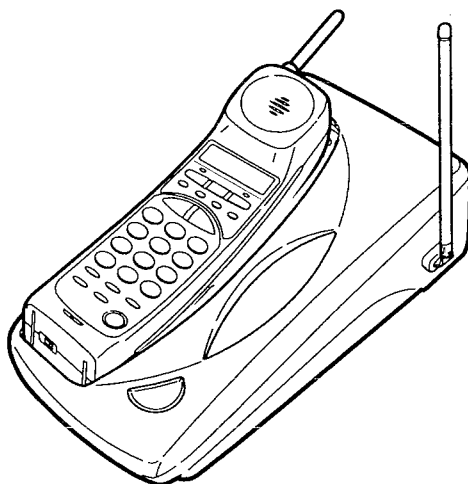


SERVICE MANUAL

CORDLESS TELEPHONE

CLT-9819/RU

(RUSSIA)



PRODUCT CODE No.

178 432 14

Specifications

Control	BASE UNIT	HAND UNIT
1. DIAL		Push
2. TEL		Push
3. END		Push
4. PAGE	Push	
5. POWER ON/OFF		Slide
6. FLASH		Push
7. MEMORY		Push
8. HOLD		Push
9. SCAN		Push
10. TONE		Push
11. REDIAL/P		Push
12. HF		Push
13. CALL BACK		Push
14. MENU		Push
15. ERASE		Push

Control	BASE UNIT	HAND UNIT
16. DIRECTORY		Push
17. C.WTG		Push
18. VOLUME ▲		Push
19. VOLUME ▼		Push
20. TONE/PULSE		Slide

Indicator Lamps	BASE UNIT	HAND UNIT
1. IN USE	Amber	Green
2. CHARGE	Red	
3. PAGE	Amber	
4. BATT. LOW		Red
5. H.F.		Red

Power Supply AC 220V 50Hz (AC Adaptor)
Ni-Cd 3N-600AA 3.6V

Specifications are subject to change without notice

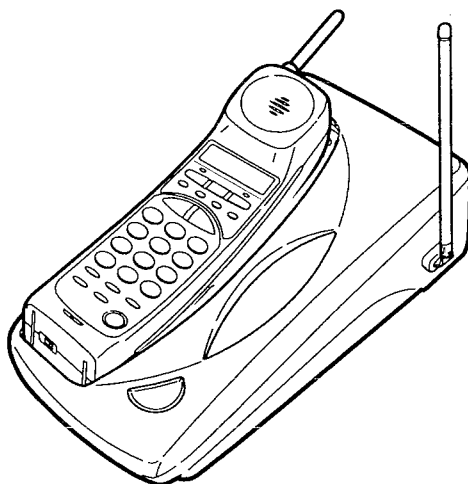
REFERENCE No. SM750247

SERVICE MANUAL

CORDLESS TELEPHONE

CLT-9819/RU

(RUSSIA)



PRODUCT CODE No.

178 432 14

Specifications

Control	BASE UNIT	HAND UNIT
1. DIAL		Push
2. TEL		Push
3. END		Push
4. PAGE	Push	
5. POWER ON/OFF		Slide
6. FLASH		Push
7. MEMORY		Push
8. HOLD		Push
9. SCAN		Push
10. TONE		Push
11. REDIAL/P		Push
12. HF		Push
13. CALL BACK		Push
14. MENU		Push
15. ERASE		Push

Control	BASE UNIT	HAND UNIT
16. DIRECTORY		Push
17. C.WTG		Push
18. VOLUME ▲		Push
19. VOLUME ▼		Push
20. TONE/PULSE		Slide

Indicator Lamps	BASE UNIT	HAND UNIT
1. IN USE	Amber	Green
2. CHARGE	Red	
3. PAGE	Amber	
4. BATT. LOW		Red
5. H.F.		Red

Power Supply AC 220V 50Hz (AC Adaptor)
Ni-Cd 3N-600AA 3.6V

Specifications are subject to change without notice

REFERENCE No. SM750247

ALIGNMENT PROCEDURES

1.HAND UNIT

1-1 Transmitting Part

- Feed 3.8V DC power supply to CP1.
- Operate the unit switching the POWER SW on.
- The connection of unit for arrangement in Fig. 1-1.
- Make TP201 momentary short for TEST MODE.
(TEST MODE channel is 28CH)
- Mic No LOAD.

Step	Condition	Adjust	Confirm	Adjusted Value
(a)	Oscillator output 20mV open (1kHz) in TP61	SVR71	Indication of FM linear detector	6.0 ± 0.1 kHz dev.
(b)	Oscillator output 20mV + 20dB open (1kHz)	Confirm	Indication of FM linear detector	7.5 ± 0.5 kHz dev.
(c)	Push "10" key (DATA TX MODE)	Confirm	Indication of FM linear detector	8.0 ± 0.5 kHz dev.

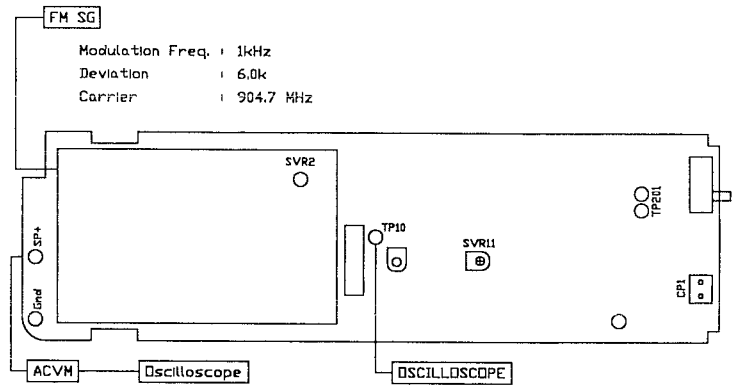


Fig. 1-2

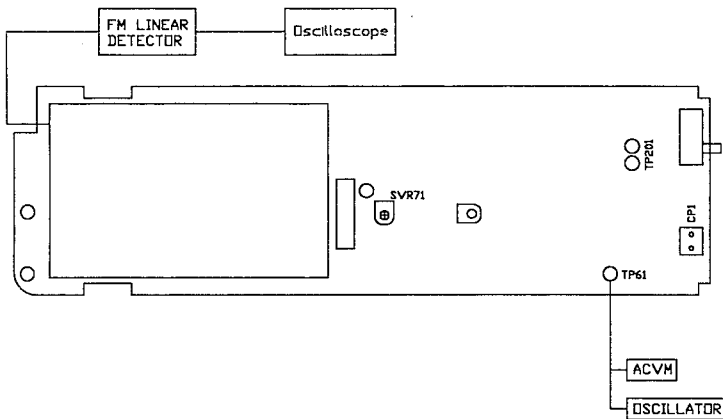


Fig. 1-1

2.BASE UNIT

2-1 Transmitting Part

- ANT should be disconnected.
- Connect the AC adaptor with base unit. (INPUT:AC 220/50Hz)
- The connection of unit arrangement is shown in Fig.2-1.
- Make TP701 & TP702 momentary short for TEST MODE.
(TEST MODE channel is 32CH)

Step	Condition	Adjust	Confirm	Adjusted Value
(a)	Oscillator output 200mV open (1kHz) in JK501	SVR611 Confirm	Indication of FM linear detector	6.0 ± 0.1 kHz dev.
(b)	Oscillator output 200mV + 20dB open (1kHz) in JK501	—	Indication of FM linear detector	7.7 ± 0.5 kHz dev.
(c)	Push the PAGE SW (SW701) twice (DATA TX MODE)	Confirm	Indication of FM linear detector	8.5 ± 0.5 kHz dev.
(d)	Push the PAGE SW (SW701) twice (ALM ON MODE)	Confirm	Indication of FM linear detector & ACVM	6.0 ± 1 kHz

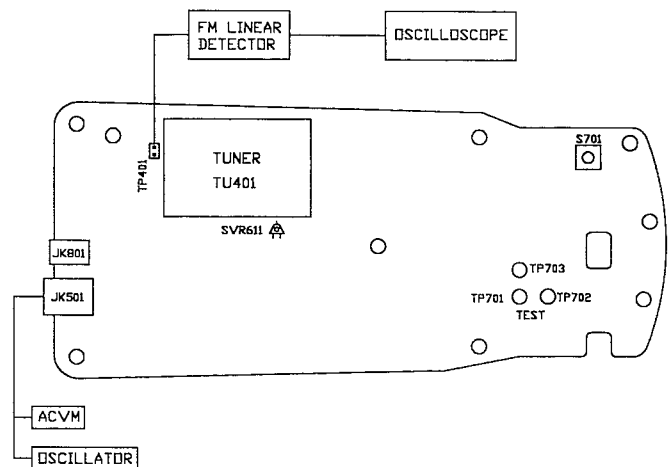


Fig. 2-1

1-2 Receiving Part

- Feed 3.8V DC power supply to CP1.
- Operate the unit by switching the POWER SW on.
- The connection of unit for arrangement in Fig.1-2.
- Make TP201 momentary short for TEST MODE.
(TEST MODE channel is 28CH)
- Speaker should be disconnected.

Step	Condition	Adjust	Confirm	Adjusted Value
(a)	SSG output:40dBuV EMF	SVR11	Deflection of waveform on the Oscilloscope	-18 dBm
(b)	SSG output:10dBuV	Confirm	Indication of ACVM	-20.5 dBm (Hi-cut ON)
(c)	SSG output:1dBuV EMF (Deviation:ON)	SVR2 (Tu)	Monitor at TP10	Change from Low → Hi
(d)	SSG output:30dBuV	Confirm	Indication of ACVM	-18 dBm

ALIGNMENT PROCEDURES

2-2 Receiving Part

- ANT should be disconnected.
- Connect the AC adaptor with base unit. (INPUT: AC 220/50Hz)
- The connection of unit arrangement is shown in Fig.2-2.
- Make TP701& TP702 momentary short for TEST MODE. (TEST MODE channel is 32CH)
- Push the PAGE SW (SW701) once. (RX ON mode)

Step	Condition	Adjust	Confirm	Adjusted Value
(a)	SSG output:40dBuV EMF	SVR401	Indication of ACVM	-3 dBm
(b)	SSG output:10dBuV EMF	Confirm	Indication of ACVM	-6.5 ± 2 dBm (Hi-cut ON)
(c)	SSG output:2dBuV EMF (Deviation:ON)	SVR302 (TU)	Monitor at TP402 (SQ)	Change from Low → Hi
(d)	SSG output:30dBuV EMF	Confirm	Indication of ACVM	-3 dBm

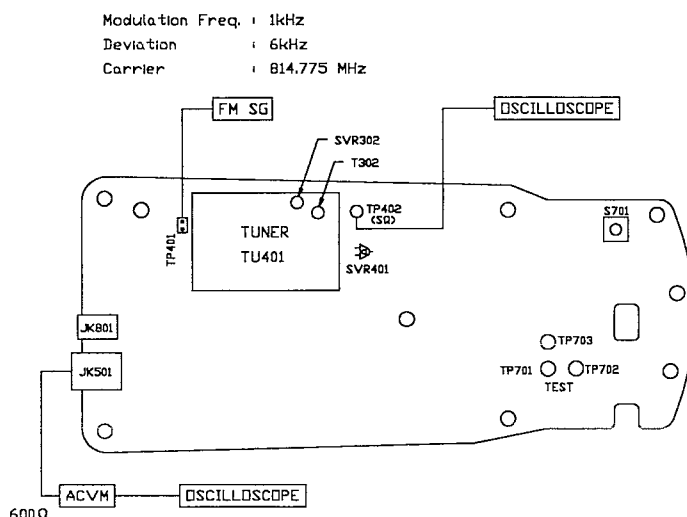


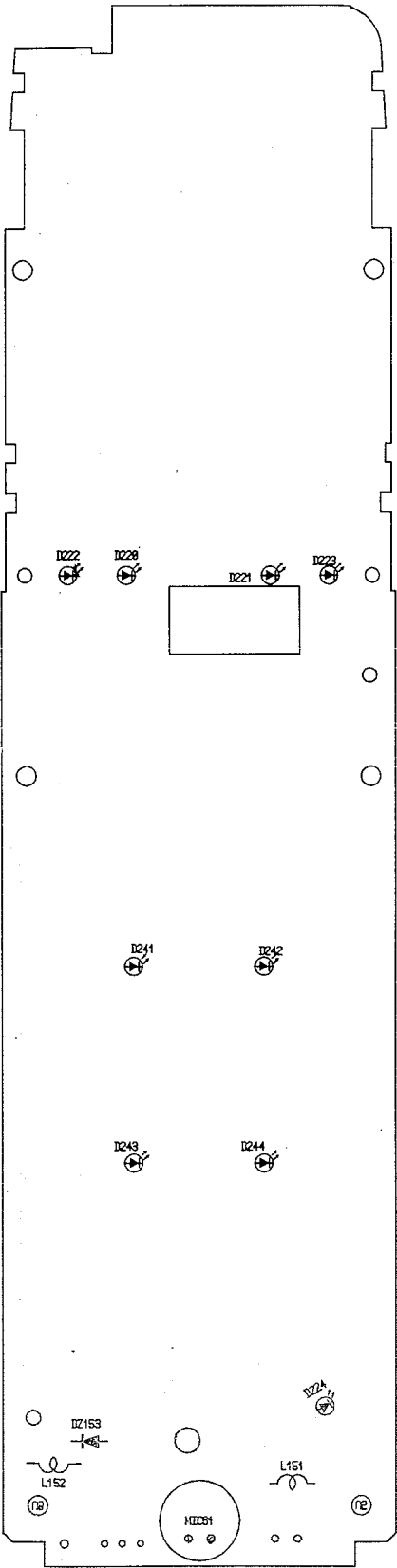
Fig. 2-2

Frequency Table 1 – unit MHz

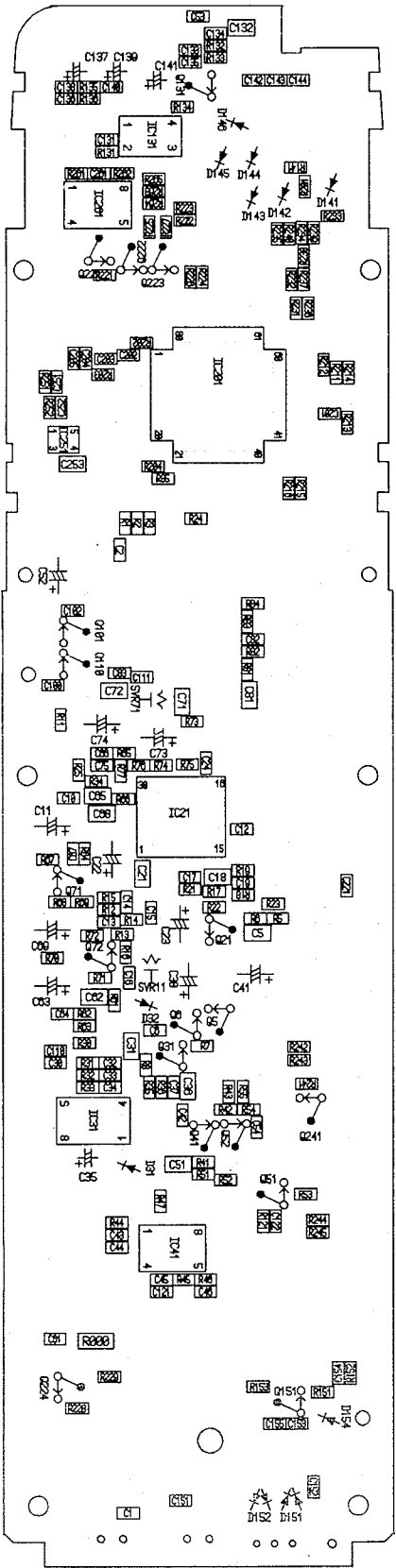
CHANNEL	FREQUENCY (MHz)	
	HANDSET TO BASE	BASE TO HANDSET
1	814.000	904.025
2	814.025	904.050
3	814.050	904.075
4	814.075	904.100
5	814.100	904.125
6	814.125	904.150
7	814.150	904.175
8	814.175	904.200
9	814.200	904.225
10	814.225	904.250
11	814.250	904.275
12	814.275	904.300
13	814.300	904.325
14	814.325	904.350
15	814.350	904.375
16	814.375	904.400
17	814.400	904.425
18	814.425	904.450
19	814.450	904.475
20	814.475	904.500
21	814.500	904.525
22	814.525	904.550
23	814.550	904.575
24	814.575	904.600
25	814.600	904.625
26	814.625	904.650
27	814.650	904.675
28	814.675	904.700
29	814.700	904.725
30	814.725	904.750
31	814.750	904.775
32	814.775	904.800
33	814.800	904.825
34	814.825	904.850
35	814.850	904.875
36	814.875	904.900
37	814.900	904.925
38	814.925	904.950
39	814.950	904.975
40	814.975	905.000

