AR2800

SERVICE MANUAL

AOR, LTD.

AR2800 RESET

1. Connect a diode between pin 13 and 51 of Microprocessor. Cathode side of the diode should be for pin 51.

2. Power on the set and initialize by KEY IN PROCEDURE as follow:

BANK>1>PROG>0>. >5>LIMIT>2>9>. >9>9>5>
SEARCH>5>5>6>. >3>2>5>ENTER

2>PROG>3>0>LIMIT>5>9>. >9>9>5>SEARCH>
5>5>6>. >3>2>5>ENTER

3>PROG>6>0>LIMIT>1>0>7>. >9>9>5>SEARCH>
5>5>6>. >3>2>5>ENTER

4>PROG>1>0>8>LIMIT>1>6>9>. >9>9>5>SEARCH>
5>5>6>. >3>2>5>ENTER

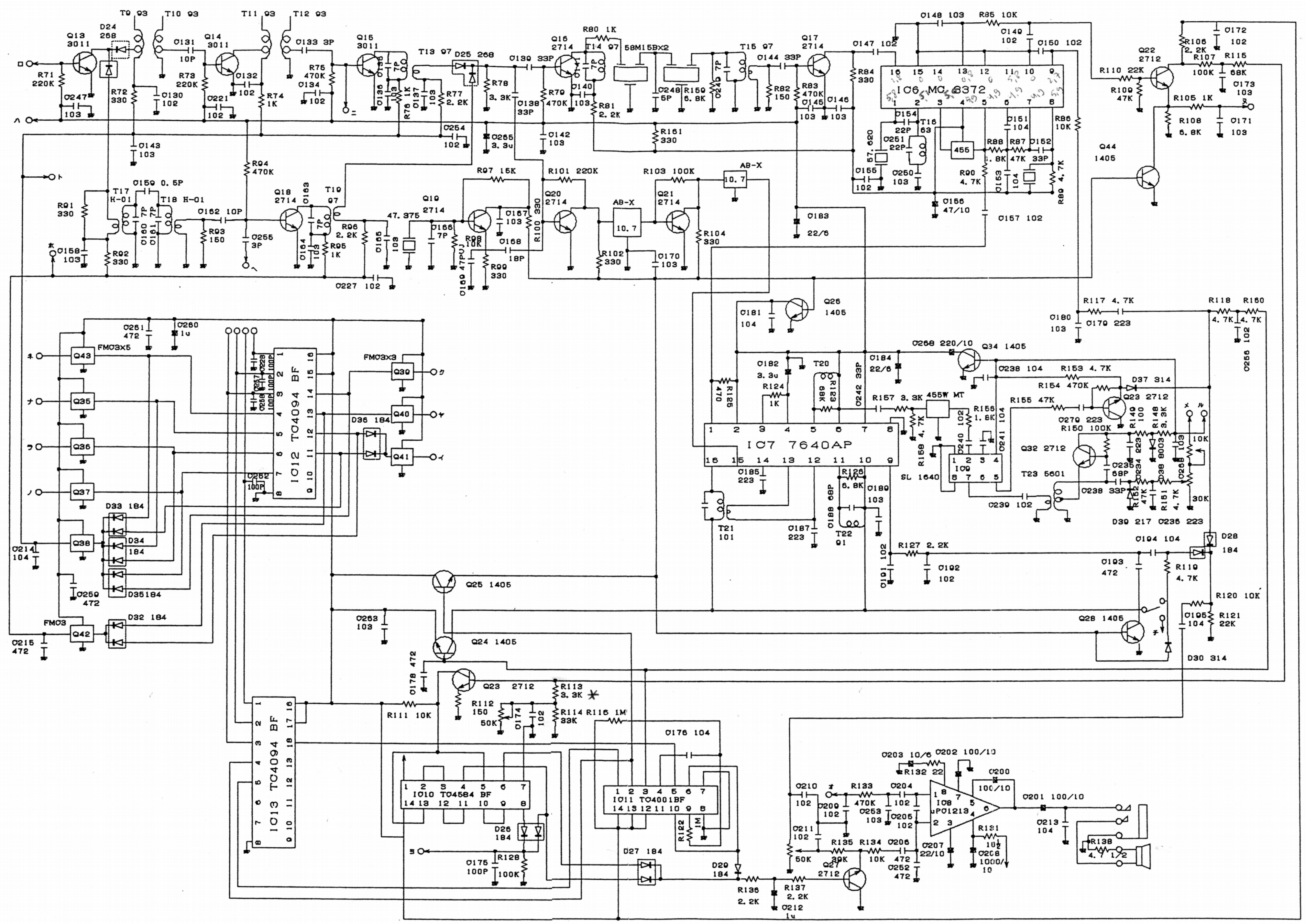
5>PROG>1>7>0>LIMIT>2>9>9>. >9>9>5>SEARCH>
5>5>6>. >3>2>5>ENTER

