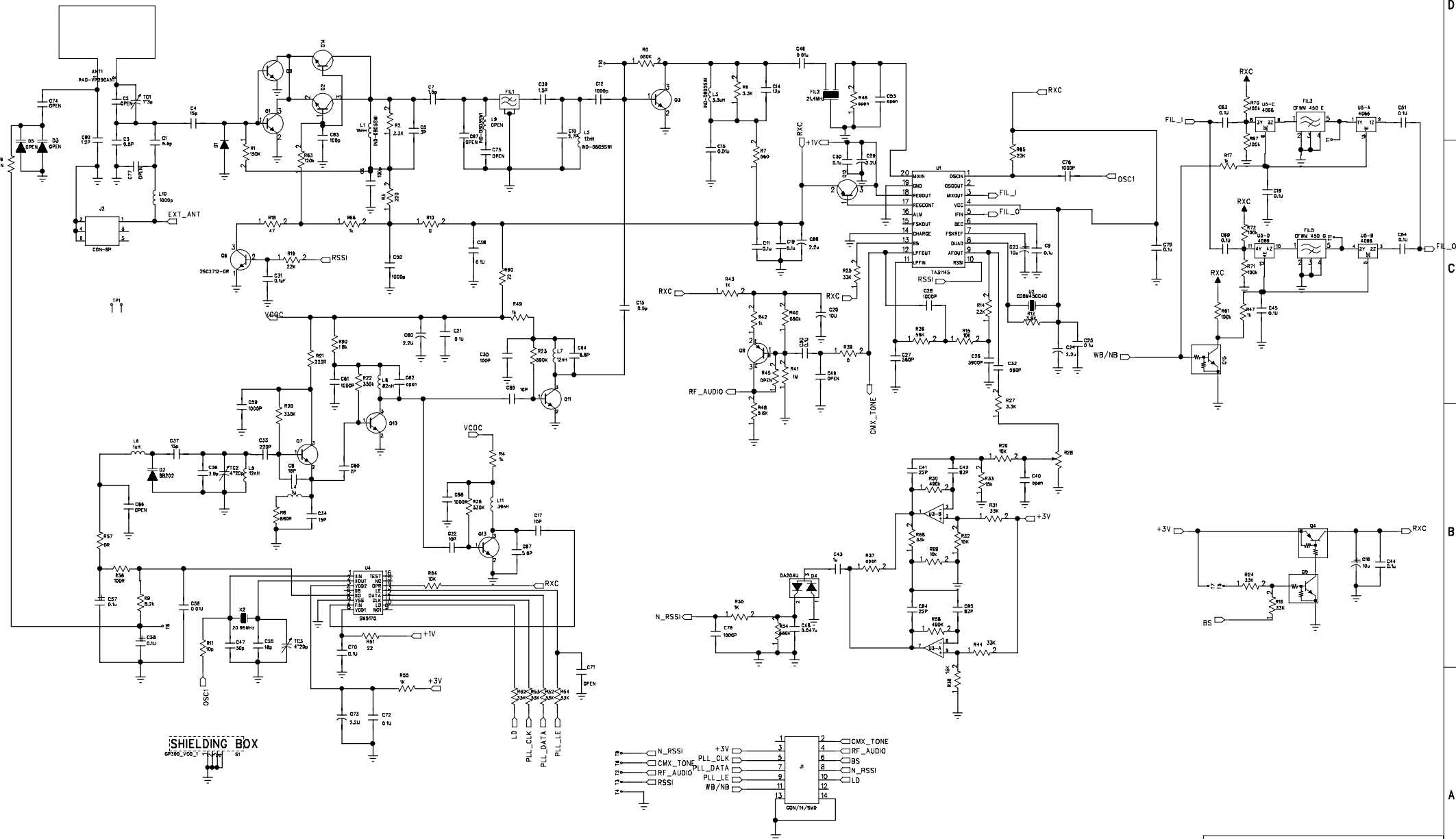
Note: After soldering crystal or other components of RF P.C.B must be waiting 10 minutes for RF P.C.B heat stability, then go to alignment process.