WIRING DIAGRAM(HAND UNIT)

HANDY LOGIC P.C.B. TOP



HANDY LOGIC P.C.B. BOTTOM



The schematic diagram illustrates the electronic circuit for the 'MAGNETIC' game. Key components include:

- ICs:** IC1 (8-pin), IC2 (12-pin), IC3 (6-pin), IC4 (6-pin), IC5 (6-pin), IC6 (6-pin), IC7 (6-pin), IC8 (6-pin), IC9 (6-pin), IC10 (6-pin), IC11 (6-pin), IC12 (6-pin), IC13 (6-pin), IC14 (6-pin), IC15 (6-pin), IC16 (6-pin), IC17 (6-pin), IC18 (6-pin), IC19 (6-pin), IC20 (6-pin), IC21 (6-pin), IC22 (6-pin), IC23 (6-pin), IC24 (6-pin), IC25 (6-pin), IC26 (6-pin), IC27 (6-pin), IC28 (6-pin), IC29 (6-pin), IC30 (6-pin), IC31 (6-pin), IC32 (6-pin), IC33 (6-pin), IC34 (6-pin), IC35 (6-pin), IC36 (6-pin), IC37 (6-pin), IC38 (6-pin), IC39 (6-pin), IC40 (6-pin), IC41 (6-pin), IC42 (6-pin), IC43 (6-pin), IC44 (6-pin), IC45 (6-pin), IC46 (6-pin), IC47 (6-pin), IC48 (6-pin), IC49 (6-pin), IC50 (6-pin), IC51 (6-pin), IC52 (6-pin), IC53 (6-pin), IC54 (6-pin), IC55 (6-pin), IC56 (6-pin), IC57 (6-pin), IC58 (6-pin), IC59 (6-pin), IC60 (6-pin), IC61 (6-pin), IC62 (6-pin), IC63 (6-pin), IC64 (6-pin), IC65 (6-pin), IC66 (6-pin), IC67 (6-pin), IC68 (6-pin), IC69 (6-pin), IC70 (6-pin), IC71 (6-pin), IC72 (6-pin), IC73 (6-pin), IC74 (6-pin), IC75 (6-pin), IC76 (6-pin), IC77 (6-pin), IC78 (6-pin), IC79 (6-pin), IC80 (6-pin), IC81 (6-pin), IC82 (6-pin), IC83 (6-pin), IC84 (6-pin), IC85 (6-pin), IC86 (6-pin), IC87 (6-pin), IC88 (6-pin), IC89 (6-pin), IC90 (6-pin), IC91 (6-pin), IC92 (6-pin), IC93 (6-pin), IC94 (6-pin), IC95 (6-pin), IC96 (6-pin), IC97 (6-pin), IC98 (6-pin), IC99 (6-pin), IC100 (6-pin).
- Resistors:** R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100.
- Capacitors:** C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100.
- Relays:** FLT1, FLT2, FLT3, FLT4, FLT5, FLT6, FLT7, FLT8, FLT9, FLT10, FLT11, FLT12, FLT13, FLT14, FLT15, FLT16, FLT17, FLT18, FLT19, FLT20, FLT21, FLT22, FLT23, FLT24, FLT25, FLT26, FLT27, FLT28, FLT29, FLT30, FLT31, FLT32, FLT33, FLT34, FLT35, FLT36, FLT37, FLT38, FLT39, FLT40, FLT41, FLT42, FLT43, FLT44, FLT45, FLT46, FLT47, FLT48, FLT49, FLT50, FLT51, FLT52, FLT53, FLT54, FLT55, FLT56, FLT57, FLT58, FLT59, FLT60, FLT61, FLT62, FLT63, FLT64, FLT65, FLT66, FLT67, FLT68, FLT69, FLT70, FLT71, FLT72, FLT73, FLT74, FLT75, FLT76, FLT77, FLT78, FLT79, FLT80, FLT81, FLT82, FLT83, FLT84, FLT85, FLT86, FLT87, FLT88, FLT89, FLT90, FLT91, FLT92, FLT93, FLT94, FLT95, FLT96, FLT97, FLT98, FLT99, FLT100.
- Other Components:** SVR1, SVR2, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100.

The diagram illustrates a complex electronic circuit, possibly a vacuum tube radio receiver. The components are distributed across the board as follows:

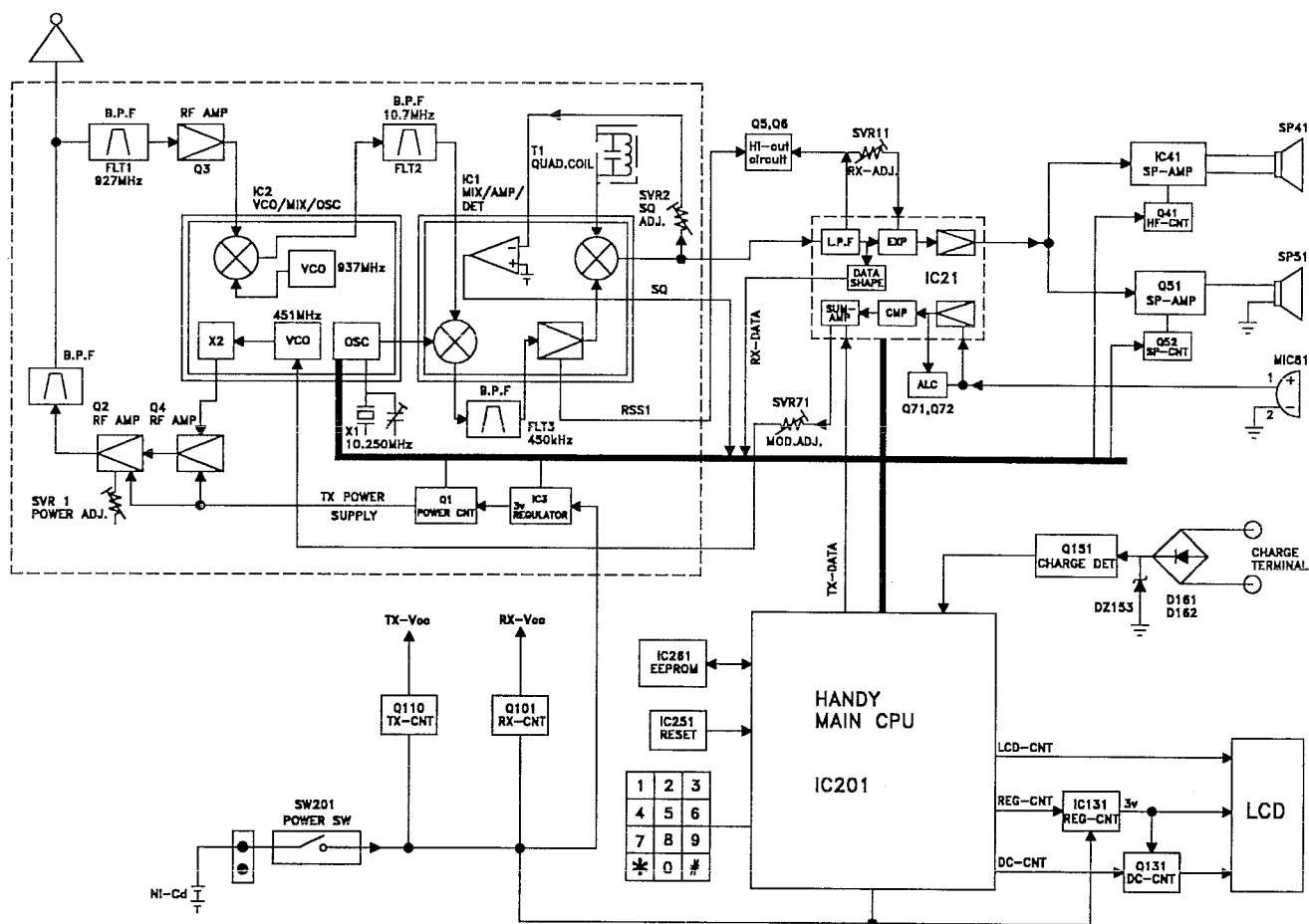
- Top Left:** Power supply section with components R50, C28, L9, C27, and R2.
- Top Center:** Tuning eye section featuring IC4 (12AX7) and IC3 (6X4), along with resistors R43, R42, R44, R45, R47, R32, and R35.
- Top Right:** L16, C32, L4, L11, C31, C30, C29, C26, C25, C24, C23, C22, C21, C20, C19, C18, C17, C16, C15, C14, C13, C12, C11, C10, C9, C8, C7, C6, C5, C4, C3, C2, C1, C0, C-4B, C-4A, C-4C, C-4D, C-4E, C-4F, C-4G, C-4H, C-4I, C-4J, C-4K, C-4L, C-4M, C-4N, C-4O, C-4P, C-4Q, C-4R, C-4S, C-4T, C-4U, C-4V, C-4W, C-4X, C-4Y, C-4Z.
- Center:** Main signal processing section with components R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100.
- Bottom:** Output section with components S (Speaker), T (Transformer), and various passive components like resistors (R) and capacitors (C).

The diagram also shows a series of interconnections between these components, including a power supply line, a tuning eye line, and a main signal line. The components are labeled with alphanumeric codes, and the interconnections are shown as lines with various symbols (dots, crosses, etc.) indicating the type of connection.

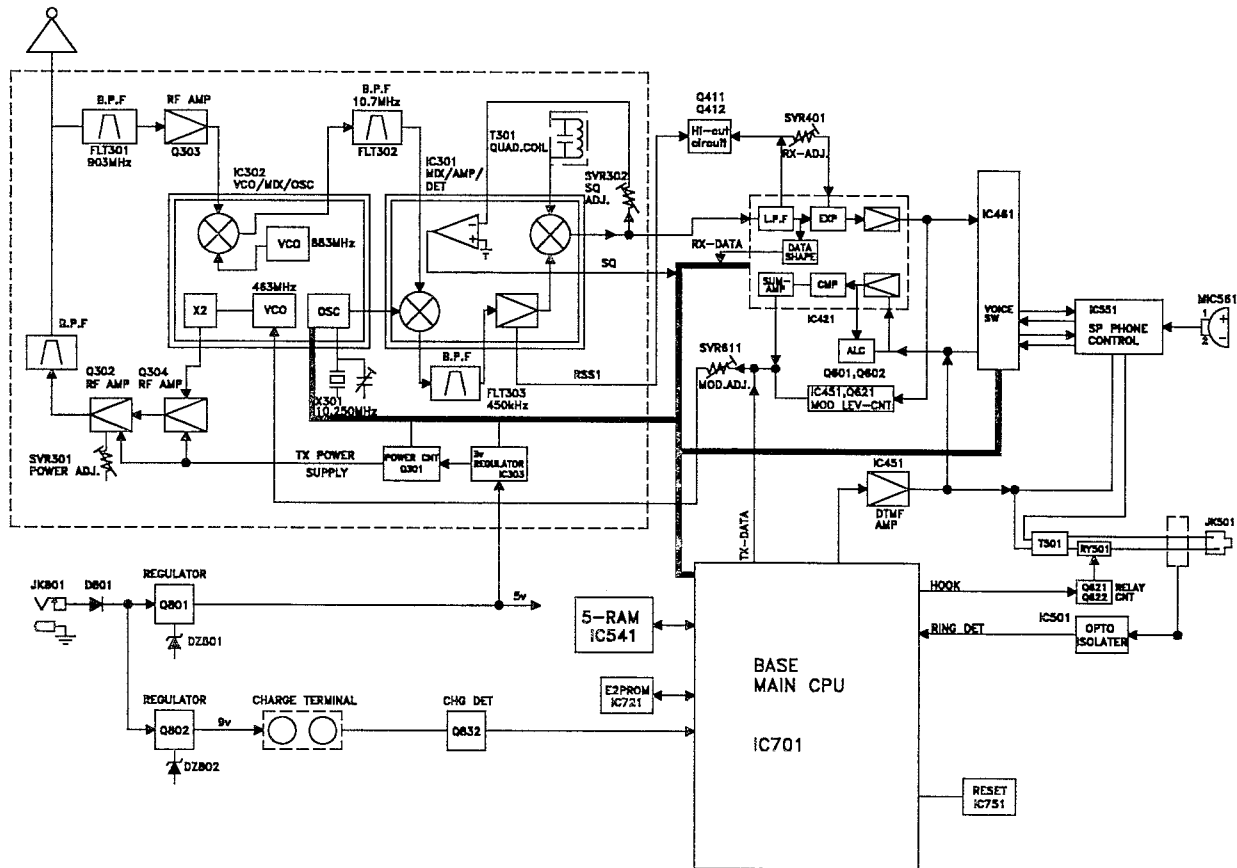
The diagram illustrates the internal circuitry of a radio receiver, featuring several integrated circuits (ICs) and passive components. Key components include:

- ICs:** IC301 (Tuner/IF amplifier), IC302 (Detector/AF amplifier), IC303 (AF amplifier), IC304 (Detector/AF amplifier), and IC305 (Detector/AF amplifier).
- Capacitors:** C300, C301, C302, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C780, C781, C782, C783, C784, C785, C786, C787, C788, C789, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C800, C801, C802, C803, C804, C805, C806, C807, C808, C809, C810, C811, C812, C813, C814, C815, C816, C817, C818, C819, C820, C821, C822, C823, C824, C825, C826, C827, C828, C829, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C850, C851, C852, C853, C854, C855, C856, C857, C858, C859, C860, C861, C862, C863, C864, C865, C866, C867, C868, C869, C870, C871, C872, C873, C874, C875, C876, C877, C878, C879, C880, C881, C882, C883, C884, C885, C886, C887, C888, C889, C890, C891, C892, C893, C894, C895, C896, C897, C898, C899, C900, C901, C902, C903, C904, C905, C906, C907, C908, C909, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C930, C931, C932, C933, C934, C935, C936, C937, C938, C939, C940, C941, C942, C943, C944, C945, C946, C947, C948, C949, C950, C951, C952, C953, C954, C955, C956, C957, C958, C959, C960, C961, C962, C963, C964, C965, C966, C967, C968, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C986, C987, C988, C989, C990, C991, C992, C993, C994, C995, C996, C997, C998, C999, C1000.
- Inductors:** L301, L302, L303, L304, L305, L306, L307, L308, L309, L310, L311, L312, L313, L314, L315, L316, L317, L318, L319, L320, L321, L322, L323, L324, L325, L326, L327, L328, L329, L330, L331, L332, L333, L334, L335, L336, L337, L338, L339, L340, L341, L342, L343, L344, L345, L346, L347, L348, L349, L350, L351, L352, L353, L354, L355, L356, L357, L358, L359, L360, L361, L362, L363, L364, L365, L366, L367, L368, L369, L370, L371, L372, L373, L374, L375, L376, L377, L378, L379, L380, L381, L382, L383, L384, L385, L386, L

