

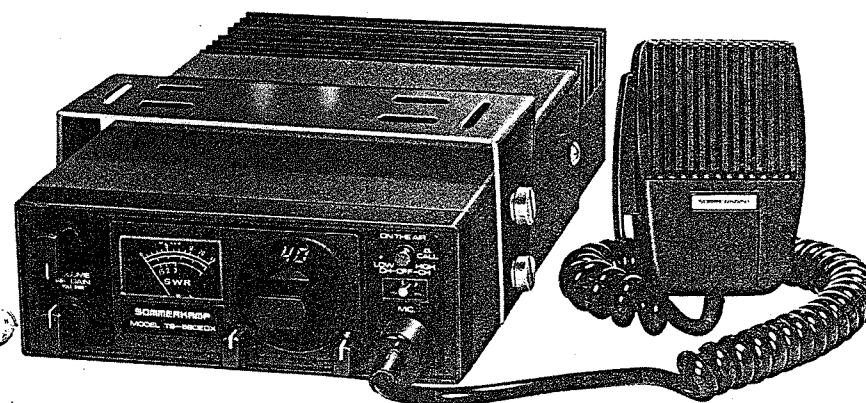
SPECIFICATIONS for TS-680EDX

Semiconductors:	4 Integrated Circuits, 2 FET, 22 Transistors. 1 SCR, 24 Silicon diode. 2 Varicap, 5 Zener diode.
Transmitter System:	Synthesized PLL controlled. Collector modulation AM.
Frequency:	80 Channels on 27 MHz.
Output Power:	25 Watts at 13.8V DC.
Band Width:	8 KHz. (max.)
Antenna impedance:	50-52 ohms.
Receiver System:	Double conversion superheterodyne, PLL controlled.
Sensitivity:	1 μ V or better for 100mW output, 10 dB signal to noise ratio.
Intermediate Frequency:	1st I.F. 10.7MHz, 2nd I.F. 455KHz.
Receiver Selectivity:	40 dB down at 10 KHz. or more.
Squelch Sensitivity:	1 μ V.
Audio Output Power:	2 watts in 10% distortion.
Power Source:	11-16V D.C. Negative Ground. Fuse 10A.
Microphone:	Dynamic type with press-talk switch. Impedance 500 ohm.
Speaker:	Dynamic type, Voice coil Impedance 8 ohm.
Size:	156 $\times$ 58 $\times$ 290 mm.
Weight:	2.5kg.
Accessories:	Mounting bracket, Mounting hardware, power cord.

SOMMERKAMP[®]

CITIZENS BAND TRANSCEIVER INSTRUCTION MANUAL

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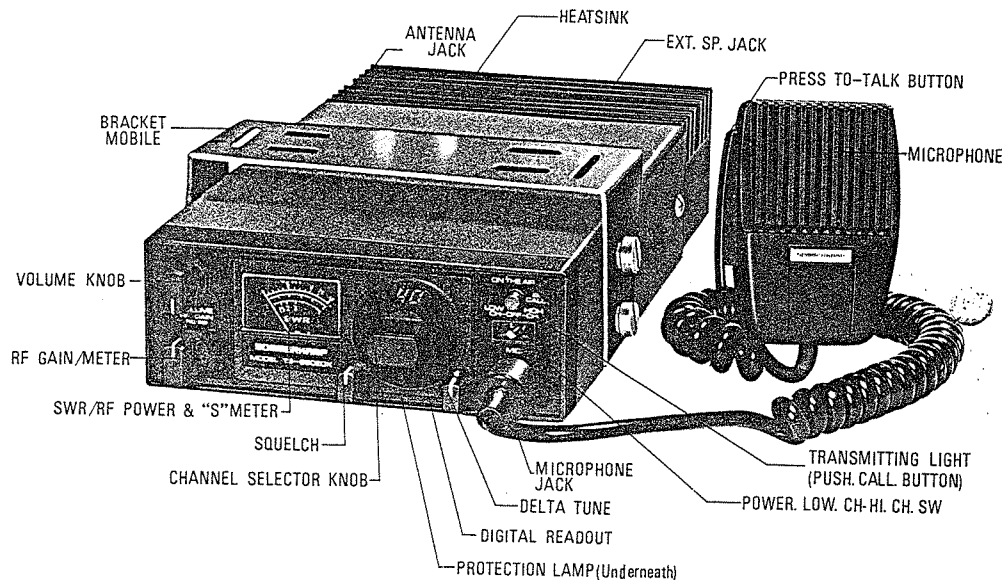
SOMMERKAMP ELECTRONIC SAS