VP-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY :470~480 MHz



NOTE : TESTING FREQ : 475 MHz



COMPANY:	Gold Apollo
TITLE:	VP2WVUHF05 470~480MHz SCH
SHEET:	1 OF 1
VERSION:	V1.0

DRAWN:	Tommy Lin	DATED:	2009/03/03
RELEASE DATE:		DRAWING NO:	VP200Pro-RCIE0-470480-100

VP200Pro-WF B.O.M.

FREQ:470~480MHz

ECN-0903-002

DATE:2009/03/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	AT31033		Agilent	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	OPEN		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C3	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	3P	+/- 5% NPO	SMD Capacitor size 0603
C6	100P	+/- 10% X7R	SMD Capacitor size 0603
C7	1.5P	+/- 10% X7R	SMD Capacitor size 0603
C8	18P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	2.7P	+/- 5% NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:470~480MHz

ECN-0903-002

DATE:2009/03/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	15P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	3.9P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	13P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:470~480MHz

ECN-0903-002

DATE:2009/03/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 5% NPO		SMD Capacitor size 0603
C56	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.1U	+/- 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	0.1U			
C64	6.8P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	OPEN			
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	1.2P	+/- 5% NPO		SMD Capacitor size 0603
C83	100P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	5.6P	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:470~480MHz

ECN-0903-002

DATE:2009/03/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
L1	18nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	12nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	150K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	220R	+/- 5%		SMD Resistor size 0603
R4	1K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	8.2K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	330K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	330K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:470~480MHz

ECN-0903-002

DATE:2009/03/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	680K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	330K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	1K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	100R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	OPEN	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:470~480MHz

ECN-0903-002

DATE:2009/03/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	1~3p	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	TA0884A(475MHz +/- 5MHz)	TAI-SAW	F-11 SAW FILTER
FIL2	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M +/- 3ppm		X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 470~480MHz 475MHz : 1.5V

VP-200Pro Alignment Procedure

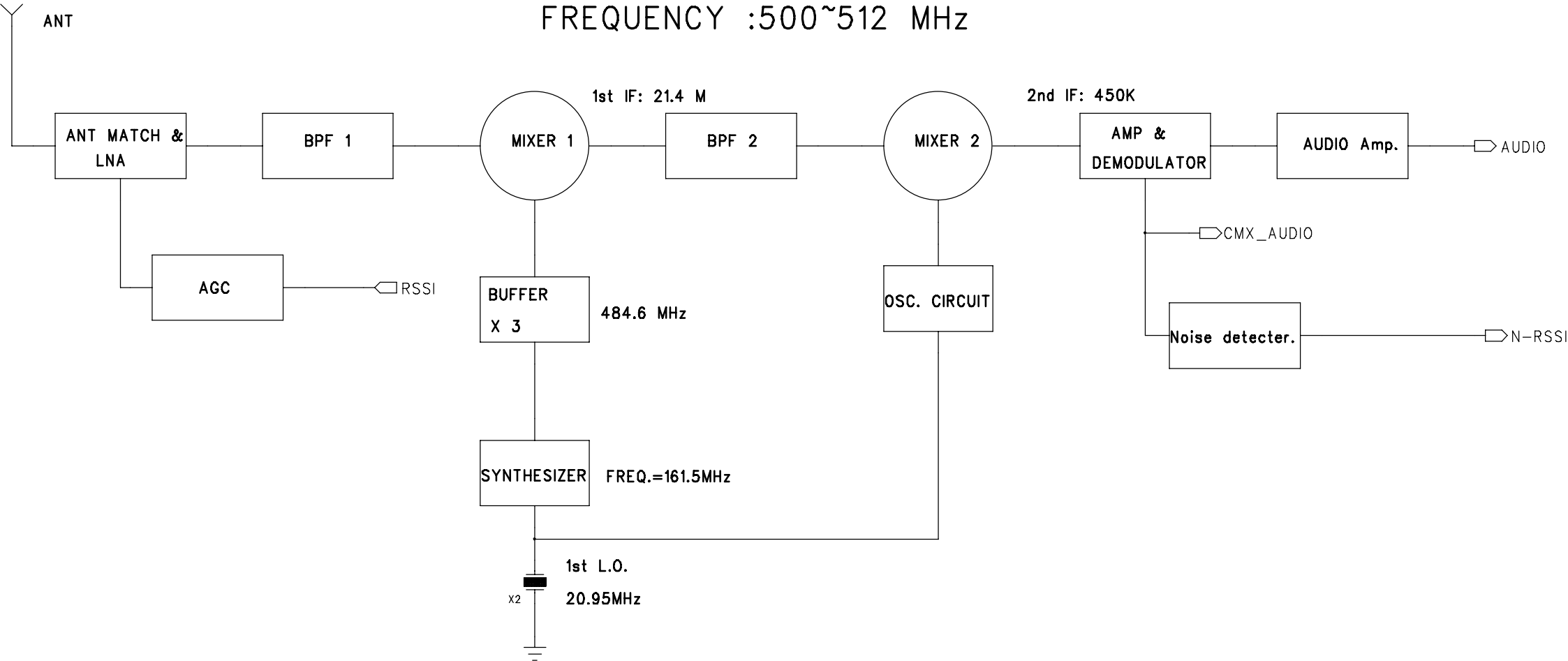
For synthesizer RF board (500~512MHz)