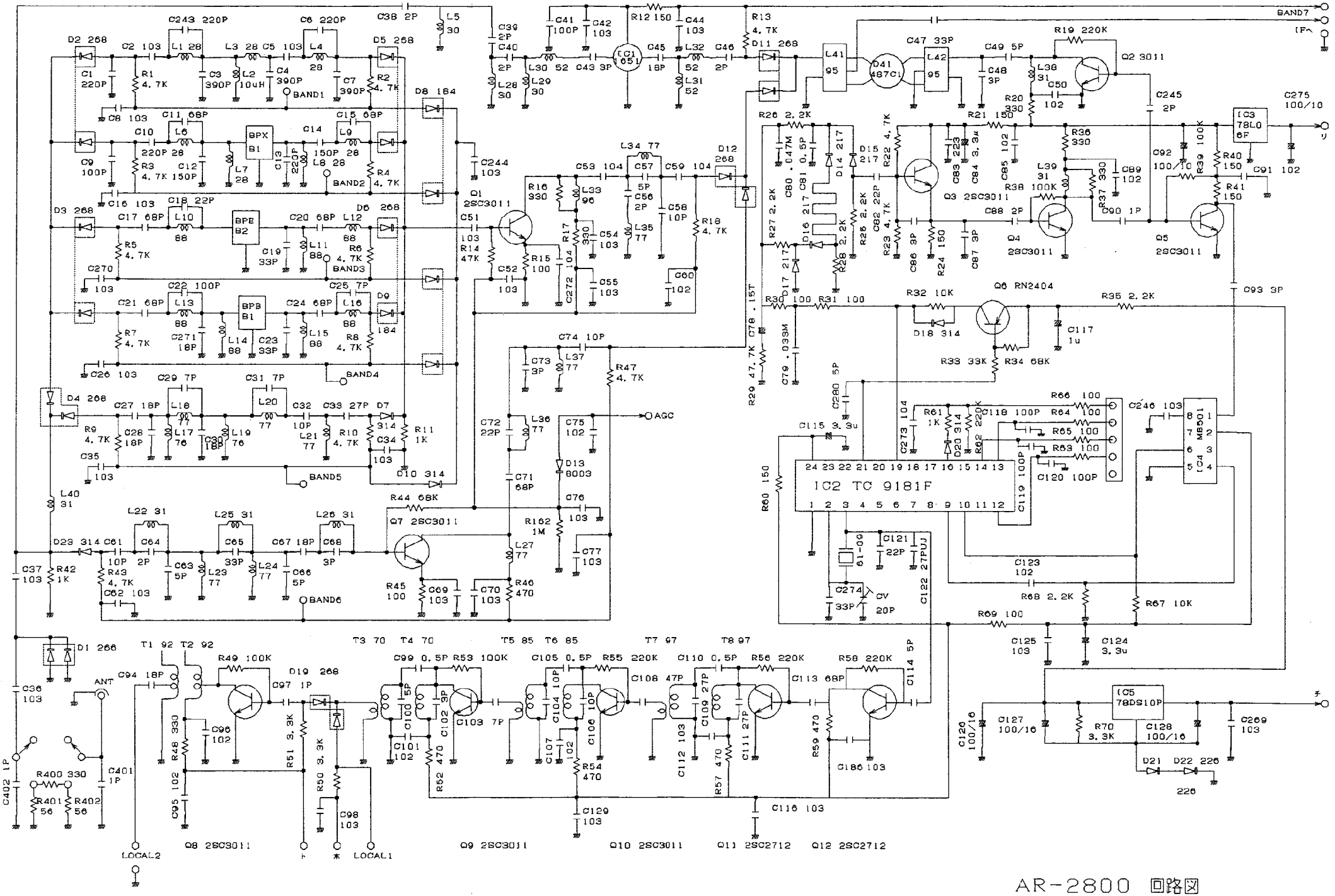
6>PROG>3>0>0>LIMIT>6>0>0>SEARCH>
2>4>9>. >1>2>5>ENTER

7>PROG>8>0>0>LIMIT>1>1>0>5>. >9>9>5>▼>
2>4>9>. >1>2>5>ENTER

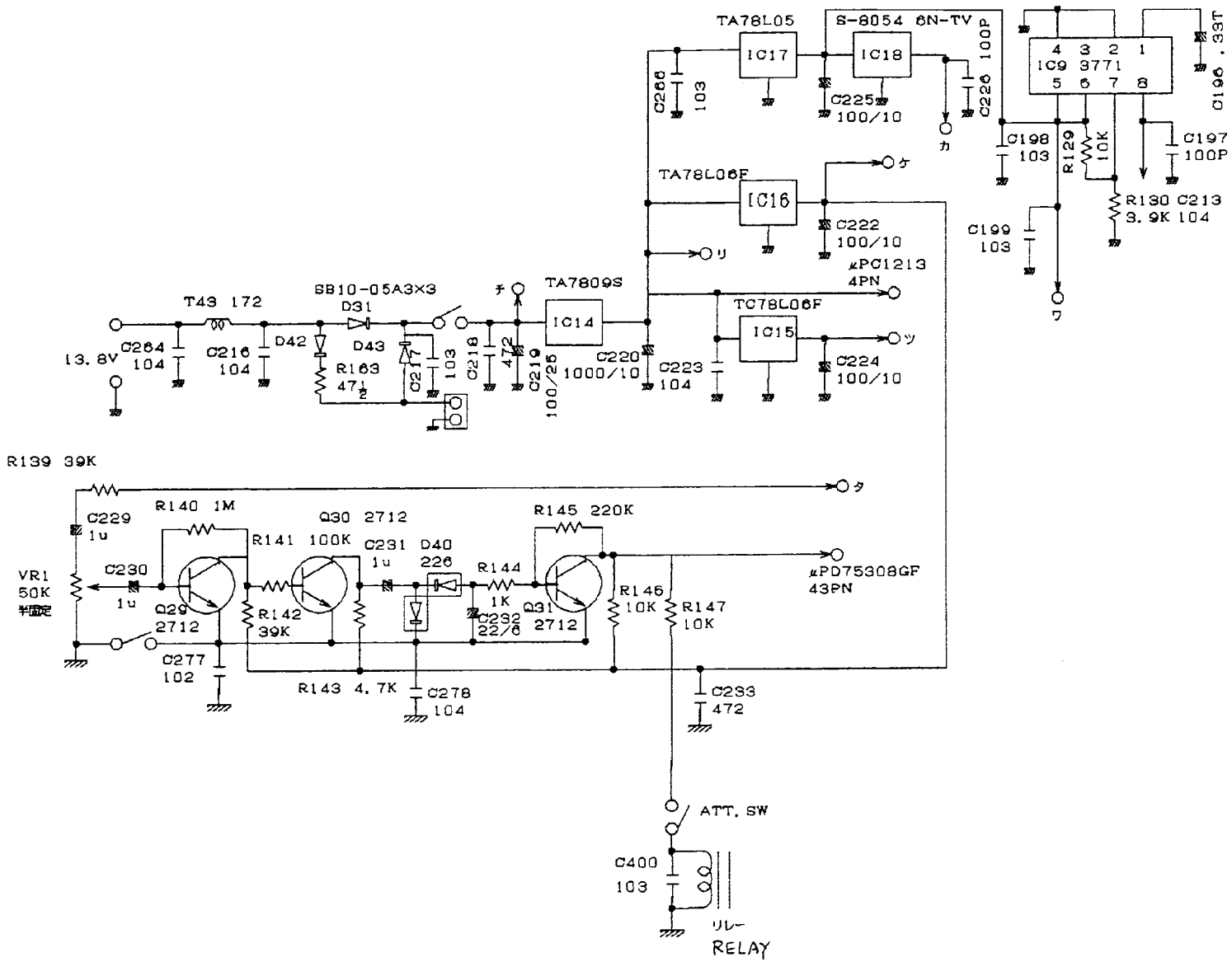
8>PROG>1>1>0>6>LIMIT>1>3>0>0>▼>
5>5>6>. >3>2>5>ENTER