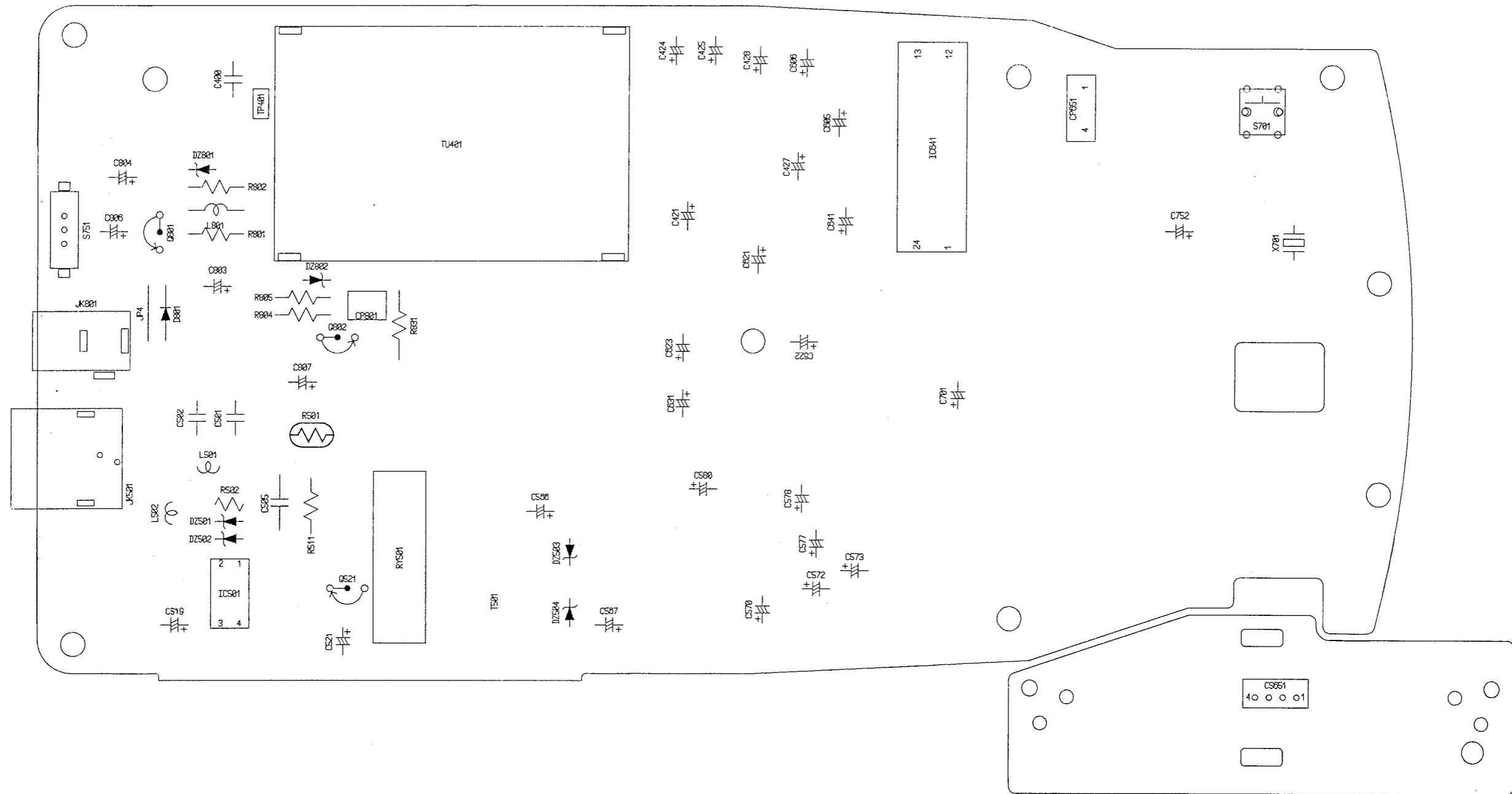
BLOCK DIAGRAM (HAND UNIT)



BLOCK DIAGRAM (BASE UNIT)



BASE MAIN P.C.B. TOP



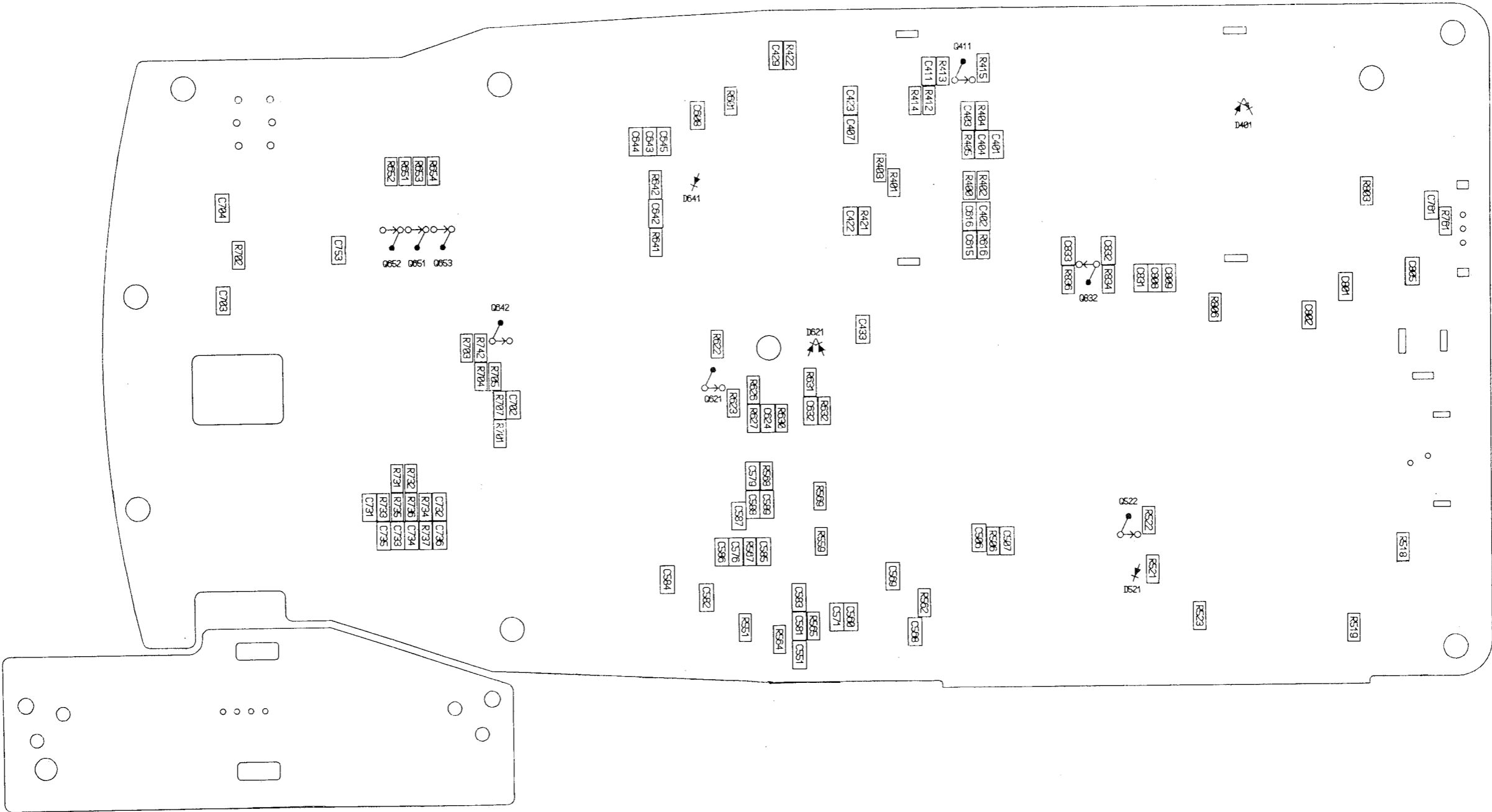
BASE LED P.C.B.

BASE MAIN P.C.B. TOP



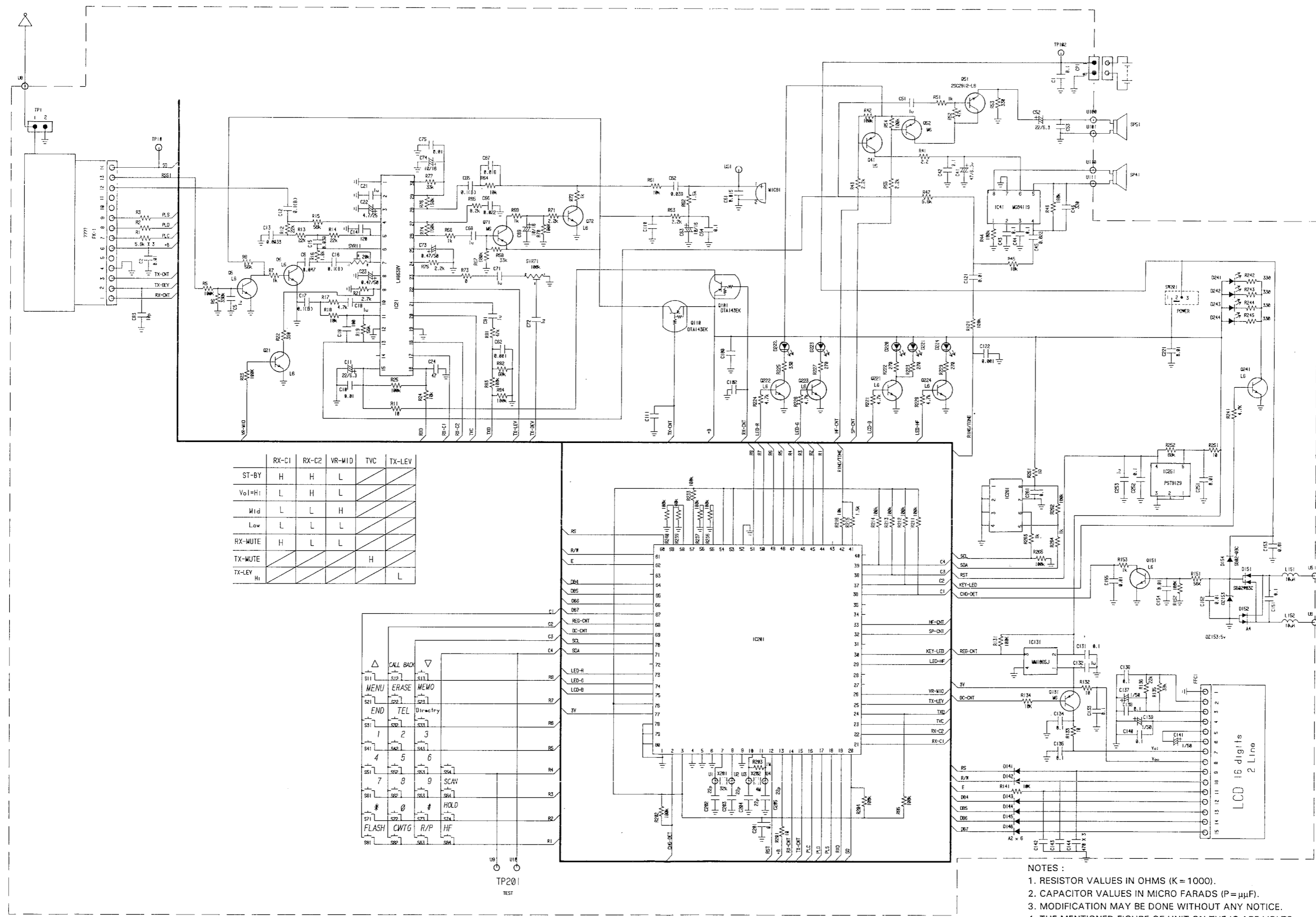
BASE LED P.C.B.

BASE MAIN P.C.B. BOTTOM

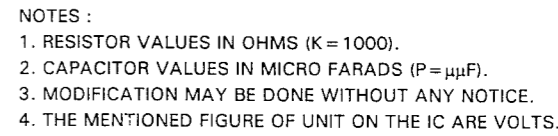


BASE LED P.C.B.

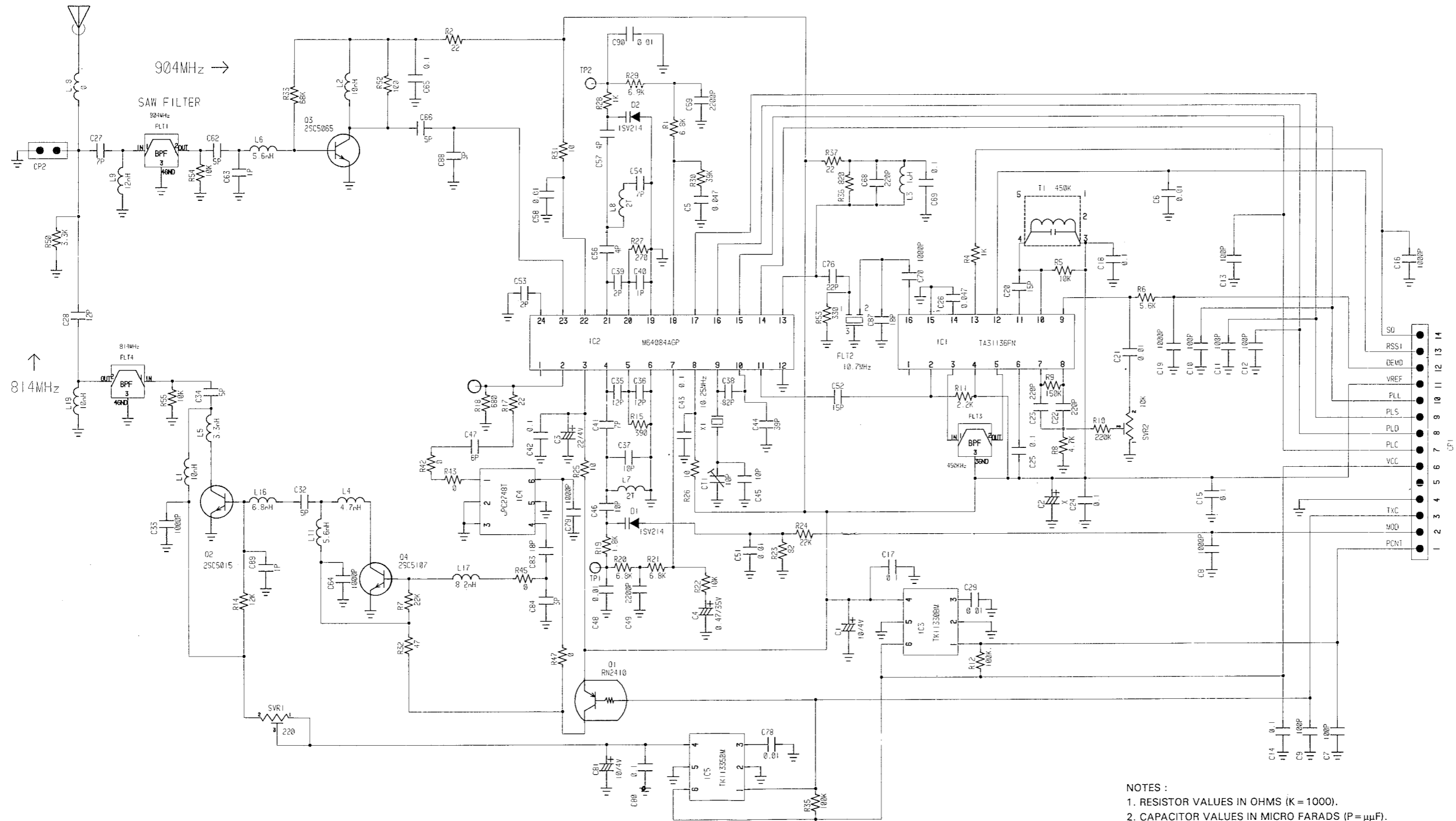
SCHEMATIC DIAGRAM (HAND UNIT)