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 (506MHz=1.5V)
4. Make sure the IF power is large enough to trigger the counter.
5. Tuning TC3 to get IF frequency at 450K $\pm$ 50HZ.
6. Tuning TC1 to get IF (450kHz) 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-200Pro RF P.C.B BLOCK DIAGRAM

FREQUENCY :500~512 MHz



NOTE : TESTING FREQ : 506 MHz

VP200Pro-WF B.O.M.

FREQ:500~512MHz

ECN-0911-011

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
半導體類				
Q1	AT31033		Agilent	RF Transistor
Q2	AT31033		Agilent	RF Transistor
Q3	AT31033		Agilent	RF Transistor
Q4	DTA114YUA		ROHM	RF Transistor
Q5	DTC114YUA		ROHM	RF Transistor
Q6	2SC2712LG		TOSHIBA	RF Transistor
Q7	2SC4226 /R25		NEC	RF Transistor
Q8	BC857BW		PHILIPS	RF Transistor
Q9	OPEN			
Q10	2SC4226 /R25		NEC	RF Transistor
Q11	2SC4226 /R25		NEC	RF Transistor
Q12	2SA1162GR		TOSHIBA	RF Transistor
Q13	2SC4226 /R25		NEC	RF Transistor
Q14	OPEN			
Q15	DTC114YUA		ROHM	RF Transistor
U1	TA31145		TOSHIBA	IF IC
U2	CDBLB450C40		昂欣	
U3	NJM2904M		NJR	OP AMP
U4	SM5170		NPC	PLL IC
U5	BU4066BCFV		ROHM	Logic IC
D1	1N4148			
D2	BB202		PHILIPS	
D3	OPNE			
D4	RB706		ROHM	
D5	OPEN		PHILIPS	

陶瓷電容類

C1	5.6P	+/- 5% NPO	SMD Capacitor size 0603
C2	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C3	OPEN	+/- 5% NPO	SMD Capacitor size 0603
C4	15p	+/- 5% NPO	SMD Capacitor size 0603
C5	1.5P	+/- 5% NPO	SMD Capacitor size 0603
C6	100P	+/- 10% X7R	SMD Capacitor size 0603
C7	1.5P	+/- 10% X7R	SMD Capacitor size 0603
C8	18P	+/- 5% NPO	SMD Capacitor size 0603
C9	0.1U	+80% -20% Y5V	SMD Capacitor size 0603
C10	1.5P	+/- 0.1p NPO	SMD Capacitor size 0603
C11	0.1U	+80% -20% Y5V	SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:500~512MHz