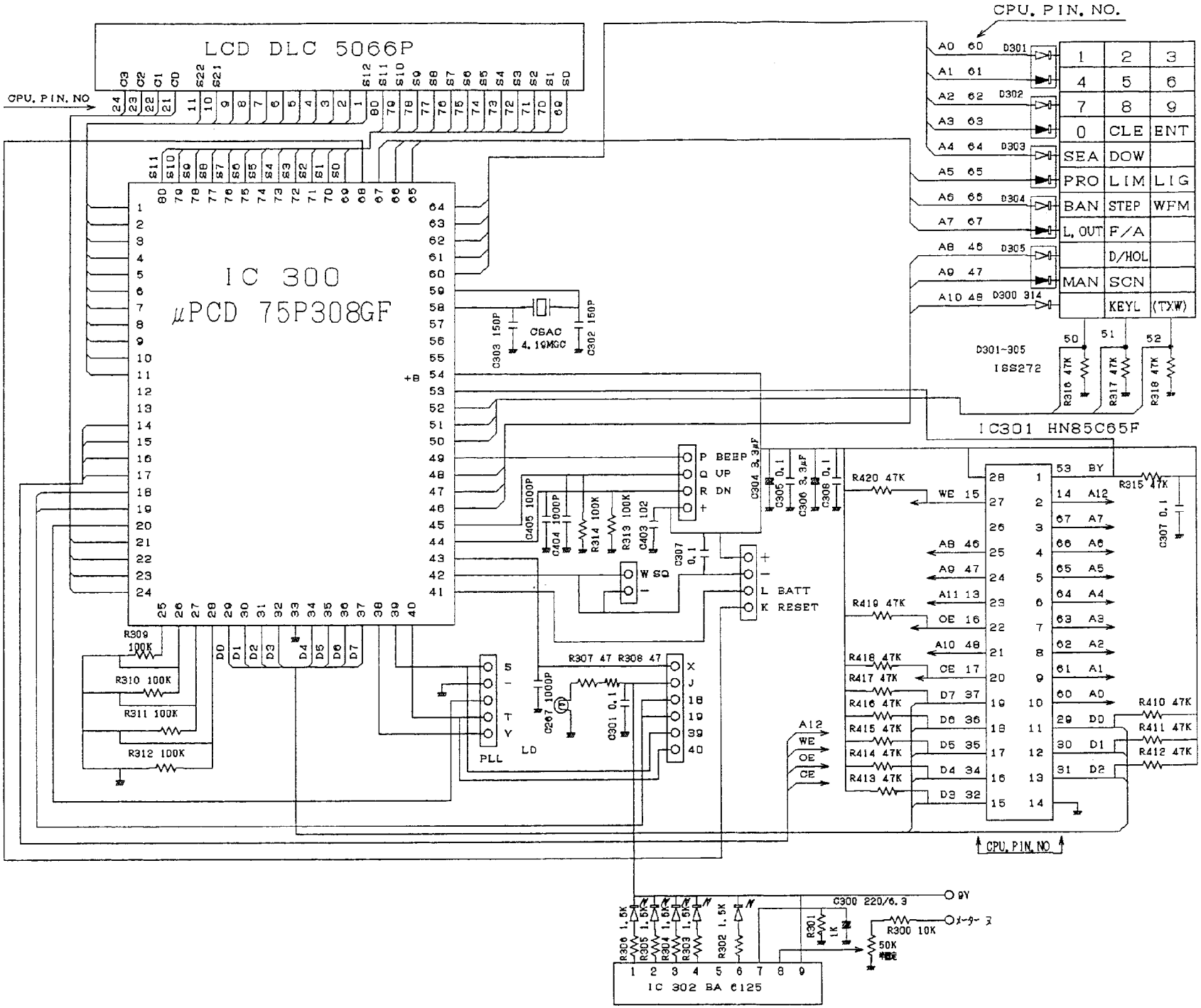
3. Power off the unit and remove a diode. Power on and write search program and memory channels.