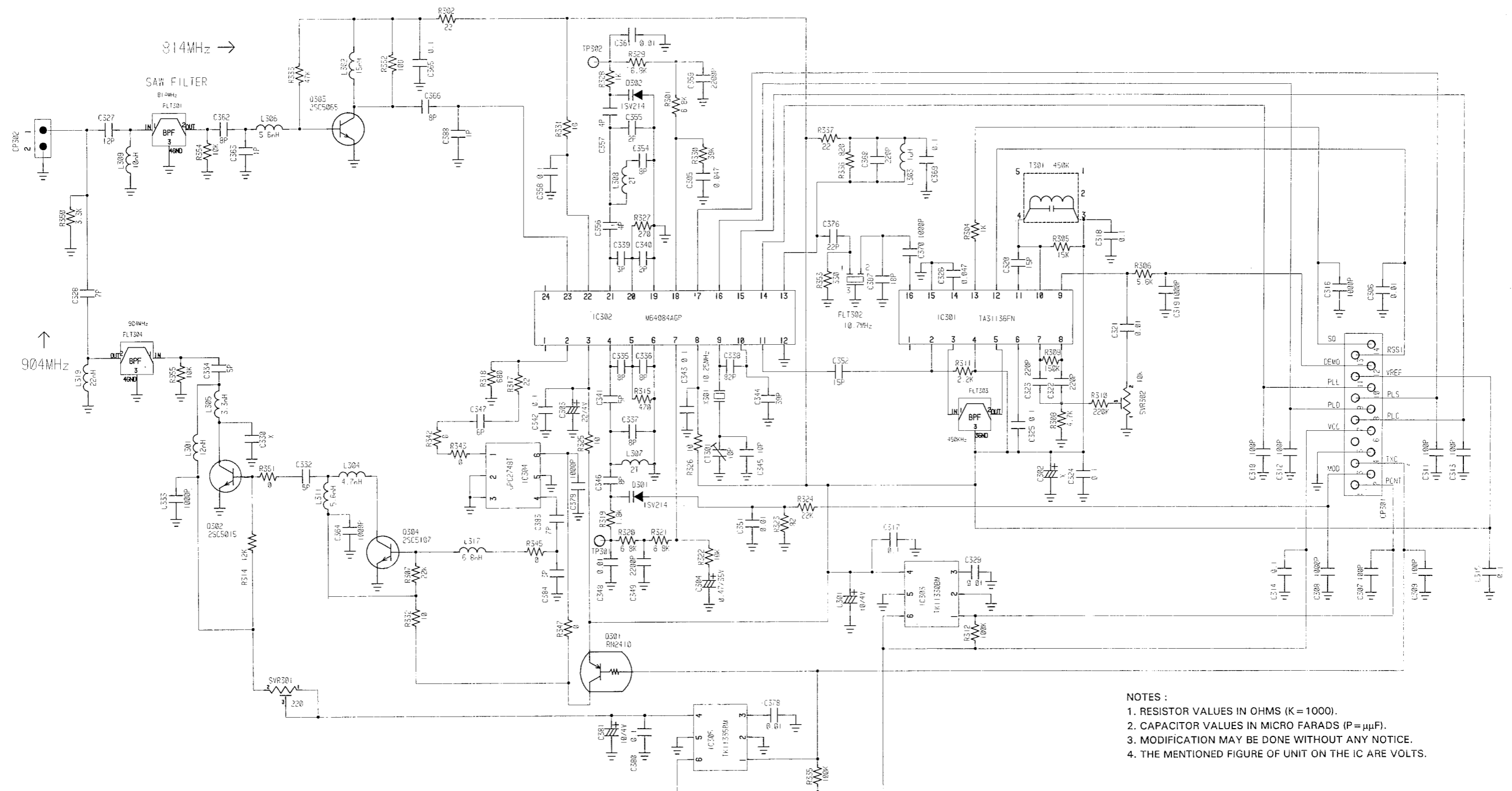
- NOTES :
- 1. RESISTOR VALUES IN OHMS (K = 1000).
 - 2. CAPACITOR VALUES IN MICRO FARADS (P = μ F).
 - 3. MODIFICATION MAY BE DONE WITHOUT ANY NOTICE.
 - 4. THE MENTIONED FIGURE OF UNIT ON THE IC ARE VOLTS.



SCHEMATIC DIAGRAM (HAND TUNER UNIT)



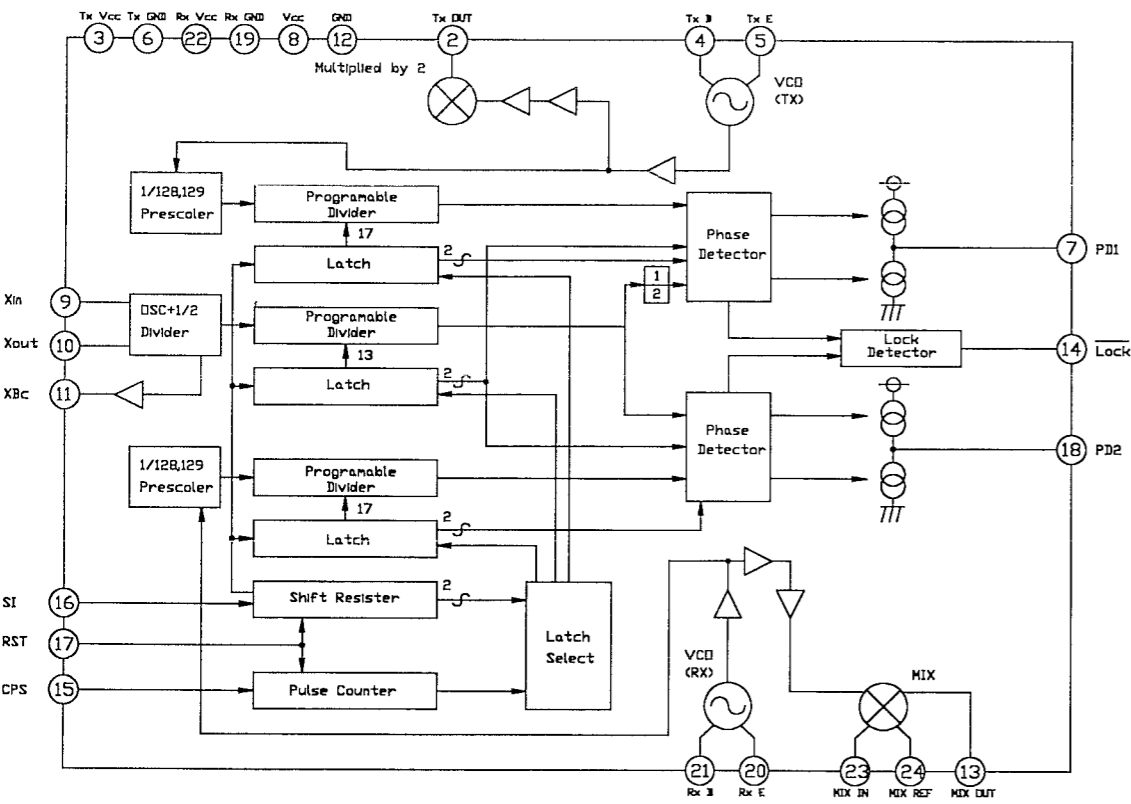
- NOTES :
1. RESISTOR VALUES IN OHMS (K = 1000).
 2. CAPACITOR VALUES IN MICRO FARADS (P = μ F).
 3. MODIFICATION MAY BE DONE WITHOUT ANY NOTICE.
 4. THE MENTIONED FIGURE OF UNIT ON THE IC ARE VOLTS.



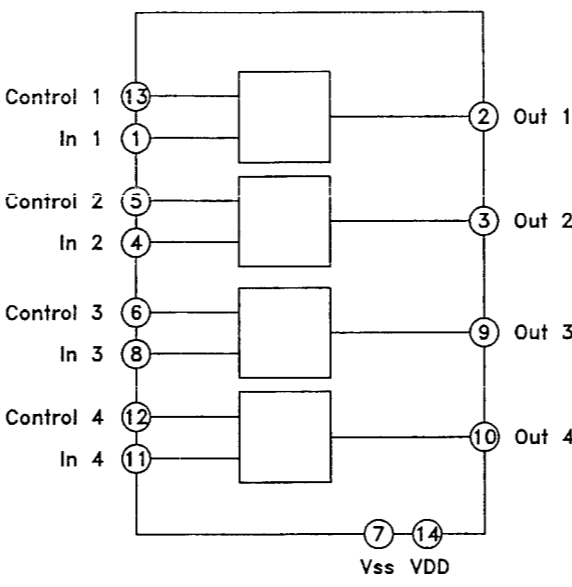
NOTES :

1. RESISTOR VALUES IN OHMS (K = 1000).
2. CAPACITOR VALUES IN MICRO FARADS (P = μ F).
3. MODIFICATION MAY BE DONE WITHOUT ANY NOTICE.
4. THE MENTIONED FIGURE OF UNIT ON THE IC ARE VOLTS.

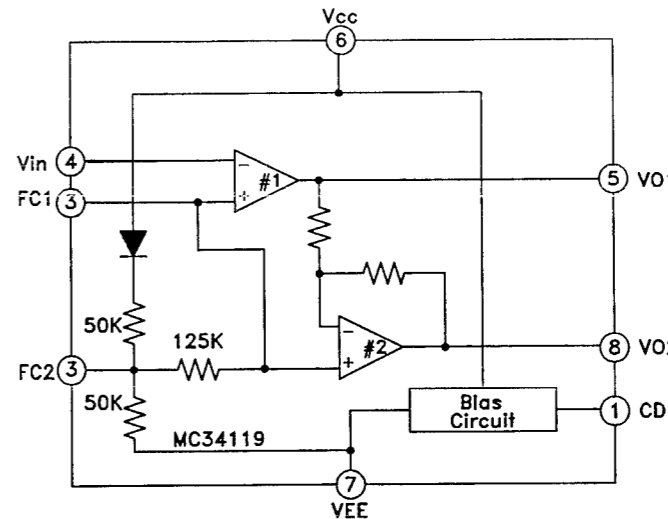
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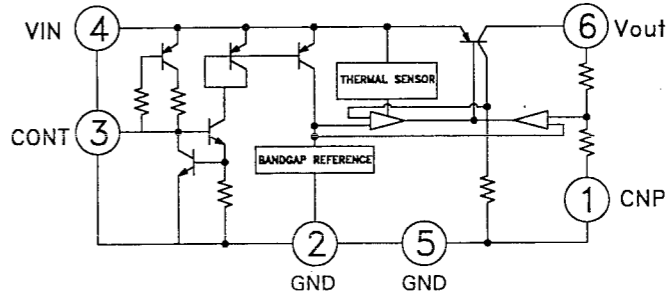
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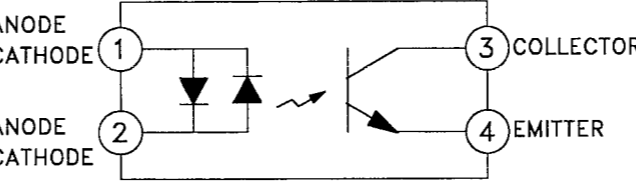
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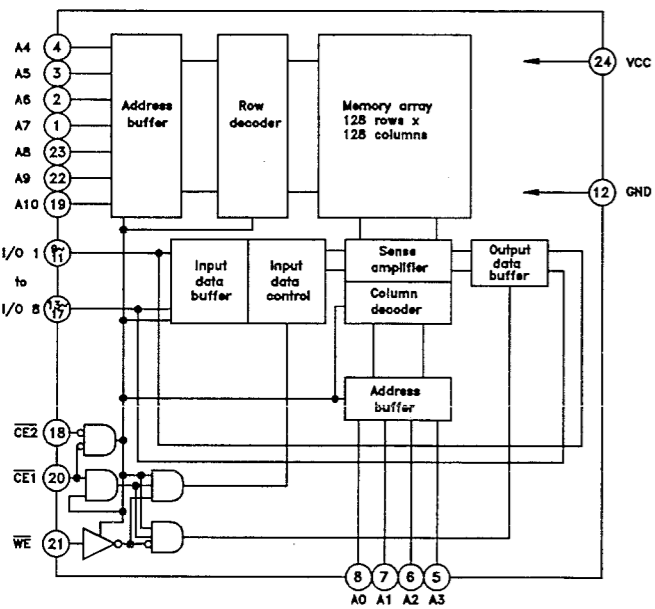
TK11335BM
TK11330BM



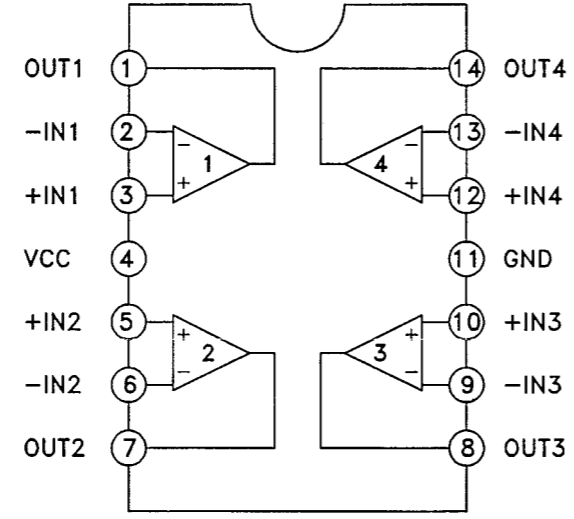
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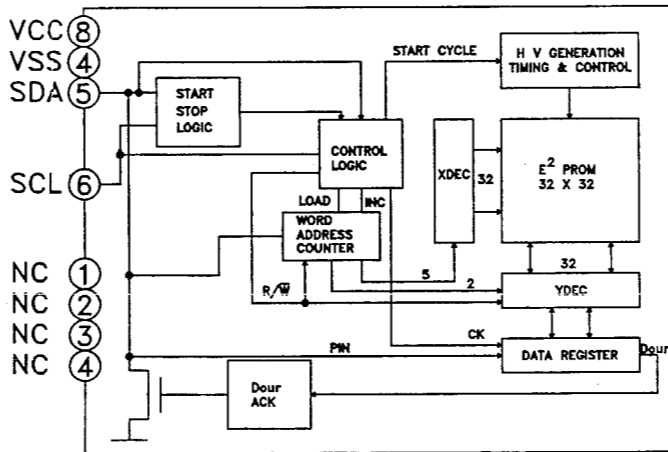
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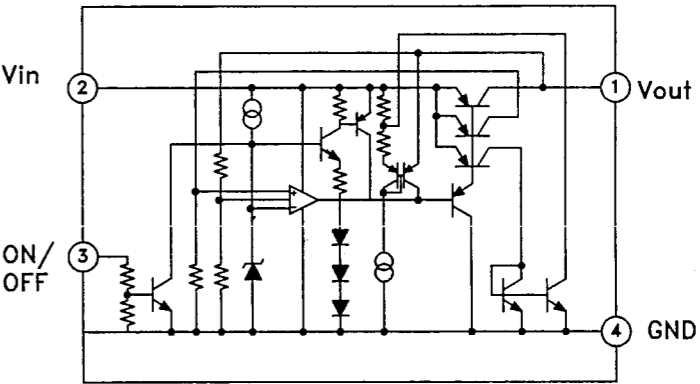
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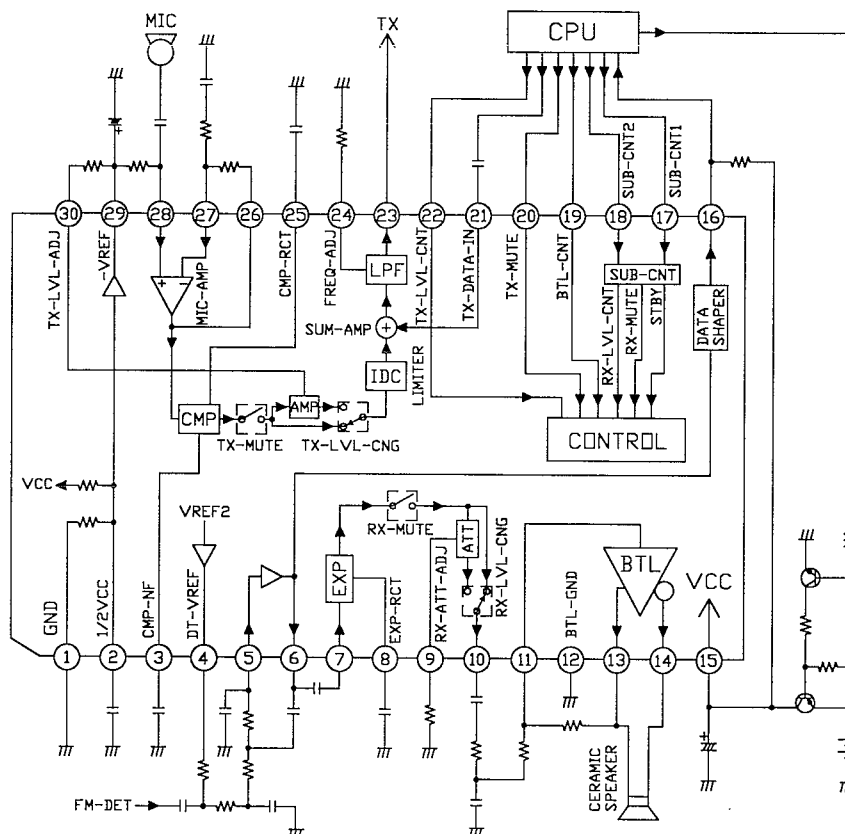
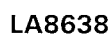
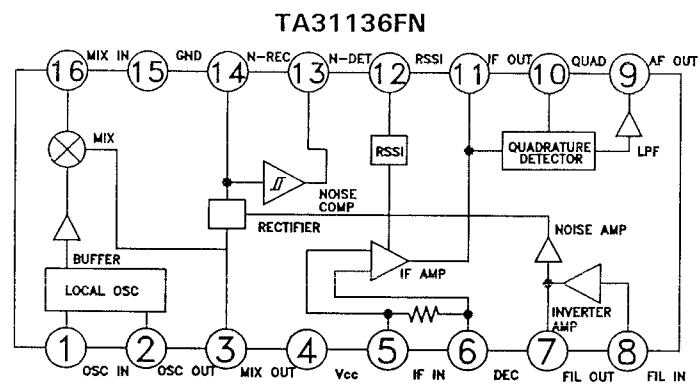