ECN-0911-011

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C12	1000P	+/- 10% X7R		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	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C17	10p	+/- 5% NPO		SMD Capacitor size 0603
C18	0.1u			
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	10p	+/- 5% NPO		SMD Capacitor size 0603
C23	10u	+/- 10% TAN-A		TAN Capacitor size "A"
C24	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
C25	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C26	3900p	+/- 10% X7R		SMD Capacitor size 0603
C27	560P	+/- 5% NPO		SMD Capacitor size 0603
C28	1000P	+/- 10% X7R		SMD Capacitor size 0603
C29	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C30	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C31	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C32	560P	+/- 10% X7R		SMD Capacitor size 0603
C33	220P	+/- 5% NPO		SMD Capacitor size 0603
C34	15P	+/- 5% NPO		SMD Capacitor size 0603
C35	100P	+/- 10% X7R		SMD Capacitor size 0603
C36	1P	+/- 0.1p NPO		SMD Capacitor size 0603
C37	13P	+/- 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	OPEN			
C41	22P	+/- 5% NPO		SMD Capacitor size 0603
C42	82P	+/- 5% NPO		SMD Capacitor size 0603
C43	1UF	+80% -20% Y5V		SMD Capacitor size 0603
C44	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C45	0.1U			
C46	0.01u	+/- 10% X7R		SMD Capacitor size 0603
C47	30p	+/- 5% NPO		SMD Capacitor size 0603
C48	0.047u	+80% -20% Y5V		SMD Capacitor size 0603
C49	OPEN			
C50	0.1U	+80% -20% Y5V		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:500~512MHz

ECN-0911-011

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
C51	0.1U			
C52	1000P	+/- 10% X7R		SMD Capacitor size 0603
C53	OPEN			
C54	0.1U	+/- 10% X7R		SMD Capacitor size 0603
C55	18P	+/- 5% NPO		SMD Capacitor size 0603
C56	0.01U	+/- 10% X7R		SMD Capacitor size 0603
C57	0.1U	+/- 10% TAN-A		TAN Capacitor size "A"
C58	0.1U	+/- 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	0.1U			
C64	6.8P	+/- 5% NPO		SMD Capacitor size 0603
C65	OPEN	+/- 5% NPO		SMD Capacitor size 0603
C66	OPEN			
C67	OPEN			
C68	2.2u	+80% -20% Y5V		SMD Capacitor size 0805
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	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C74	OPEN			
C75	OPEN			
C76	1000P	+/- 10% X7R		SMD Capacitor size 0603
C77	OPEN			
C78	1000P	+/- 10% X7R		SMD Capacitor size 0603
C79	0.1U	+80% -20% Y5V		SMD Capacitor size 0603
C80	2.2uF	+80% -20% Y5V		SMD Capacitor size 0805
C81	OPEN			
C82	0.5P	+/- 5% NPO		SMD Capacitor size 0603
C83	100P	+/- 10% X7R		SMD Capacitor size 0603
C84	22P	+/- 5% NPO		SMD Capacitor size 0603
C85	82P	+/- 5% NPO		SMD Capacitor size 0603
C86	OPEN			
C87	5.6P	+/- 5% NPO		SMD Capacitor size 0603
C88	1000P	+/- 10% X7R		SMD Capacitor size 0603
C89	10p	+/- 5% NPO		SMD Capacitor size 0603

VP200Pro-WF B.O.M.

FREQ:500~512MHz

ECN-0911-011

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
電感類				
L1	18nH	+/- 5%	DELTA	SMD Inductor size 0805
L2	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L3	3.3uH	+/- 10%	DELTA	M/C Inductor size 0805
L4	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L5	12nH	+/- 5%	DELTA	SMD Inductor size 0603
L6	1uH	+/- 10%	台灣電感	M/C Inductor size 0603
L7	12nH	+/- 5%	DELTA	SMD Inductor size 0805
L8	82nH	+/- 5%	DELTA	SMD Inductor size 0805
L9	OPEN			
L10	1000P	+/- 10% X7R		SMD Capacitor size 0603
L11	39nH	+/- 5%	DELTA	SMD Inductor size 0805
電阻類				
R1	150K	+/- 5%		SMD Resistor size 0603
R2	2.2K	+/- 5%		SMD Resistor size 0603
R3	220R	+/- 5%		SMD Resistor size 0603
R4	1K	+/- 5%		SMD Resistor size 0603
R5	560K	+/- 5%		SMD Resistor size 0603
R6	3.3K	+/- 5%		SMD Resistor size 0603
R7	560	+/- 5%		SMD Resistor size 0603
R8	680R	+/- 5%		SMD Resistor size 0603
R9	8.2K	+/- 5%		SMD Resistor size 0603
R10	0R	+/- 5%		SMD Resistor size 0603
R11	10p	+/- 5% NPO		SMD Capacitor size 0603
R12	3.9K	+/- 5%		SMD Resistor size 0603
R13	OPEN			
R14	22K	+/- 5%		SMD Resistor size 0603
R15	10K	+/- 5%		SMD Resistor size 0603
R16	33K	+/- 5%		SMD Resistor size 0603
R17	1K	+/- 5%		SMD Resistor size 0603
R18	47	+/- 5%		SMD Resistor size 0603
R19	22K	+/- 5%		SMD Resistor size 0603
R20	120K	+/- 5%		SMD Resistor size 0603
R21	220R	+/- 5%		SMD Resistor size 0603
R22	330K	+/- 5%		SMD Resistor size 0603
R23	390K	+/- 5%		SMD Resistor size 0603
R24	33K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:500~512MHz