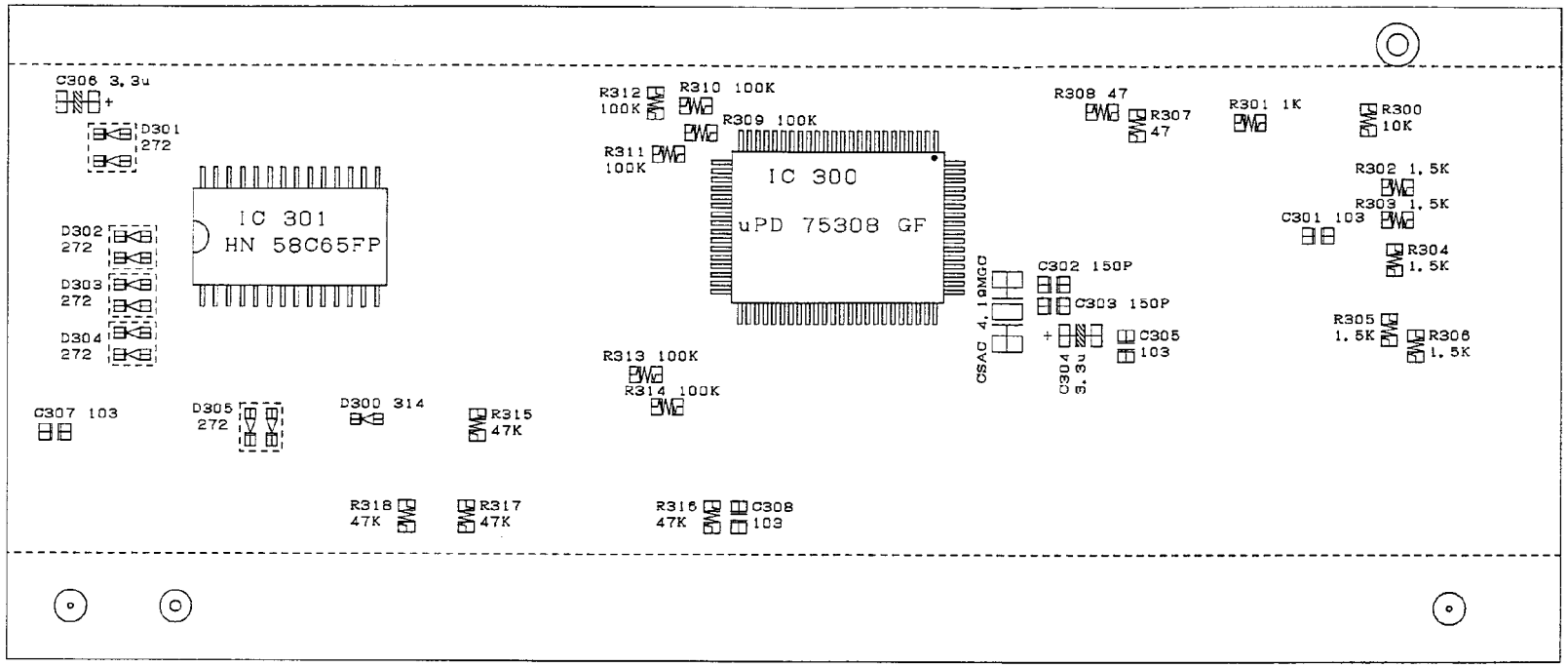

IC6 MC3372
IC7 7640AP
IC8 μPC1213
IC9 SL 1640
IC10 TC4584 BF
IC11 TC4001BF
IC12 TC4094 BF
IC13 TC4094 BF


IC2 TC 9181F
Q1 2SC3011
Q2 3011
Q3 2SC3011
Q4 2SC3011
Q5 2SC3011
Q6 RN2404
Q7 2SC3011
Q8 2SC3011
Q9 2SC3011
Q10 2SC3011
Q11 2SC2712
Q12 2SC2712
IC3 78L06F
IC4 MB501
IC5 78DS10P
BAND1
BAND2
BAND3
BAND4
BAND5
BAND6
BAND7
AGC
ANT
LOCAL1
LOCAL2

AR-2800 回路図


TA78L05
S-8054 6N-TV
IC17
IC18
C266
103
C225
100/10
C226 100P
カ
4 3 2 1
IC9 3771
5 6 7 8
C196 .33T
C198
103
R129
10K
C197
100P
R130 C213
3.9K 104
C199
103
ヲ
TA78L06F
IC16
ケ
C222
100/10
リ
μPC1213
4PN
TA78L06F
IC15
ツ
C224
100/10
SB10-05A3X3
D31
チ
TA7809S
IC14
T43 172
13.8V
C264
104
C216
104
D42
D43
R163
47Ω
C217
103
C218
472
C219
100/25
C220
1000/10
C223
104
R139 39K
タ
R140 1M
C229
1u
Q30 2712
R141 100K
C231
1u
D40
226
R145 220K
VR1
50K
半固定
C230
1u
Q29
2712
R142
39K
R144
1K
Q31
2712
C232
22/6
R146
10K
R147
10K
μPD75308GF
43PN
C277
102
R143 4.7K
C278
104
C283
472
ATT. SW
C400
103
リレー
RELAY