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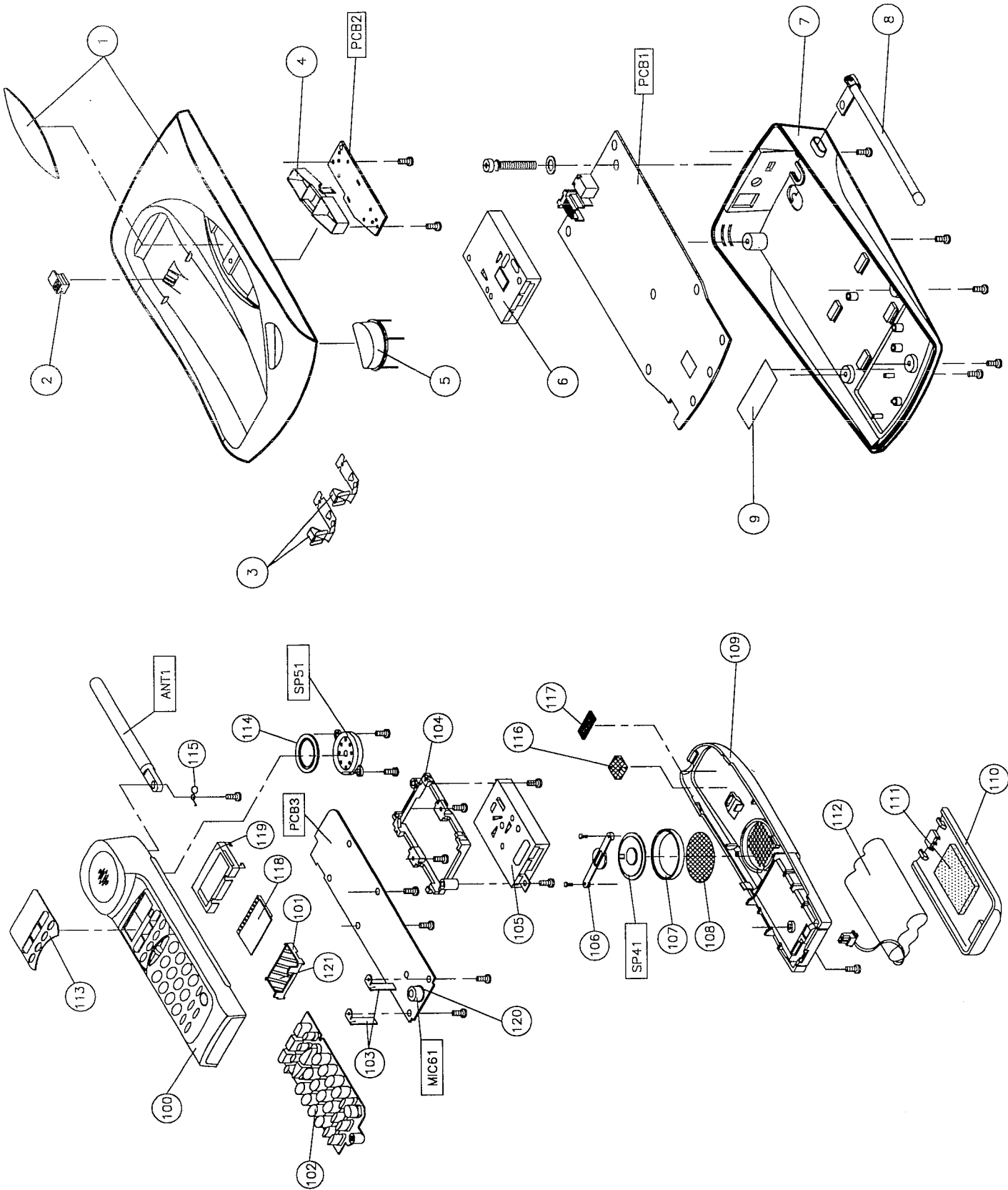


MM1065







EXPLODED VIEW



PARTS LIST

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

Ref. No.	PART No.	DESCRIPTION	Q'ty	Ref. No.	PART No.	DESCRIPTION	Q'ty
PACKING MATERIAL				ASSY, PCB-W BASE MAIN			
	641 004 2609	ASSY, FIXER	1	PCB1	641 006 4021	ASSY, PCB-W, BASE MAIN	1
	641 006 4106	INNER CARTON	1	CP651	641 001 0585	PLUG, 4P	1
	641 006 4137	LABEL, RATING (B)	1	CP801	632 253 9976	PLUG, 2P	1
	641 006 4144	LABEL, RATING (H)	1	D401	407 098 6905	DIODE 1SV172	1
	641 006 3970	PAD, PLAIN	1	D521,641	407 012 6509	DIODE 1SS193	2
	641 006 3628	PAD, PLAIN	1	D621	407 012 6202	DIODE 1SS184	1
	641 006 3819	LABEL, RATING (R)	1	D801	407 158 8306	DIODE 1N4002S	1
	632 298 2376	POLYETHYLENE BAG	1	DZ501,502	407 100 0204	ZENER DIODE MTZJ36-A	2
	641 006 4120	INSTRUCTION MANUAL	1	DZ501,502	407 148 7203	ZENER DIODE HZS36NB1	2
	641 003 3409	POLY COVER, 110 X 350	1	DZ503,504	407 099 6409	ZENER DIODE MTZJ11-B	2
	641 002 8863	NOTICE	1	DZ801	407 063 8903	ZENER DIODE MTZJ5.6C	1
	641 006 4113	INSTRUCTION MANUAL	1	DZ802	407 099 6102	ZENER DIODE MTZJ10B	1
	632 537 1504	PROTECTOR SHEET	1	IC421	409 388 9108	IC LA8638V-TLM	1
	641 005 1236	LABEL, BARCODE	1	IC451	409 057 2300	IC UPC324G2-T1	1
	641 003 1276	LABEL, BARCODE	1	IC451	409 321 4900	IC BA10324AF-T1	1
ACCESSORY				IC461	409 199 4705	IC MC14066BF-R	1
112	641 006 1198	BATTERY, RECHARGE	1	IC501	407 094 0808	PHOTO COUPLE TLP620 (GB)	1
	641 006 1457	ADAPTOR, AC-DC	1	IC501	407 001 3700	PHOTO COUPLE PC814	1
	641 003 4697	MODULAR CORD	1	IC501	407 121 1204	PHOTO COUPLE PS2505-1	1
HANDY CABINET				IC551	409 203 2703	IC MC34118DWR2	1
100	641 006 4076	CABINET	1	IC641	409 123 7604	IC LC3518BSL-15	1
102	641 006 3758	SWITCH KEY	1	IC641	409 277 7802	IC LC3518BSL-12	1
103	641 006 3208	TERMINAL CHARGER	2	IC701	409 433 3402	IC LCB98XB-C32N	1
104	641 006 3185	MOUNT-E TUNER	1	IC721	410 232 0004	IC AT24C01-10SC-2.7	1
106	641 006 3192	MOUNT-E, SPEAKER	1	IC751	409 429 8909	IC IC-PST9134 NR	1
107	641 006 3253	PACKING	1	JK501	641 004 1954	JACK, MODULAR	1
108	641 006 3147	NET	1	JK801	641 004 4009	JACK	1
109	641 006 3123	CABINET REAR	1	L501,502	641 004 1527	INDUCTOR, 3300UH J	2
110	641 006 3130	LID BATTERY (H)	1	L801	641 002 4513	INDUCTOR, 100UH K	1
111	632 513 5670	CUSHION, BATTERY	1	Q411,621,832	405 015 4201	TR 2SC2712-GR	3
113	641 006 3741	SIGN WINDOW	1	Q411,621,832	405 015 8704	TR 2SC2812-L6-TA	1
114	641 006 3246	CUSHION	1	Q411,621,832	405 134 0009	TR 2SC3928-R	3
115	641 006 3215	SPRING, TERMINAL	1	Q412,591,602,641	405 015 4201	TR 2SC2712-GR	4
116	641 006 3291	CUSHION	1	Q412,591,602,641	405 015 8704	TR 2SC2812-L6-TA	1
117	641 006 3307	CUSHION	1	Q412,591,602,641	405 134 0009	TR 2SC3928-R	4
	641 006 3260	ADHESIVE SHEET	1	Q521	405 005 1906	TR 2SA733-EK	1
	641 006 3277	SHEET	1	Q521	405 001 7001	TR 2SA1015-GR	1
	411 176 4806	SCR S-TPG PAN + SW 2.6 X 12	1	Q522	405 088 1701	TR RN1407	1
	411 026 0507	SCR S-TPG PAN 2.6 X 10	1	Q522	405 000 3608	TR DTC114YK-T97	1
	411 025 9402	SCR S-TPG PAN 2 X 8	2	Q601	405 035 2201	TR UN2214	1
	411 025 5008	SCR S-TPG BIN 2.6 X 6	2	Q642	405 002 4603	TR 2SA1162-GR	1
	641 003 2532	VEIL	1	Q642	405 001 0507	TR RN1403	1
	411 025 4209	SCR S-TPG BIN 2 X 6	2	Q642	405 000 4100	TR DTC124EK	1
	411 026 1504	SCR S-TPG PAN 2.6 X 6	2	Q653	405 086 9006	TR RN2401	1
	411 164 1701	SCR S-TPG PAN + SW 2 X 8	2	Q653	405 080 0405	TR TDA143EK	1
BASE CABINET				Q801,802	405 102 7108	TR 2SD882-P	2
1	641 006 4052	ASSY, CABINET TOP	1	RY501	641 005 1342	RELAY	1
2	641 006 3000	HANGER	1	SVR401	641 006 2942	POTENTIOMETER, 22K	1
3	641 006 3949	TERMINAL	2	SVR611	641 005 8723	POTENTIOMETER, 200K	1
4	641 006 3956	HOLDER, LED	1	SW751	632 511 9748	SWITCH, SLIDE	1
5	641 006 3932	BUTTON	1	SW701	641 002 4971	SWITCH, TACT	1
7	641 006 3871	ASSY, CABINET BOTTOM	1	T501	632 572 8537	TRANS	1
9	641 006 4090	SHIELD PLATE	1	TP401	641 006 0689	PLUG, 2P	1
	411 026 2303	SCR S-TPG PAN 3 X 10	4	X701	641 004 8229	RESONATOR, XTAL	1
	411 026 7704	SCR S-TPG PAN 3 X 6	1	ASSY, PCB-W, BASE LED			
	411 025 9105	SCR S-TPG PAN 2 X 5	2	PCB2	641 006 4038	ASSY, PCB-W, BASE LED	1
	411 092 5208	WASHER Z 3 X 8 X 0.5	1	CS651	641 006 3888	CORD, 4P-140MM	1
	411 045 3909	SCR PAN + SW 3 X 20	1	LED653,654	407 149 7202	LED CL-140Y-C-T	2
	641 006 3079	CORD, PRESSURE 2P 180MM	1	LED655	407 122 3108	LED BR101W-TR	1
CHASSIS ELECTRICAL				ASSY, PCB-W, BASE TUNER			
8	641 006 1211	ANTENNA, ROD	1	6	641 006 2478	ASSY, PCB-W, BASE TUNER	1
ANT1	641 006 3406	ANTENNA, RUBBER	1	CP301	641 006 0955	PLUG, 14P	1
SP41	641 005 5340	SPEAKER	1	CP302	641 006 0689	PLUG, 2P	1
SP51	641 006 3390	SPEAKER, 150	1	CT301	641 006 0733	TRIMMER, 10P	1
				D301,302	407 105 1701	VARACTOR DI 1SV214-TPH2	2
				FLT301	422 001 9903	SAW FILTER, 815.0MF70T	1
				FLT302	641 005 4961	FILTER, CERAM, 10.700MHZ	1