ECN-0911-011

DATE:2009/11/03

VER:1.0

Ref	Value	Tolerance	Manufacturer	Description
R25	33K	+/- 5%		SMD Resistor size 0603
R26	56K	+/- 5%		SMD Resistor size 0603
R27	3.3K	+/- 5%		SMD Resistor size 0603
R28	22K			VR30
R29	10K	+/- 5%		SMD Resistor size 0603
R30	470K	+/- 5%		SMD Resistor size 0603
R31	33K	+/- 5%		SMD Resistor size 0603
R32	15K	+/- 5%		SMD Resistor size 0603
R33	15K	+/- 5%		SMD Resistor size 0603
R34	680K	+/- 5%		SMD Resistor size 0603
R35	1K	+/- 5%		SMD Resistor size 0603
R36	330K	+/- 5%		SMD Resistor size 0603
R37	OPEN			
R38	15K	+/- 5%		SMD Resistor size 0603
R39	0	+/- 5%		SMD Resistor size 0603
R40	680K	+/- 5%		SMD Resistor size 0603
R41	1M	+/- 5%		SMD Resistor size 0603
R42	1K	+/- 5%		SMD Resistor size 0603
R43	1K	+/- 5%		SMD Resistor size 0603
R44	33K	+/- 5%		SMD Resistor size 0603
R45	OPEN			
R46	5.6K	+/- 5%		SMD Resistor size 0603
R47	1K	+/- 5%		SMD Resistor size 0603
R48	OPEN			
R49	1K	+/- 5%		SMD Resistor size 0603
R50	1.8K	+/- 5%		SMD Resistor size 0603
R51	22R	+/- 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	100R	+/- 5%		SMD Resistor size 0603
R57	0R	+/- 5%		SMD Resistor size 0603
R58	470K	+/- 5%		SMD Resistor size 0603
R59	OPEN	+/- 5%		SMD Resistor size 0603
R60	22R	+/- 5%		SMD Resistor size 0603
R61	100K	+/- 5%		SMD Resistor size 0603
R62	33K	+/- 5%		SMD Resistor size 0603
R63	120K	+/- 5%		SMD Resistor size 0603

VP200Pro-WF B.O.M.

FREQ:500~512MHz

ECN-0911-011

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Ref	Value	Tolerance	Manufacturer	Description
R64	10K	+/- 5%		SMD Resistor size 0603
R65	22K	+/- 5%		SMD Resistor size 0603
R66	1K	+/- 5%		SMD Resistor size 0603
R67	100K	+/- 5%		SMD Resistor size 0603
R68	33K	+/- 5%		SMD Resistor size 0603
R69	10K	+/- 5%		SMD Resistor size 0603
R70	100K	+/- 5%		SMD Resistor size 0603
R71	100K	+/- 5%		SMD Resistor size 0603
R72	100K	+/- 5%		SMD Resistor size 0603

半可調電容

TC1	1~3p	光茂	SMD Trimmer Capacitor
TC2	4~20p	光茂	SMD Trimmer Capacitor
TC3	4~20p	光茂	SMD Trimmer Capacitor