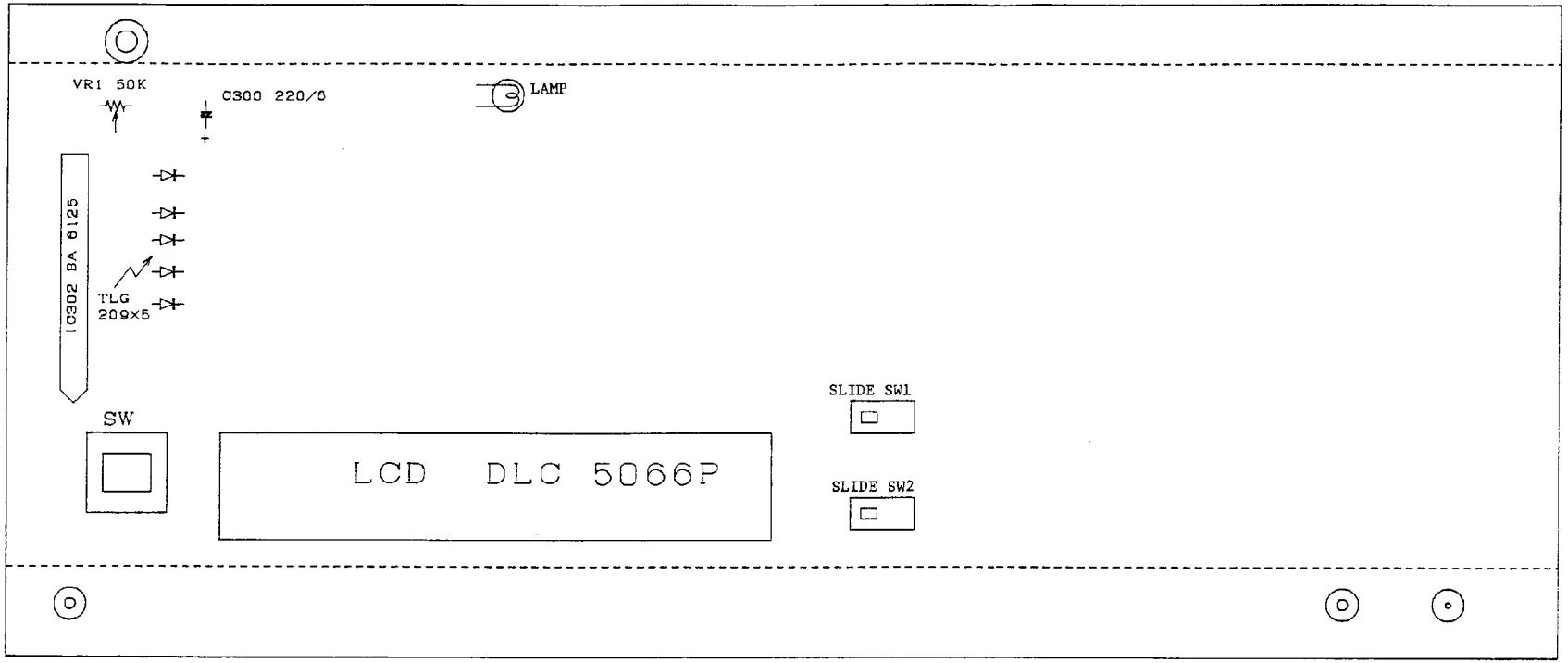

LCD DLC 5066P
CPU. PIN. NO
IC 300
μPCD 75P308GF
CSAC
4.19MGC
C303 150P
C302 150P
CPU. PIN. NO.
A0 60 D301
A1 61
A2 62 D302
A3 63
A4 64 D303
A5 65
A6 66 D304
A7 67
A8 46 D305
A9 47
A10 48 D300 314
1 2 3
4 5 6
7 8 9
0 CLE ENT
SEA DOW
PRO LIM LIG
BAN STEP WFM
L. OUT F/A
D/HOL
MAN SCN
KEYL (TXW)
D301-305
1SS272
R316 47K
R317 47K
R318 47K
IC301 HN85C65F
P BEEP
Q UP
R DN
+
W SQ
L BATT
K RESET
R420 47K
WE 15
R419 47K
OE 16
R418 47K
CE 17
R417 47K
R416 47K
R415 47K
R414 47K
R413 47K
R315 47K
R410 47K
R411 47K
R412 47K
R309 100K
R310 100K
R311 100K
R312 100K
R307 47 R308 47
PLL
LD
A12
WE
OE
CE
CPU. PIN. NO
IC 302 BA 6125
C300 220/6.3
9V
R300 10K
50K



AR-2800 CONTROL UNIT SOLDER FOIL SIDE COMPONENT LAYOUT

PARTS LIST
AR-2800 (CONTROL UNIT)

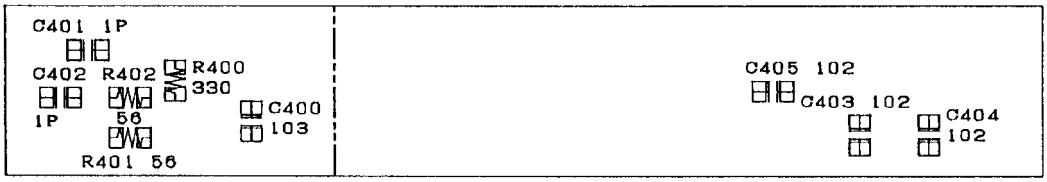
DESCRIPTION	PART NO.	Q'TY	ITEM
IC	uPD75308GF	1	IC300
	HN58C65FP	1	IC301
DIODE	ISS272	5	D301,302,303,304 305
	ISS314	1	D300
SERALOCK	CSAC4.19MGC	1	
CHIP RESISTOR	RC210 47Ω	2	R307,308
	1KΩ	1	R301
	1.5KΩ	5	R302,303,304,305 306
	10KΩ	1	R300
	47KΩ	4	R315,316,317,318
	100KΩ	6	R309,310,311,312,3 13,314
CHIP CAPACITOR	GRM40 CH150P	2	C302,303
	GRM40 B 103	4	C301,305,307,308
CHIP ELECTROLYTIC CAP.	ECS-T0JY335R 3.3u	2	C304,306



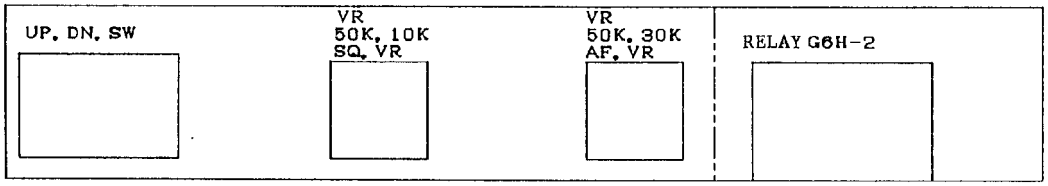
AR-2800 CONTROL UNIT COMPONENT SIDE COMPONENT LAYOUT

PARTS LIST
AR-2800 (CONTROL UNIT)

DESCRIPTION	PARTS NO.	Q'TY	ITEM
IC	BA6125	1	IC302
LCD	DLC5066P	1	
ELECTROLYTIC CAPACITOR	6.3V220u6.5×8	1	C300
SEMI FIXED RESISTOR	VM5CK-PV B50K	1	VR1(for METER LED)
LED	TLG209(GREEN)	5	
LAMP		1	
MINI SLIDE SW		2	for BFO,ATT
PUSH SW		1	(for POWER SUPPLY)



AR-2800 SOLDER FOIL SIDE
(ATT) COMPONENT LAYOUT
(UP, DN)



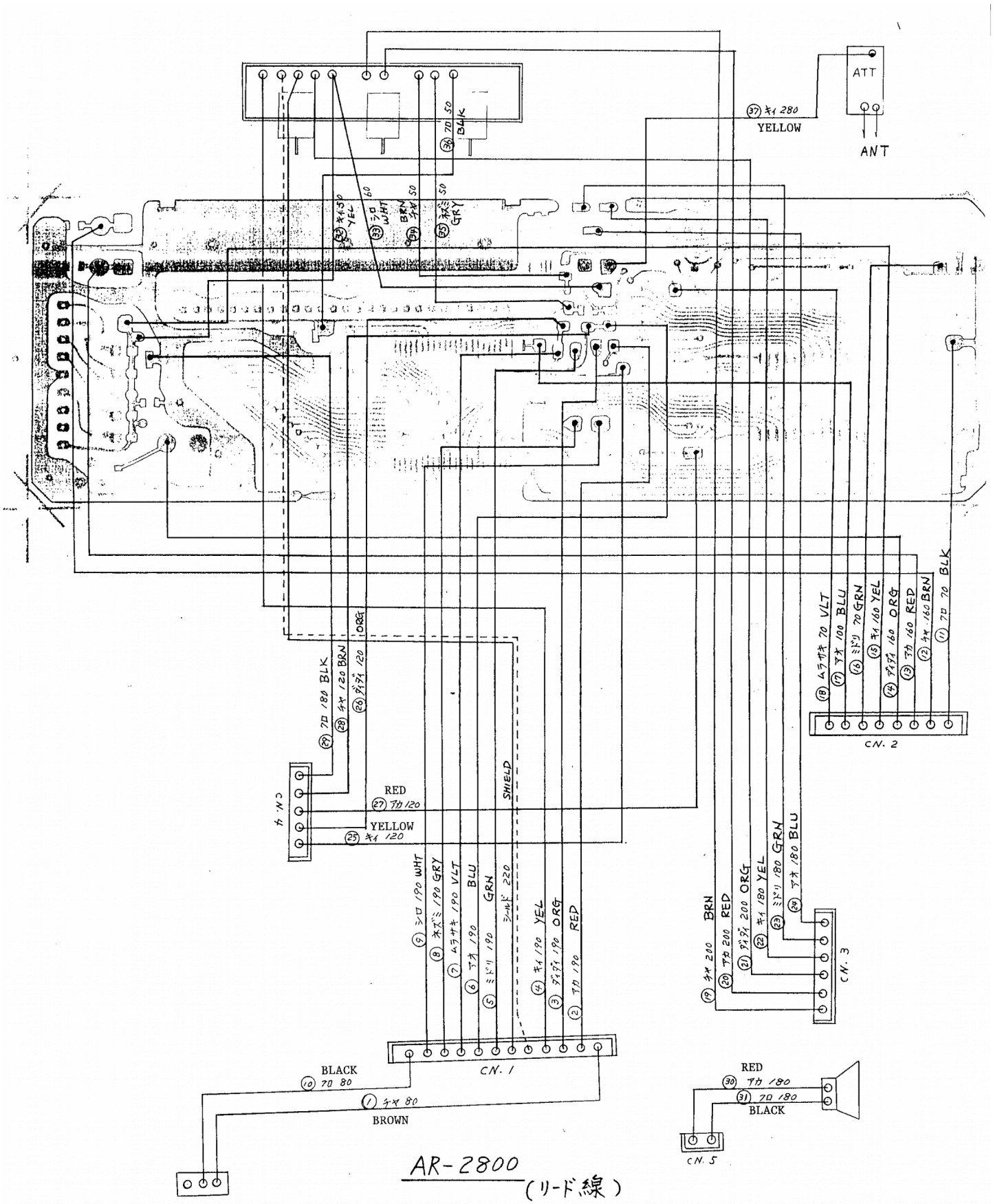
AR-2800 COMPONENT SIDE
(ATT) COMPONENT LAYOUT
(UP, DN)