PARTS LIST

Ref. No.	PART No.	DESCRIPTION	Q'ty	Ref. No.	PART No.	DESCRIPTION	Q'ty
ASSY, PCB-W, BASE TUNER				ASSY, PCB-W, HANDY MAIN			
FLT303	641 006 0818	FILTER, CERAM, 450KHZ	1	Q221,222,223,224,241	405 015 4201	TR 2SC2712-GR	5
FLT304	422 002 0008	SAW FILTER, 904.0MF70T	1	Q221,222,223,224,241	405 015 8704	TR 2SC2812-L6-TA }OR	5
IC301	409 299 9501	IC TA31136FN-ER	1	Q221,222,223,224,241	405 134 0009	TR 2SC3928-R	5
IC302	409 414 9508	IC M64084AGP	1	Q41,52,71,131	405 002 4603	TR 2SA1162-GR	4
IC303	409 411 2601	IC TK11330BM	1	Q41,52,71,131	405 002 6706	TR 2SA1179-M6-TA }OR	4
IC304	409 425 1904	IC UPC2748T-E3	1	Q41,52,71,131	405 005 5508	TR 2SA812-M6	4
IC305	409 423 2408	IC TK11335BMC-L	1	Q5,6,21,51,72,151	405 015 4201	TR 2SC2712-GR	6
L301	641 006 0740	INDUCTOR, 12NH J	1	Q5,6,21,51,72,151	405 015 8704	TR 2SC2812-L6-TA }OR	6
L302	641 006 2522	INDUCTOR, 15NH J	1	Q5,6,21,51,72,151	405 134 0009	TR 2SC3928-R	6
L303	641 006 0863	INDUCTOR, 1UH K	1	SVR11	641 006 2942	POTENTIOMETER, 22K	1
L304	641 006 0801	INDUCTOR, 4.7NH S	1	SVR71	641 005 8709	POTENTIOMETER, 100K	1
L305	641 006 0771	INDUCTOR, 3.3NH S	1	SW201	641 002 4773	SWITCH, SLIDE, 1P-2T	1
L306	641 006 0832	INDUCTOR, 5.6NH S	1	X201	632 250 7593	RESONATOR, XTAL }OR	1
L307,308	641 006 0870	COIL, AIR	2	X201	641 005 0888	RESONATOR, XTAL	1
L309	641 006 0719	INDUCTOR, 10NH J	1	X202	641 006 0924	CRYSTAL, 4MHZ	1
L311	641 006 0832	INDUCTOR, 5.6NH S	1	ASSY, PCB-W, HANDY TUNER			
L317	641 006 2508	INDUCTOR, 6.8NH J	1	105	641 006 3826	ASSY, PCB-W, HANDY TUNER	1
L319	641 006 2539	INDUCTOR, 22NH J	1		641 006 3161	VEIL	1
Q301	405 145 7707	TR RN2410-(TE85R)	1		641 006 3598	SHEET	1
Q301	405 145 7301	TR DTB143TK-T146 }OR	1	CP1	641 006 0795	PLUG, 14P	1
Q302	405 126 5906	TR 2SC5015-T1	1	CP2	641 006 0856	PLUG, 2P	1
Q303	405 128 2309	TR 2SC5065-0-(TE85R)	1	CT1	641 006 2935	TRIMMER, 10P	1
Q304	405 128 2200	TR 2SC5107-0-(TE85R)	1	D1,2	407 105 1701	VARACTOR DI 1SV214	2
SVR301	641 006 0887	SVR, 200 OHM	1	FLT1	422 002 0008	SAW FILTER, 904.0MF70T	1
SVR302	641 006 0894	SVR, 10K OHM	1	FLT2	641 005 4961	FILTER, CERAM	1
T301	641 006 0825	TRANS, IF, 450KHZ	1	FLT3	641 006 0818	FILTER, CERAM	1
T301	641 006 0849	TRANS, IF, 450KHZ }OR	1	FLT4	422 001 9903	SAW FILTER, 815.0MF70T	1
X301	641 006 0900	CRYSTAL, 10.25MHZ	1	IC1	409 299 9501	IC TA31136FN ER	1
	641 006 0702	LID, TOP	1	IC2	409 414 9508	IC M64084AGP	1
	641 006 2485	LID, BOTTOM	1	IC3	409 411 2601	IC TK11330BM	1
	641 006 0931	SHIELD, CASE (B)	1	IC4	409 425 1904	IC UPC2748T-E3	1
	641 006 0788	SHIELD, CASE, OSC	1	IC5	409 423 2408	IC TK11335BMC-L	1
ASSY, PCB-W, HANDY MAIN				L1,19	641 006 0719	INDUCTOR, 10NH J	2
PCB3	641 006 4045	ASSY, PCB-W, HANDY MAIN	1	L11	641 006 0832	INDUCTOR, 5.6NH S	1
101	641 006 3222	ILLUMINAT	1	L16	641 006 2508	INDUCTOR, 6.8NH J	1
118	641 005 0864	LCD	1	L17	641 006 2515	INDUCTOR, 8.2NH J	1
119	641 006 3178	BRACKET-E, LCD	1	L2	641 006 0719	INDUCTOR, 10NH J	1
120	641 005 5302	SPACER, MIC	1	L3	641 006 0863	INDUCTOR, 1UH K	1
121	641 006 3239	REFLECTOR	1	L4	641 006 0801	INDUCTOR, 4.7NH S	1
CP1	632 530 8555	PLUG, 2P	1	L5	641 006 0771	INDUCTOR, 3.3NH S	1
D141,142,143,144,145	407 012 6509	DIODE 1SS193	5	L6	641 006 0832	INDUCTOR, 5.6NH S	1
D146	407 012 6509	DIODE 1SS193	1	L7,8	641 006 0870	COIL, AIR	2
D151	407 114 5707	DIODE SB02W03C-TA	1	L9	641 006 0740	INDUCTOR, 12NH J	1
D152	407 012 6103	DIODE 1SS181	1	Q1	405 145 7707	TR RN2410-(TE85R) }OR	1
D154	407 079 7501	DIODE SB02-03C	1	Q1	405 145 7301	TR DTB143TK-T146	1
D154	407 114 5707	DIODE SB02W03C-TA }OR	1	Q2	405 126 5906	TR 2SC5015-T1	1
D220,221,223,241,242	407 173 4109	LED CL-170YG-CD	5	Q3	405 128 2309	TR 2SC5065-0-(TE85R)	1
D222,224	407 194 7103	LED CL-170R-CD	2	Q4	405 128 2200	TR 2SC5107-0-(TE85R)	1
D243,244	407 173 4109	LED CL-170YG-CD	2	SVR1	641 006 0887	SVR, 200 OHM	1
DZ153	407 099 5204	ZENER DIODE MTZJ5.1B	1	SVR2	641 006 0894	SVR, 10K OHM	1
IC131	409 317 8301	IC MM1065JM-R	1	T1	641 006 0825	TRANS, IF, 450KHZ }OR	1
IC21	409 388 9108	IC LA8638V-TLM	1	T1	641 006 0849	TRANS, IF, 450KHZ	1
IC251	409 390 6607	IC IC-PST9129NR	1	X1	641 006 0900	CRYSTAL, 10.25MHZ	1
IC261	410 232 0004	IC AT24C01-10SC-2.7	1		641 006 0702	LID, TOP	1
IC41	409 345 1008	IC NJM2113M-(TE1)	1		641 006 2485	LID, BOTTOM	1
IC41	409 332 4906	IC MC34119D-R2 }OR	1		641 006 2492	SHIELD, CASE (H)	1
IC701	409 433 3501	IC LCH98XB-A02	1		641 006 0788	SHIELD, CASE, OSC	1
L151,152	641 002 5947	INDUCTOR, 10UH K	2				
MIC61	641 005 4336	MICROPHONE	1				
Q101,110	405 086 9006	TR RN2401	2				
Q101,110	405 080 0405	TR TDA143EK }OR	2				
Q101,110	405 133 9904	TR UN211L	2				

- NOTES : 1. Part orders must contain Model Number, Part Number and Description.
2. Order quantity of screws and resistors must be multiple of 10 pcs.
3. Regular type resistor and capacitor are omitted. Check the schematic diagram for these values.

IC AND TRANSISTOR VOLTAGE CHART

(BASE MAIN)

IC \ PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC421	0	2.6	2.6	1.3	1.3	1.3	2.6	0.6	0	2.7	2.6	0	2.7	2.6	5.1	2.1	5.1	0	0	5.1
	21	22	23	24	25	26	27	28	29	30										
	3.3	0	3.2	0	0.6	2.7	2.6	2.6	2.7	2.7										
IC451	0	2.8	2.7	5.0	2.3	2.3	2.3	2.3	2.3	2.3	0	0.2	3.9	3.9						
IC461	0	0	2.1	2.1	5.1	0	0	2.1	2.1	0	0	5.1	0	5.2						
IC462	0	0	0	2.1	0	0	0	0	2.1	0	0	0	0	5.2						
IC463	2.2	0	0	2.1	0	0	0	0	2.2	0	0	0	0	5.2						
IC481	0	0	0	0	0	0.4	0	0												
IC551	2.1	2.1	0	5.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	5.1	2.2	2.1	2.2	1.8	2.2	2.0	2.0	2.2
	21	22	23	24	25	26	27	28												
	2.2	2.2	2.2	2.1	2.0	2.2	1.8	0												
IC641	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	5.1	0	0.1
	21	22	23	24																
	5.1	0	0	5.1																
IC721	0	0	0	0	5.1	0	0	5.2												
IC751	0	0	0	5.1	5.1															

PIN \ Tr	Q411	Q412	Q481	Q482	Q521	Q522	Q591	Q601	Q602	Q621	Q641	Q642	Q801	Q802	Q811	Q812	Q831	Q832
E	0	0	5.3	0	5.1	0	0.1	5.3	0	0	0	0	6.6	9.1	0	0	0	0
C	0.8	0	0.4	5.2	5.0	5.2	3.5	0	0	0	0.1	5.1	10.2	12.2	5.3	0	0	5.3
B	0.1	0.6	5.2	0	4.3	0	0.7	5.2	0	0	0	0	6.0	9.7	6.1	5.1	0	0

(HANDY MAIN)

IC \ PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC21	0	1.7	1.7	1.3	1.3	1.3	1.7	0.6	0	1.8	1.7	0	1.8	1.7	3.5	1.5	0	0	0	0
	21	22	23	24	25	26	27	28	29	30										
	2.2	3.5	2.0	0	0	1.7	1.7	1.7	0	0										
IC41	0	1.3	1.3	1.4	1.4	3.5	0	1.4												
IC131	2.9	0	0	0																
IC251	0	0	0	3.7	3.7															
IC261	0	0	0	0	0	0	0	3.7												

PIN \ Tr	Q5	Q6	Q21	Q41	Q51	Q52	Q71	Q72	Q101	Q110	Q131	Q151	Q221	Q222	Q223	Q224	Q241
E	0	0	0	3.8	1.8	3.7	3.7	0	3.7	3.6	2.9	0	0	0	0	0	0
C	0.6	0	0	0.4	3.7	3.7	0	0	3.7	3.6	2.9	3.6	0	2.3	0	2.2	0.1
B	0.2	0.6	0.6	3.7	2.3	3.0	3.5	0	0	0	2.3	0	0.7	0	0.7	0	0.7

IC PIN DESCRIPTION

LCB98XA-C31 (BASE)

PIN	I/O	PORT NAME	NAME	EXPLANATION	ACTIVE	PIN	I/O	PORT NAME	NAME	EXPLANATION	ACTIVE
1	I	R2	PB3/AN3	KEY SCAN	DATA	40	O	A8	P71	SRAM ADDRESS OUT	-
2	I	R1	PB2/AN2	KEY SCAN	DATA	41	O	A9	P72	SRAM ADDRESS OUT	-
3	ADI	BTEL	PB1/AN1	BRANCH DETECT	L	42	O	A10	P73	SRAM ADDRESS OUT	-
4	ADI	BATT DET	PB0/AN0	BACKUP BATT DETECT	L	43	O	WE	P74/TMRI	READ/WRITE CONTROL	-
5	I	AVSS	AVSS	GND	-	44	O	CE2	P75/TMCI	ENABLE OUT	H
6	I	TEST	TEST	GND	L	45	O	RS OSC	P76/TMOV	SQUELCH OSC	PULSE
7	O	X2	X2	NC	-	46	I	DC DET	P77	DC DETECT	L
8	I	X1	X1	VCC	-	47	I	STD	P80/FTCI	CAS DETECT	-
9	I	GND	VSS	GND	-					(FROM MT8843)	
10	I	OSC1	OSC1	XTAL (8MHZ)	8 MHZ	48	O	PLS	P81/FTOA	PLL ENABLE	L
11	O	OSC2	OSC2	XTAL (8MHZ)	8 MHZ	49	O	PLC	P82/FTOB	PLL CLOCK	CLOCK
12	I	RESET	RES	RESET	-	50	O	PLD	P83/FTIA	PLL DATA OUT	DATA
13	I	NC	NM1	VCC	-	51	O	TXD	P84/FTIB	TX DATA OUT	DATA
14	O	BATT CNT	P40	BACKUP BATT CONTROL	L	52	O	TX CNT	P85/FTIC	TX POWER CONTROL	L
15	O	LINT	P41	INT LED CONTROL	L	53	I	RXD	P86/FTID	RX DATA IN	DATA
16	O	LSPEA	P42	SPEAKER LED CONTROL	L	54	O	SQ	P87	OUT OF RANGE DETECT	L
17	O	LBACK	P43	BACKUP LED CONTROL	L	55	O	TVC	P37/CS	TX VOICE CONTROL	H
18	O	LBASE	P44	BASE LED CONTROL	L	56	O	SUB CNT	P36/STR13	MOD CONTROL OF	H/L
19	O	LMES	P45	MESSAG LED CONTROL	L					LA8638	
20	O	LCALS	P46	CALLERS LED CONTROL	L	57	O	CA/RU	P35/SO2	CA/RU CONTROL	H/L
21	O	HOOK	P47	HOOK CONTROL	L	58	O	CH6-SAVE	P34/SI2	CHARGE CURRENT	H/L
22	I	NC	IRQ0	VCC	-					CONTROL	
23	I	DATA IN	P50/INT0	RX DATA IN	DATA	59	I	CHG	P33/SCK2	CHARGE DETECT	L
				(FROM MT8843)		60	O	DMUTE	P32/SO1	MIC MUTE	H
24	O	AO/INT CNT	P51/INT1	SRAM ADDRESS OUT & ANALOG SW CONTROL	-	61	O	SP CNT	P31/SI1	SP CONTROL	H
25	O	AI/H-HF CNT	P52/INT2	SRAM ADDRESS OUT & ANALOG SW CONTROL	-	62	I	FSK EN	P30/SCK1	FSK ENABLE OF MT8843	-
26	O	A2/TEL CNT	P53/INT3	SRAM ADDRESS OUT & ANALOG SW CONTROL	-	63	I	VCC	VCC	VCC	-
27	O	A3/INT-HF CNT	P54/INT4	SRAM ADDRESS OUT & ANALOG SW CONTROL	-	64	I/O	RING CNT	P10/TMOW	RINGER VOLUME	H/L
28	O	A4/HF-CNT1	P55/INT5	SRAM ADDRESS OUT & ANALOG SW CONTROL	-					CONTROL	
29	O	A5/HF-CNT2	P56/INT6	SRAM ADDRESS OUT & ANALOG SW CONTROL	-	65	O	RING OSC	P11/TMOE	RING OSC	DATA
30	O	A6	P57/INT7	SRAM ADDRESS OUT	-	66	O	CLK	P12/LID	CLOCK (EEPROM)	CLOCK
31	I/O	I/O1	P60/RP0	SRAM DATA I/O	DATA	67	I/O	SDA	P13/TMIC	DATA I/O (EEPROM)	DATA
32	I/O	I/O2	P61/RP1	SRAM DATA I/O	DATA	68	O	C1	P14/PWM	KEY SCAN	L
33	I/O	I/O3	P62/RP2	SRAM DATA I/O	DATA	69	O	C2	P15/IRQ1	KEY SCAN	L
34	I/O	I/O4	P63/RP3	SRAM DATA I/O	DATA	70	O	C3	PI6/IRQ2	KEY SCAN	L
35	I/O	I/O5	P64/RP4	SRAM DATA I/O	DATA	71	O	C4	P17/IRQ3	KEY SCAN	L
36	I/O	I/O6	P65/RP5	SRAM DATA I/O	DATA	72	I	AVCC	AVCC	POWER	-
37	I/O	I/O7	P66/RP6	SRAM DATA I/O	DATA	73	I	P/T	PC3/DA3	PULSE/TONE CONTROL	H/L
38	I/O	I/O8	P67/RP7	SRAM DATA I/O	DATA	74	I	RING DET	PC2/DA2	RING DETECT	L
39	I/O	A7	P70	SRAM ADDRESS OUT	-	75	DAO	TONE C	PC1/DA1	COLUMN & DTMF OUT	DATA
						76	DAO	TONE R	PC0/DA0	ROW OUT	DATA
						77	I	R6	PB7/AN7	KEY SCAN	DATA
						78	I	R5	PB6/AN6	KEY SCAN	DATA
						79	I	R4	PB5/AN5	KEY SCAN	DATA
						80	I	R3	PB4/AN4	KEY SCAN	DATA