濾波器

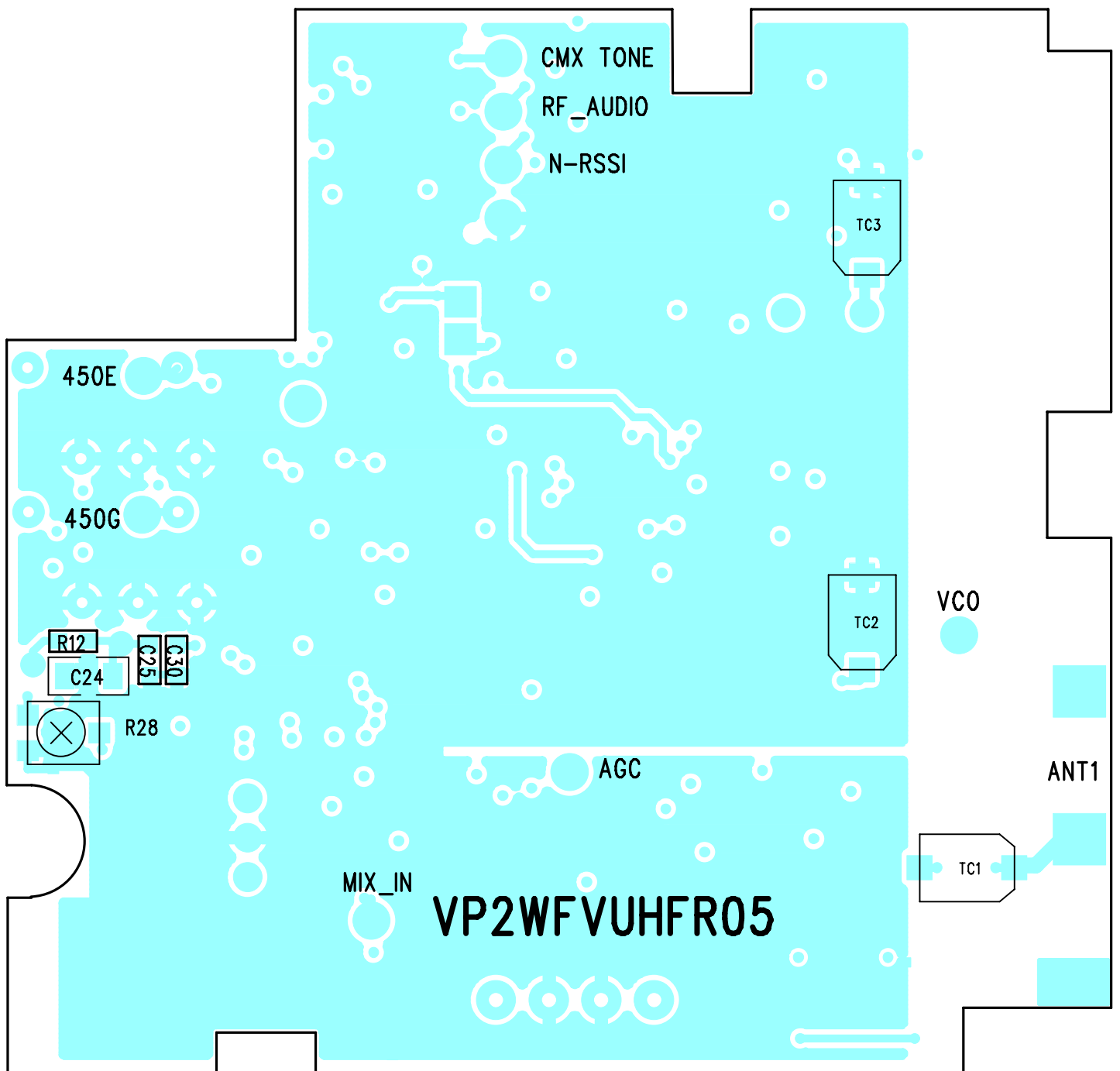
FIL1	TA0826A(500~512MHz)	TAI-SAW	F-11 SAW FILTER
FIL2	21.4MHz		XTAL-FIL-F-UM_5
FIL3	CFWM450E		Ceramic filter
FIL4	OPEN		
FIL5	CFWM450G		Ceramic filter

石英晶體

X1	OPEN		
X2	20.95M	+/- 3ppm	X'TAL Size UM5
ANT1	VP200 LOOP ANTENNA		Small loop antenna
PCB	VP2WVUHFR05		Printed circuit board
J1	AMP FEMALE/14PINS		SMD Connector
J2	AMP FEMALE/6PINS		
S1	VP200 RF 銅隔離罩		
TP1	VP200 ANTENNA Holder		

VCO: 500~512MHz 506MHz : 1.5V

TOP COMPONENT



BOTTOM COMPONENT