PARTS LIST
AR-2800

DESCRIPTION	PART NO.	Q'TY	ITEM
UP.DW.SW		1	
COAXIAL POTENTIOMETER	AF VR	1	50K.30K
	SQ VR	1	50K.10K
RELAY	G6H-2(DC9V)	1	

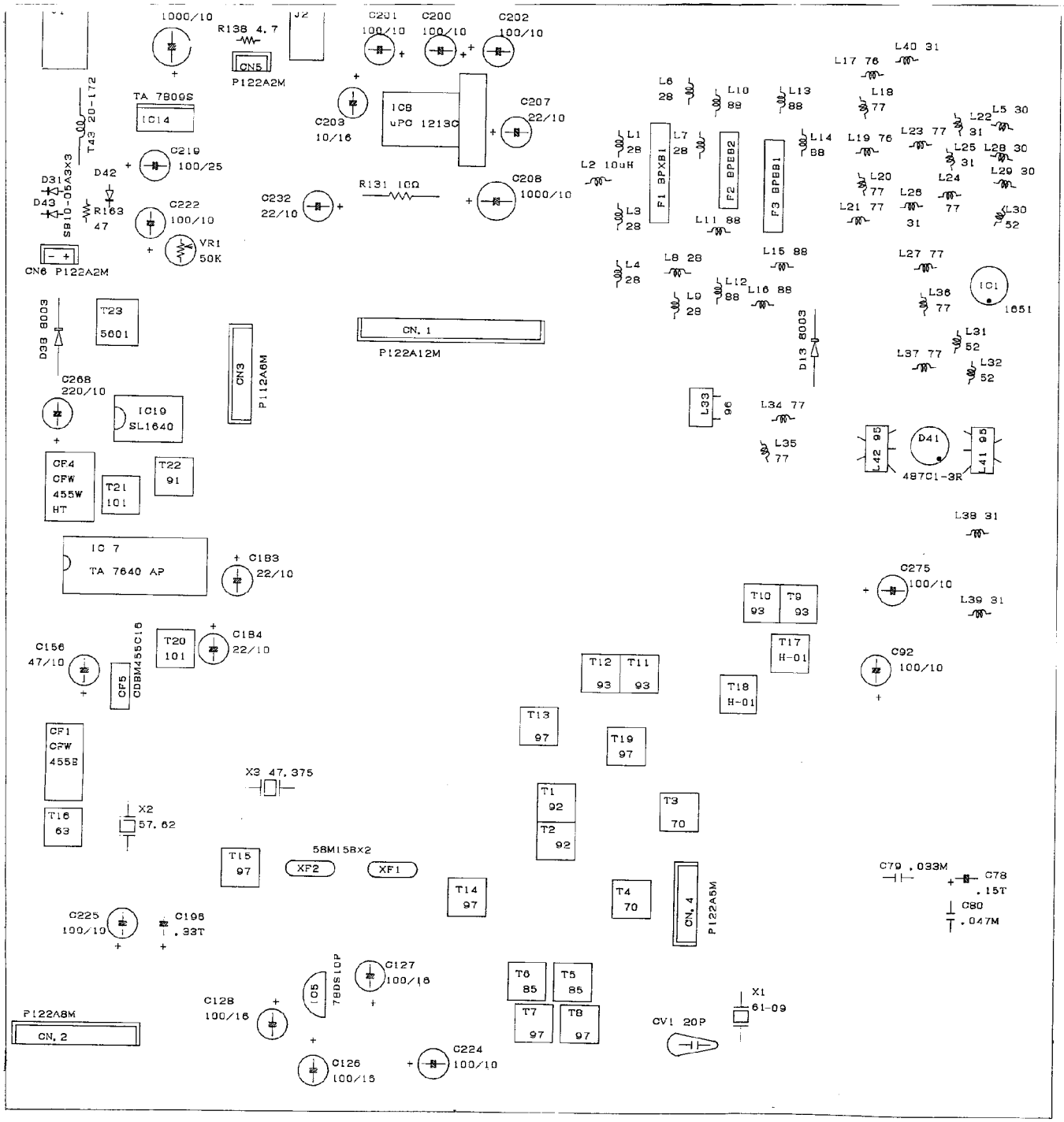
PARTS LIST
AR-2800

DESCRIPTION	PART NO.	Q'TY	ITEM
CHIP RESISTOR	RC210 56Ω	2	R401,402
	330Ω	1	R400
CHIP CAPACITOR	GRM40 CH 1P	1	C401,402
	B 103	1	C400
	102	3	C403,404,405



AR-2800 (リード線)