IC PIN DESCRIPTION

LCH98XA-A01 (HANDY)

	I/O	PORT NAME	NAME	EXPLANATION	ACTIVE	PIN	I/O	PORT NAME	NAME	EXPLANATION	ACTIVE
1	I	NC	PB3/AN3	GND	-	40	O	NC	P74/TMRIV	NC	-
2	I	CHG DET	PB2/AN2	CHARGE DETECT	L	41	O	RING VOL	P75/TMCIV	TONE OSC LEVEL	H/L
3	I	NC	PB1/AN1	VCC	-					CONTROL	
4	I	NC	PB0/AN0	GND	-	42	O	RING/TONE	P76/TMOV	TONE OSC	PULSE
5	I	AVSS	AVSS	GND	-	43	O	NC	P77	NC	-
6	I	TEST	TEST	GND	-	44	I	R1	P80/FTCI	KEY SCAN	L
7	I	X1	X1	XTAL (32KHZ)	CLOCK	45	I	R2	P81/FTOA	KEY SCAN	L
8	O	X2	X2	XTAL (32KHZ)	CLOCK	46	I	R3	P82/FTOB	KEY SCAN	L
9	I	VSS	VSS	GND	-	47	I	R4	P83/FTIA	KEY SCAN	L
10	I	OSC1	OSC1	XTAL (8MHZ)	CLOCK	48	I	R5	P84/FTIB	KEY SCAN	L
11	O	OSC2	OSC2	XTAL (8MHZ)	CLOCK	49	I	R6	P85/FTIC	KEY SCAN	L
12	I	RESET	RESET	RESET	-	50	I	R7	P86/FTID	KEY SCAN	L
13	I	VCC	VCC	VCC	-	51	I	R8	P87	KEY SCAN	L
14	O	RX CNT	P90	RX POWER CONTROL	L	52	I	VSS	VSS	GND	-
15	O	TX CNT	P91	TX POWER CONTROL	L	53	I	VCC	VCC	VCC	-
16	O	PLC	P92	PLL CLOCK	CLOCK	54	I	POW DET	P30/SCK1	VCC	-
17	O	PLD	P93	PLL DATA OUT	DATA	55	I	NC	P31/SI1	1/2 VCC	-
18	O	PLS	P94	PLL ENABLE	L	56	I	NC	P32/SO1	1/2 VCC	-
19	I	RXD	IRQ0	RX DATA IN	DATA	57	I	NC	P33	1/2 VCC	-
20	I	SQ	P50/INT0	OUT OF RANG DETECT	L	58	I	KEY	P34	1/2 VCC	-
21	O	SUB CNT1	P51/INT1	LA8638 MODE	H/L	59	I	CA/RU	P35	1/2 VCC	-
				CONTROL 1		60	O	RS	P20/SCK3	LCD WRITE DATA	H/L
22	O	SUB CNT2	P52/INT2	LA8638 MODE	H/L					DETECT	
				CONTROL 2		61	O	R/W	P21/RXD	LCD READ/WRITE	H/L
23	O	TVC	P53/INT3	TX VOICE CONTROL	H					DETECT	
24	O	TXD	P54/INT4	TX DATA OUT	DATA	62	O	E	P22/TXD	LCD ENABLE	L
25	O	TX LEB	P55/INT5/	TX VOICE LEVEL	H/L	63	O	NC	P23	NC	-
			DTRG	CONTROL		64	O	DB4	P24	LCD DATA	DATA
26	O	VR	P56/INT6/MIB	RX VOICE LEVEL	H/L	65	O	DB5	P25	LCD DATA	DATA
				CONTROL		66	O	DB6	P26	LCD DATA	DATA
27	O	NC	P57/INT7	NC	-	67	O	DB7	P27	LCD DATA	DATA
28	O	NC	P60	NC	-	68	O	REG CNT	P10/TMOW	LCD DC/DC CONVERTER	L
29	O	LED-HF	P61	HANDS FREE LED	H					CONTROL	
				CONTROL		69	O	DC CNT	P11	LCD POWER CONTROL	L
30	O	KEY-LED	P62	KEY LIGHT LED	H	70	I	SCL	P12	CLOCK (EEPROM)	CLOCK
				CONTROL		71	I/O	SDA	P13	DATA (EEPROM)	DATA
31	O	NC	P63	NC	-	72	O	NC	P14/PWM	NC	-
32	O	SP CNT	P64	SP POWER AMP	H	73	O	LRED	P15/IRQ1	LED CONTROL (RED)	L
				CONTROL		74	O	LGRN	P16/IRQ2	LED CONTROL (GREEN)	L
33	O	H/F CNT	P65	H/F POWER AMP	H	75	O	LCD	P17/IRQ3/	LCD BACK LIGHT	-
				CONTROL					TRGV	CONTROL	
34	O	NC	P66	NC	-	76	I	AVCC	AVCC	VCC	-
35	O	NC	P67	NC	-	77	ADI	3V	PB7/AN7	BATTERY VOLTAGE	H
36	I/O	C1	P70	KEY SCAN	L					DETECT	
37	I/O	C2	P71	KEY SCAN	L	78	I	NC	PB6/AN6	GND	-
38	I/O	C3	P72	KEY SCAN	L	79	I	NC	PB5/AN5	GND	-
39	I/O	C4	P73	KEY SCAN	L	80	I	NC	PB4/AN4	GND	-

CIRCUIT DESCRIPTION

Please note that communication distance may vary depending the conditions of operation and may decrease if using the unit in a steel-reinforced concrete structure.

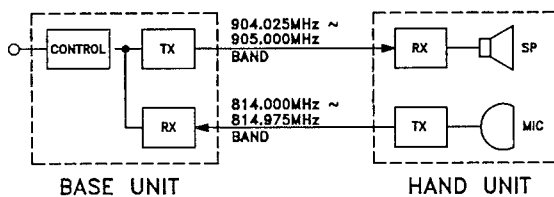
This cordless telephone is composed of two units, the base unit and the handunit.

As shown in Fig.1, there are 40 channels. At any given time, communication between the base unit and hand unit uses one pair (channel) of these frequencies.

CHANNEL	FREQUENCY (MHz)	
	BASE TO HANDSET	HANDSET TO BASE
1	814.000	904.025
2	814.025	904.050
3	814.050	904.075
4	814.075	904.100
5	814.100	904.125
6	814.125	904.150
7	814.150	904.175
8	814.175	904.200
9	814.200	904.225
10	814.225	904.250
11	814.250	904.275
12	814.275	904.300
13	814.300	904.325
14	814.325	904.350
15	814.350	904.375
16	814.375	904.400
17	814.400	904.425
18	814.425	904.450
19	814.450	904.475
20	814.475	904.500
21	814.500	904.525
22	814.525	904.550
23	814.550	904.575
24	814.575	904.600
25	814.600	904.625
26	814.625	904.650
27	814.650	904.675
28	814.675	904.700
29	814.700	904.725
30	814.725	904.750
31	814.750	904.775
32	814.775	904.800
33	814.800	904.825
34	814.825	904.850
35	814.850	904.875
36	814.875	904.900
37	814.900	904.925
38	814.925	904.950
39	814.950	904.975
40	814.975	905.000

Fig. 1

OUTLINE OF OPERATION



SECURITY CODE

Normal operation for conversation and incoming call are possible when the set Security Code are the same for both the Base unit and the Hand unit.

This status is shown in Fig. 2.

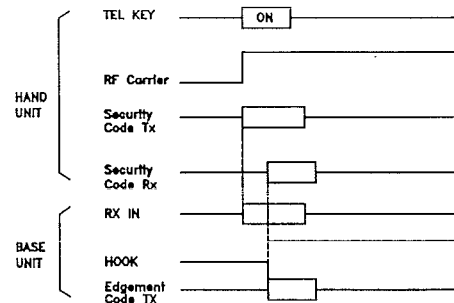
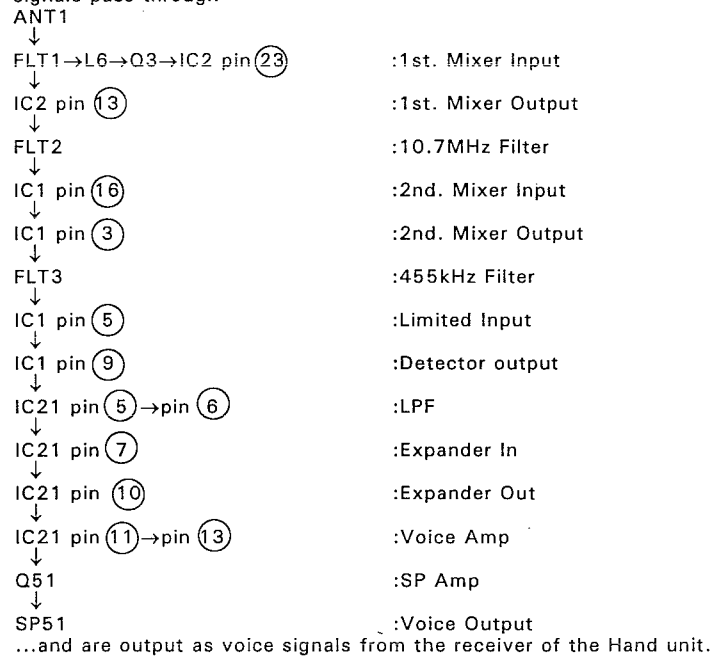


Fig. 2

1. HAND UNIT

1-1 RECEPTION MODE (Voice : TEL)

As shown in Fig. 3, for the voice-receive circuitry of the Hand unit, signals pass through



...and are output as voice signals from the receiver of the Hand unit.

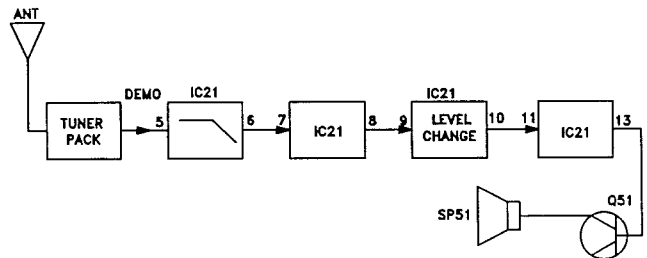


Fig. 3

CIRCUIT DESCRIPTION

1-2RECEPTION MODE (SPEAKER PHONE MODE)

When speaker phone button on the Hand unit is depressed, voice signals pass through the receive circuitry shown in Fig. 4.

IC21 pin (5) :LPF IN
 ↓
 IC21 pin (13) :Audio Output
 ↓
 IC41 pin (4) :Speaker Amp in
 ↓
 IC41 pin (5),(8) :Speaker Amp out
 ↓
 SP41 :Voice output
 ...and are output as voice signals from the speaker of the Hand unit

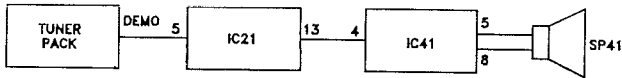


Fig. 4

1-3RINGER & PAGE OUTPUT(Reception of call signals from Base unit)

When call signals are transmitted from the Base unit while the Hand unit's Power switch is at the "ON" position, the Hand unit's ringer rings. The call detection circuitry of the Hand unit is activated and the ringer rings only if the set Security Code of both the Base unit and the Hand unit are the same.

As shown in Fig. 5 call signals are transmitted from the Base unit, signals pass through

IC1 pin (9) :AF out
 ↓
 IC21 pin (5) :LPF in
 ↓
 IC21 pin (16) :Data Shaper out
 ↓
 IC201 pin (19) :Data in
 ↓
 IC201 pin (42),(41) :Oscillated Ring Signal
 ↓
 IC41 :Ringer Amp
 ↓
 SP41 :Ringer tone

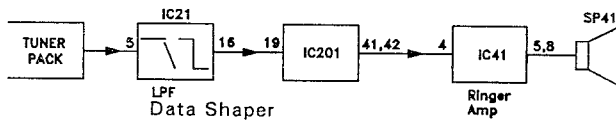


Fig. 5

1-4TRANSMISSION MODE (Voice : TEL)

As shown in Fig. 6 Voice signals input from the microphone pass through...

MIC61 :Mic In
 ↓
 IC21 pin (28)→pin (26) :Voice Amp
 ↓
 IC21 pin (23) :Voice and Data out
 ↓
 D1 :FM Modulator
 ↓
 L7 :OSC Coil
 ↓
 Q4 :RF Amp
 ↓
 Q2 :RF Amp
 ↓
 FLT4 :Filter
 ↓
 ANT ...and the FM-modulated signals are transmitted to the Base unit.

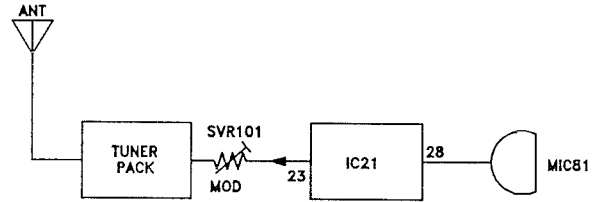


Fig. 6

1-5 DIGITAL CODE SIGNAL (TEL,END,FLASH,MEMO Etc.)

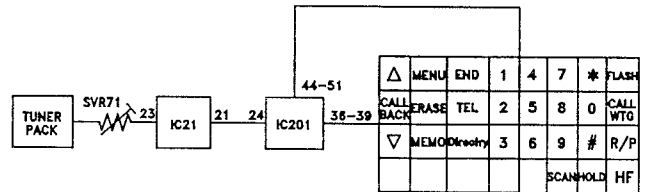


Fig. 7-1

All control signals (TEL,END,FLASH,MEMO etc.) from Hand unit are FM modulated digital code signals. This is shown in Fig. 7-2

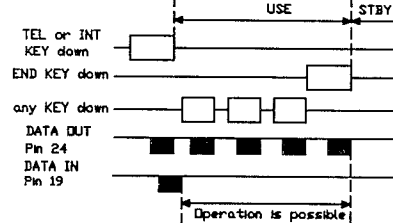


Fig. 7-2

Fig.7-3 shows the FSK(frequency Shift Keying) signals.High and Low data appear as a result of the transmission carrier frequency(f_c) and the data frequency (f_d) deviated (Δf is approx 9kHz) from the f_c frequency by the signal corresponding to the digital code shown in Fig.7-3.

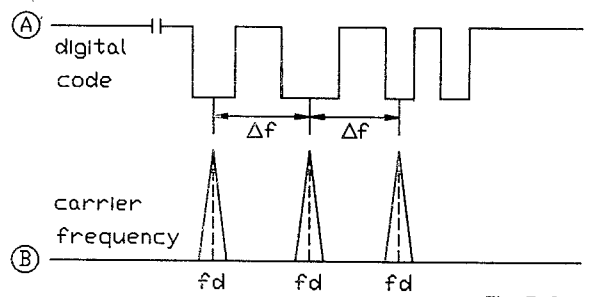


Fig. 7-3

2.BASE UNIT

The transmission/reception basic circuitry is the same as that of the Hand unit, except for the following differences.

	Transmission frequency	Reception frequency
HAND UNIT	814 ~ 814.975MHz band	904.025 ~ 905MHz band
BASE UNIT	904.025 ~ 905MHz band	814 ~ 814.975MHz band

2-1 RECEPTION MODE (TEL Voice-detection output)

As shown in Fig. 8, voice signals from the Hand unit are demodulated by current flowing.

ANT
 ↓
 FLT301,L306,Q303 :1st. Mixer Input
 ↓
 IC302 pin (13) :1st. Mixer Output
 ↓

CIRCUIT DESCRIPTION

FLT302	:10.7MHz Filter
↓	
IC301 pin (16)	:2nd. Mixer Input
↓	
IC301 pin (3)	:2nd. Mixer Output
↓	
FLT303	:455KHz Filter
↓	
IC301 pin (5)	:Limited Input
↓	
IC301	:Audio Output(DEMO)

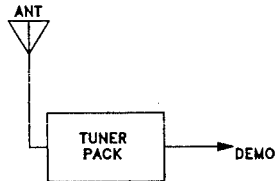


Fig. 8

2-2 TRANSMISSION MODE(Voice:TEL/INT/DATA mode)
Refer to section 1-4 of the Hand unit description for information
about the operation in Fig.9

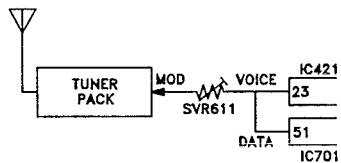


Fig. 9

2-3 VOICE OUTPUT

VOICE OUTPUT (from Hand unit to telephone line)
Voice signals demodulated as described in Fig. 10 pass through:
IC301 pin (9) : Audio output

↓
 IC421 pin (5) → (6) :LPF
 ↓
 IC421 pin (7) :Expander In
 ↓
 IC421 pin (11) → pin (13) :Voice Amp In→Out
 ↓
 IC461 pin (10) → (11) :Switch On(TEL mode)
 ↓
 IC551 pin (7) → (6), (5) :Hybrid Amp
 ↓
 T501 :Hybrid transformer
 ↓
 Telephone Line(Tip&Ring)

Voice signals are output to Tel. line

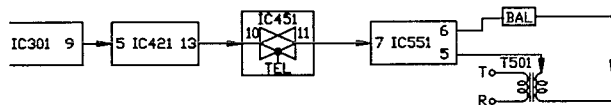


Fig. 10

2-4 DIGITAL SIGNAL(receive)

The digital signal sent from Hand unit by the FSK signal is demodulated to a digital signal which is input to pin 53 of IC701 as shown in Fig. 11

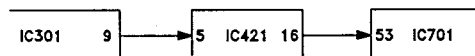


Fig. 11

2-5 RINGING

When the ringing signal from the TEL line is input is as shown in Fig.12-1 and 12-2.

Ringing signal input to JK501

IC501 pin (4)	:Ringing detect ON.(H→L)
↓	
IC701 pin (74)	:Ringing detect in
↓	
IC701 pin (65)	:Ringing signal out
↓	
IC701 pin (51)	:Digital signal output to Hand unit

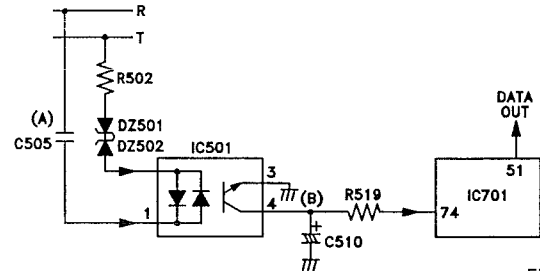


Fig. 12-1

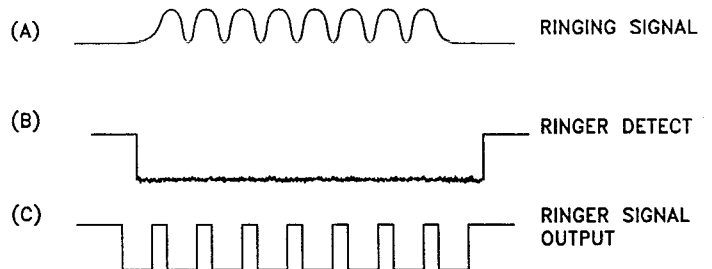


Fig. 12-2

2-6 PULSE/DTMF DIALING

Key in from Hand unit :IC701 pin (53) DATA IN

Dial signal output

PULSE : IC701 pin (21) → Q522 → Q521 → RY 501 → TEL LINE
OR
TONE : IC701 pin (75) ~ (76) → IC451 → IC551 → T501 → TEL LINE

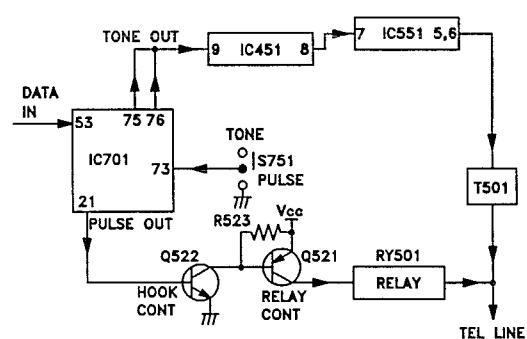
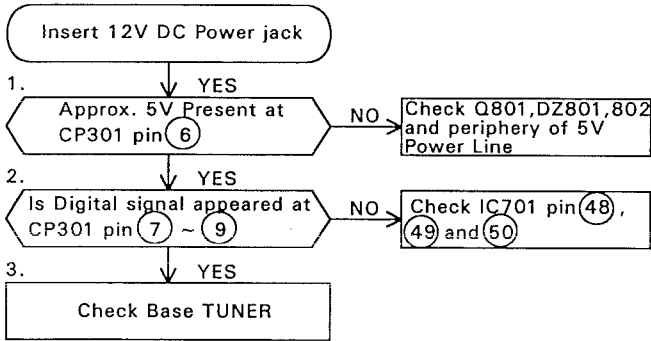


Fig. 13

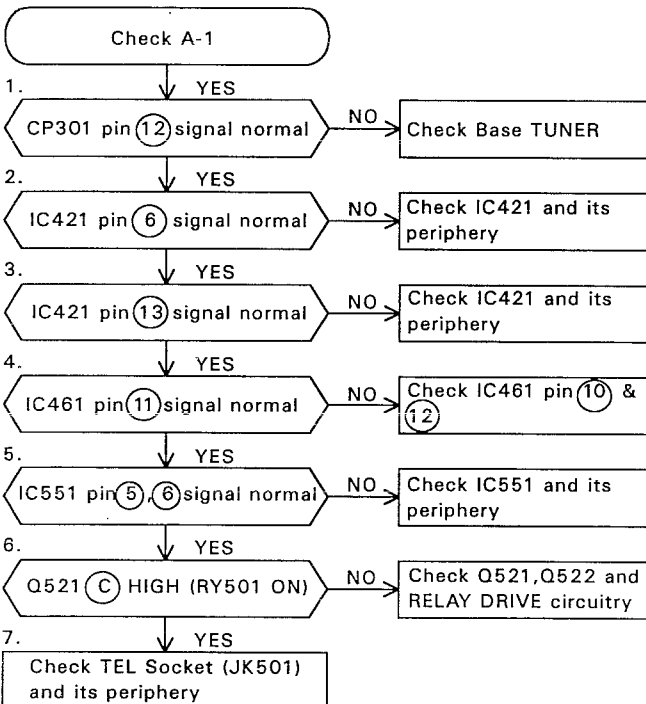
TROUBLESHOOTING

1. BASE UNIT

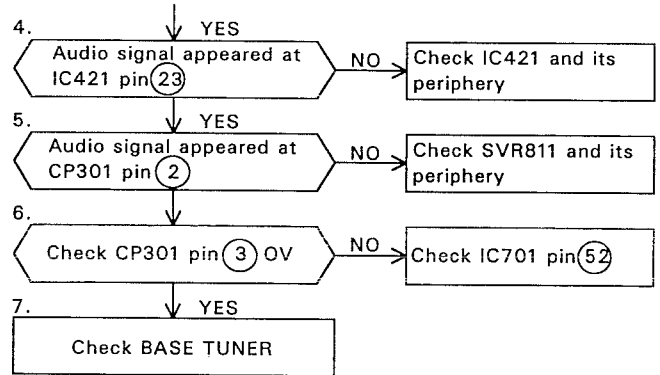
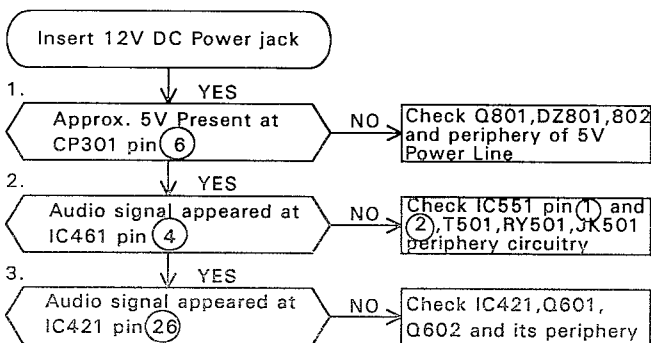
A-1 Cannot receive (Audio signal does not appear at CP301 pin(12))



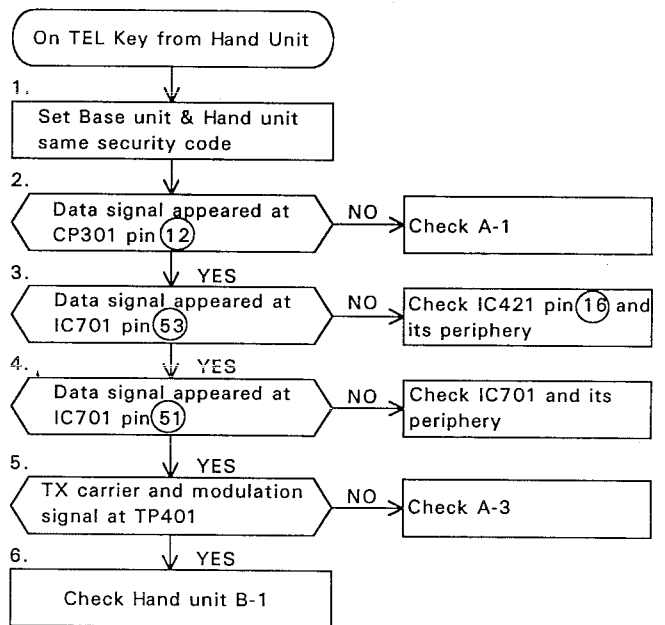
A-2 Cannot receive with TELEPHONE



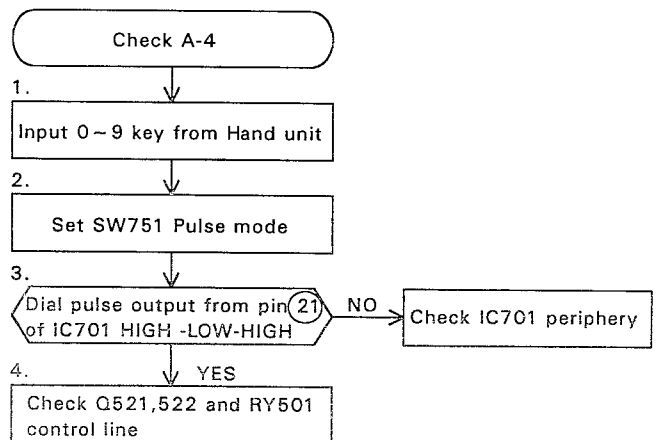
A-3 Cannot transmit (TX carrier or modulation signal does not appear)



A-4 Cannot communicate with wireless telephone

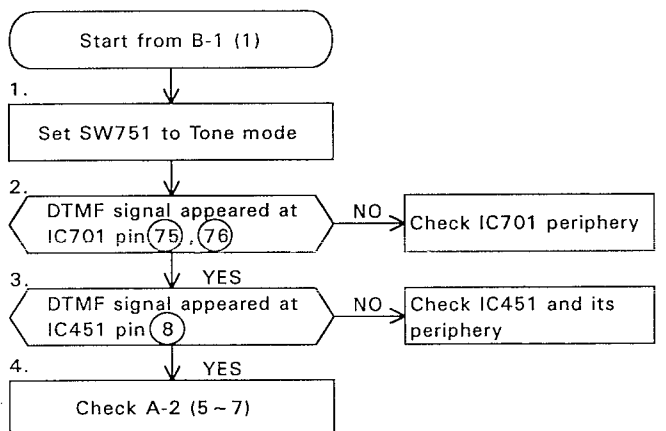


B-1 Pulse dialing cannot be made from Hand unit



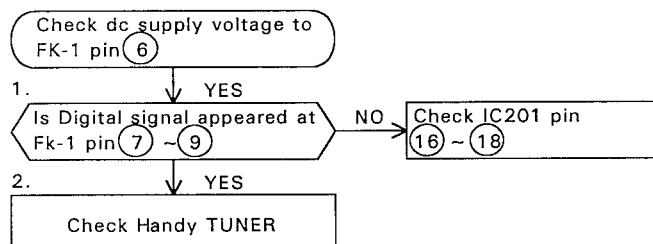
TROUBLESHOOTING

B-2 DTMF dialing cannot be made from Hand unit

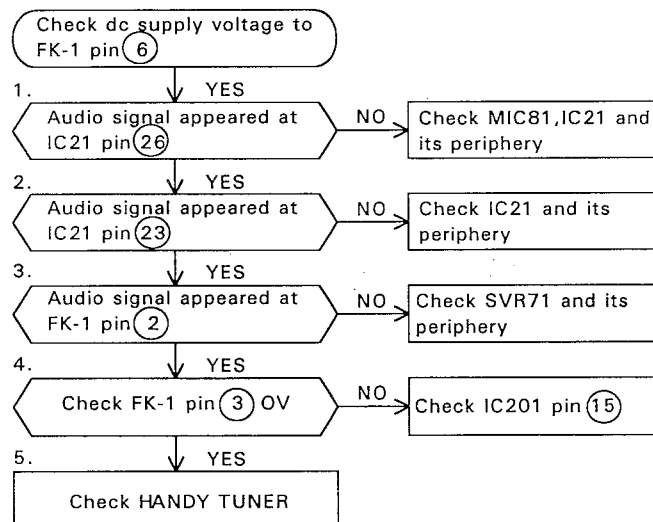


2. HAND UNIT

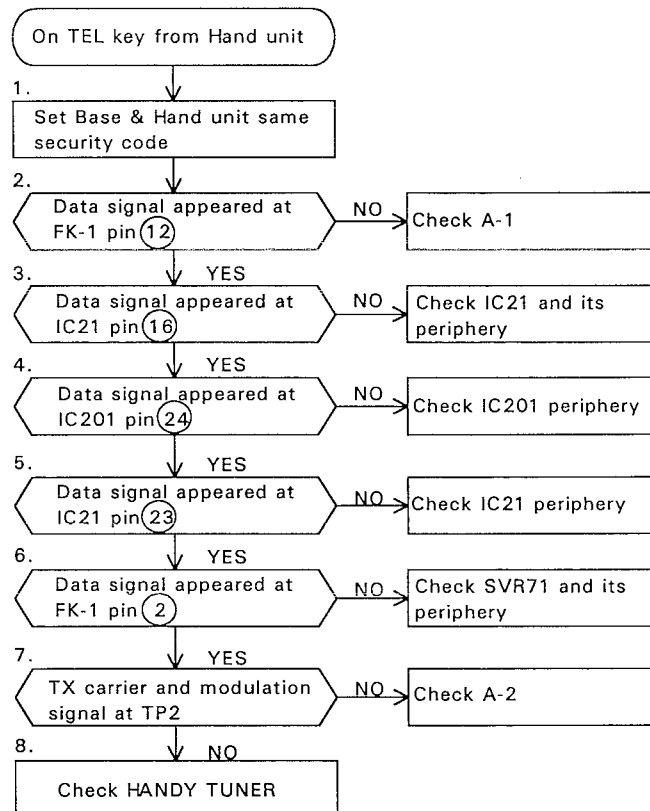
A-1 Cannot receive (Audio signal does not appear FK-1 pin (12))



A-2 Cannot transmit (TX carrier modulation signal does not appear) (Check same as Base unit A-3)



A-3 Cannot communicate with wireless telephone



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