WIRINGS


1000/10
R138 4.7
CN5
P122A2M
C201
100/10
C200
100/10
C202
100/10
C203
10/16
IC8
uPC 1213C
C207
22/10
TA 7809S
IC14
T43 20-172
C219
100/25
D31
D43
SB10-05A3X3
D42
R163
47
C222
100/10
VR1
50K
CN6 P122A2M
C232
22/10
R131 10Ω
C208
1000/10
L6
28
L10
88
L13
88
L18
77
L40 31
L17 76
L22
31
L5 30
L23 77
L25
31
L28 30
L29 30
L19 76
L24
77
L20
77
L26
31
L21 77
L30
52
L1
28
L7
28
L14
88
L2 10uH
L3
28
F1 BPXB1
F2 BPBB2
F3 BPBB1
L11 88
L4
28
L8 28
L12
88
L9
28
L16 88
L15 88
L27 77
L36
77
IC1
1651
L31
52
L37 77
L32
52
D38 8003
T23
5601
CN, 1
P122A12M
CN3
P112A6M
D13 8003
C268
220/10
IC19
SL1640
L33
96
L34 77
L35
77
L42 95
D41
487C1-3R
L41 95
CF4
CFW
455W
HT
T21
101
T22
91
L38 31
IC 7
TA 7640 AP
+ C183
22/10
C275
100/10
L39 31
T10
93
T9
93
T17
H-01
C156
47/10
CF5
CDBM455C16
T20
101
C184
22/10
T12
93
T11
93
C92
100/10
T18
H-01
CF1
CFW
455E
T13
97
T19
97
X3 47.375
T16
63
X2
57.62
T1
92
T2
92
T3
70
58M15BX2
T15
97
XF2
XF1
T14
97
T4
70
CN, 4
P122A5M
C79 .033M
C78
.15T
C80
.047M
C225
100/10
C198
.33T
C127
100/16
C128
100/16
IC5
78DS10P
T6
85
T5
85
T7
97
T8
97
X1
61-09
CV1 20P
P122A8M
CN, 2
C126
100/16
C224
100/10

IC-2
TC9181F
IC12
TC4094BF
IC13
TC4094BF
IC10
TC4584BF
IC11
TC4001BF
IC6
MC3372M
IC9
MB
3771F
S-8054ALR
78L06
78L05F
78L06F
FMC3X5
FMC3
SFEC 10.7
AB-X
CF2
CF3

PARTS LIST
AR－2800

DESCRIPTION	PART NO.	Q'TY	ITEM
IC	uPC1651G	1	IC1
	uPC1213C	1	IC8
	SL1640	1	IC19
	TA7640AP	1	IC7
	TA78DS10P	1	IC5
	TA7809S	1	IC14
FILTER	BPXB1	1	F1
	BPEB2	1	F2
	BPBB1	1	F3
	CFW455E	1	CF1
	CFW455WHT	1	CF4
	58M15B(HC-49U)	2	XF1,2(58.075M)
CRYSTAL	61-09	1	X1(12.8M)
	50.620MHz	1	X2(HC-49U)
	47.375MHz	1	X3(HC-49U)
DISCRIMINATOR	CDBM455C16	1	CF5
TRANSFORMER	55-63	1	T16
	55-70	2	T3,4
	55-85	2	T5,6
	55-91	1	T22
	55-92	2	T1,2
	55-93	4	T9,10,11,12
	55-97	6	T7,8,13, 14,15,19
	H-01	2	T17,18
	S-132-101	2	T20,21
	5601	1	T23
	20-172	1	T43
COIL	55-28	7	L1,3,4,6,7,8,9
	55-30	3	L5,28,29
	55-31	6	L22,25,26,38,39,40
	55-52	3	L30,32,31
	55-76	2	L17,19
	55-77	10	L18,20, 21,23,24,27, 34,35,36,37
	55-88	7	L10,11, 12, 13,14, 15,16
	55-95	2	L41,42
	55-96	1	L33
	LAL02KR100K	1	L2(10uH)
DIODE	LT8003	2	D13,38
	SB10-05A3	3	D31,42,43
	ND487C1-3R	1	D41
TRIMMER CAPACITOR	CV-38D 20P	1	CV1
CONNECTOR	P122A2M	2	CN5,6
	P122A5M	1	CN4
	P122A6M	1	CN3
	P122A8M	1	CN2
	P122A12M	1	CN1
CHIP RESISTOR	F1/2WSSP47Ω	1	R163
	〃 10Ω	1	R131
	〃 4.7Ω	1	R138
TANTALUM CAPACITOR	16V 0.15u	1	C78
	16V 0.33u	1	C196
MYLAR CAPACITOR	16V 333	1	C79
	16V 473	1	C80

DESCRIPTION	PART NO.	Q'TY	ITEM
SEMI FIXED RESISTOR	VM5CK-PV B50KΩ	1	VR1 (AF SCAN用)
ELECTROLYTIC CAPACITOR	16V 10u 4×7	1	C203
	10V 22u 4×7	4	C183,184,207,232
	10V 47u 5×7	1	C156
	〃 100u 6.5×8	8	C92,200,201,202,222,224,225,275
	16V 〃 6×11	3	C126,127,128
	25V 〃 6.5×13	1	C219
	10V 220u 6×11	1	C268
	〃 1000u10×18	2	C208,220
DC P.S.	2.1φ	1	
EXT.SP.J	3.5φ	1	

PARTS LIST

AR-2800

DESCRIPTION	PART NO.	Q'TY	ITEM
IC	MB501L	1	IC4
	MC3372M	1	IC6
	MB3771F	1	IC9
	S-8054ALR-LN-T1	1	IC18
	TA78L06F	3	IC3,15,16
	TA78L05F	1	IC17
	TC9181F	1	IC2
	TC4584BF	1	IC10
	TC4001BF	1	IC11
	TC4094BF	1	IC12,13
TRANSISTOR	2SC3011	12	Q1,2,3,4,5,7,8,9,10,13,14,15
	2SC2712Y	10	Q11,12,22,23,27,29 30,31,32,33
	2SC2714Y	6	Q16,17,18,19,20,21
	RN2404	1	Q6
	RN2405	1	Q24
	RN1405	5	Q25,26,28,34,44
	FMC3	9	Q35,36,37,38,39,40 41,42,43
FILTER	SFEC10.7MS2	2	CF2,3
DIODE	ISS184	11	D8,9,26,27,28,29, 32,33,34,35,36
	ISS226	4	D1,21,22,40
	ISS268	10	D2,3,4,5,6,11,12, 19,24,25
	ISV217	5	D14,15,16,17,39
CHIP RESISTOR	RC210 22Ω	1	R132
	100Ω	10	R15,30,31,45,63,64 65,66,69,149
	150Ω	9	R12,21,24,40,41,60 82,93,112
	330Ω	15	R16,17,20,36,37,48 72,84,91,92,99,100 102,104,161
	470Ω	6	R46,52,54,57,59, 125
	1KΩ	10	R11,42,61,74,76,80 95,105,124,144
	1.8KΩ	2	R88,156
	2.2KΩ	13	R25,26,27,28,35,68 77,81,96,106,127, 136,137
	3.3KΩ	7	R50,51,70,78,113 148,157
	3.9KΩ	1	R130
	4.7KΩ	27	R1,2,3,4,5,6,7,8,9 10,13,18,22,23,29 43,47,89,90,117,11 8,119,143,151,153, 158,160
	6.8KΩ	3	R108,126,159
	10KΩ	11	R32,67,85,86,98,11 1,120,129,134,146, 147
	15KΩ	1	R97
	22KΩ	2	R110,121
	33KΩ	2	R33,114
	39KΩ	3	R135,139,142
	47KΩ	5	R14,87,109,152,155
	68KΩ	4	R44,115,123,34
	100KΩ	9	R38,39,49,45,103,1 07,128,141,150,53
	220KΩ	9	R19,55,56,58,62,71 73,101,145
	1MΩ	4	R116,122,140,162

DESCRIPTION	PART NO.	Q'TY	ITEM
CHIP ELECTROLYTIC	ECS-TOJY3.3u	4	C84,115,124,182
	1u	7	C117,212,229,230,2 31,260,265
CHIP RESISTOR	GRM40CH 0.5P	5	C81,99,105,110,159
	1P	2	C90,97
	2P	8	C38,39,40,46,56,64 88,245
	3P	10	C43,48,68,73,86,87 93,102,133,255
	5P	7	C49,57,63,66,100,2 48,280
	7P	11	C25,29,31,103,135, 141,160,161,163,16 6,249
	10P	8	C32,58,61,74,104,1 06,131,162
	15P	1	C114
	18P	8	C27,28,30,45,67,94 ,168,271
	22P	6	C18,72,82,121,154, 251
	27P	3	C33,109,111
	33P	11	C19,23,47,65,138,1 39,144,152,237,242 274
	47P	1	C108
	68P	10	C11,15,17,20,21,24 ,71,113,188,235
	100P	13	C9,22,41,118,119,1 20,175,197,226,228 ,257,258,262
	150P	2	C12,14
	220P	5	C1,6,10,13,243
	390P	3	C3,4,7
	GRM40UJ 27P	1	C122
	47P	1	C169
	GRM40 B 102	36	C50,60,75,85,89,91 ,95,96,101,107,123 ,130,132,134,147,1 49,150,155,157,172 ,174,191,192,204,2 05,209,210,211,221 ,227,239,240,254,2 56,267,277
	103	56	C2,5,8,16,26,34,35 ,36,37,42,44,51,52 ,54,55,62,69,70,76 ,77,98,112,116,125 ,129,136,137,140,1 42,143,145,146,148 ,158,164,165,167,1 70,171,173,180,186 ,189,198,199,217,2 44,246,247,250,253 ,266,269,270,263,2 68
	104	18	C53,59,151,153,176 ,181,194,195,213,2 14,216,223,238,241 ,264,272,273,278
	472	10	C177,178,193,206,2 15,218,233,252,218 ,233,252,259,261
	223	7	C83,179,185,187,23 4,236,279
DIODE	ISS314	7	D7,10, 18, 20,23,3 0,37
CHIP RESISTOR	RC210 470KΩ	6	R75,79,83,94,133,1 54

AR2800 SERVICING INFORMATION

1. Banding

			1st IF	2nd IF	3rd IF
Band 1.	0.5	- 29.995MHz	+556.325MHz	58.075MHz	455KHz/10.7MHz
2.	30	- 59.995	"	"	"
3.	60	- 107.995	"	"	"
4.	108	- 169.995	"	"	"
5.	170	- 299.995	"	"	"
6.	300	- 600	+249.125	"	"
7.	800	- 1105.995	-249.125	"	"
8.	1106	- 1300	-556.325	"	"

2. IF adjustment

1) Apply exact 13.2V DC for power source and input 58.075MHz AM signal level 18dB from S.S.G. and adjust T13, T14, T15, T20 & T21 to get S/N 10dB sensitivity.

2) Input FM signal level 12dB and adjust T15 & T16(slug even with coil sleeve) to get 12dB SINAD sensitivity.

3) Input WFM signal level 22db and adjust T22 for the best SINAD.

4) Reference oscillator alignment
Connect frequency counter at secondary of T5 and adjust CV1 trimmer for exact 153.6MHz, Adjust T5, T6, T7 & T8 for maximum output level of the carrier.

3. RF adjustment

1) Set 118.1MHz AM and apply same frequency signal from S.S.G. at level of 0dB and adjust T1, T2, T3, T4, T9, T10, T11 & T12 for more than S/N 10dB sensitivity.
Check the level difference with 10dB between FM and AM.

2) Set 950.1MHz AM and apply same frequency signal from S.S.G. at level of +3dB and adjust T3, T17, T18 & T19 for more than S/N 10dB sensitivity.
Check the level around +6dB for FM against 12dB SINAD.

4. Sensitivity check

1290.0MHz	FM	+12dB	12dB SINAD
950.1	FM	+ 6	"
25.1	FM	0	"
5.2	FM	0	"
118.1	AM	0	S/N 10dB
92.1	WFM	+ 6	"
151.1	FM	0	12dB SINAD
355.1	FM	0	"
440.1	FM	0	"
512.1	FM	+ 6	"
250.1	AM	0	S/N 10dB
850.1	FM	0	12dB SINAD

5. AF squelch check

Set 850.1MHz FM, input +40dB level 0.5KHz deviation, adjust VR1 for AF squelch open for 0.5KHz deviation and close for less than 0.5KHz even in tight squelch position of normal squelch control.

6. BFO adjustment

Set 25.1MHz AM no modulation, switch on BFO and adjust T21 for zero beat.

7. S meter adjustment

Set 151.1 FM input level for 12dB SINAD and adjust VR1 at LED S meter for one section light on level.