CH-6903 LUGANO, P.O. BOX 176
SWITZERLAND

TEL.91 688543, TELEX:79314

MODEL: TS-680EDX

CONTROL LOCATIONS:



PACKING LIST

Beside this manual, the carton shall contain the following items:

1. Transceiver TS-680EDX
1. Mounting bracket.
4. Screw for Mounting bracket.
1. Microphone hanger.
1. Microphone.

GENERAL DESCRIPTION

Your SOMMERKAMP TS-680EDX transceiver has been designed for continuous heavy duty mobile and base station application.

It can be operated with a microphone and internal speaker or handset, speaker/microphone combination, telephoneset incorporating automatic voice operated transmit/receive switching, external selective calling with automatic answer-back and many more.

GENERAL

The transceiver is designed to operate from 13.8 Volt DC powersupply as a base or mobile station. Its straight forward 80 channel capability allows it to operate on any channel within 26.965 and 27.855 MHz.

RECEIVER SECTION

The receiver section is designed to receive amplitude modulated (AM/A3) signals in the 26.965 to 27.855 MHz. (11 meter) citizens band.

The unique combination of low noise Field Effect Transistor (FET), double conversion, a combination of mechanical ceramic, and L/C filters, fully automatic noise limiter (ANL) and a hifi quality speaker amplifier will give you exceptional reception quality in this fine piece of equipment.

In addition, the above combination of the latest technology provides you with a sensitivity and unwanted signal rejection and noise suppression available previously only in space and military communication equipment.

The power supply of the receiver RF. IF. and oscillator section is stabilized by an extreme sharp cut-off Zener diode to obtain the high sensitivity and unwanted signal rejection. The fully automatic series gate noise limiter, which virtually cuts off the audio output during ignition noise pulses, is defeatable to make even the weakest signal audible which otherwise would be cut off by the threshold level of the ANL switching diode.

The high squelch sensitivity is achieved by using a separate squelch detector and switching circuit with a carefully balanced hysteresis. The transformerless hifi quality audio power amplifier will drive any load between 8 ohms and indefinite such as internal speaker or external speaker/microphone or headset combinations having the above impedances.

The meter indicates the field strength during reception of a signal.

TRANSMITTER & MODULATOR SECTION:

The transmitter section is designed for continuous heavy duty transmission of amplitude modulated (AM/A3) signals in the 26.965 to 27.855 MHz. (11 meter) citizens band.

The transmitter consists of a Phase Locked Loop circuit and an one-crystal controlled oscillator, of which output is synthesized in a class B mixer, followed by a double tuned filter, class AB1 buffers, and a highly efficient collector-modulated class C driver and power output stage, coupled by series and pi-matching filters to the antenna jack.

The modulator consists of an input audio filter, ALC amplifier integrated pre- and power amplifier and modulation transformer. This gives you the lowest possible modulation distortion and up to 100% modulation.

The input is designed for 500 ohm dynamic microphone or 32 ohm speaker/microphone combination with a 1K ohm resistor in series.

RECEIVE/TRANSMIT SWITCHING

The receive/transmit switching is done by a single pole, single throw switch in the microphone and a combination of NPN and PNP switching transistors.

METER

The combination meter provides you with the following functions:

During receive mode.....it indicates the incoming signal strength.

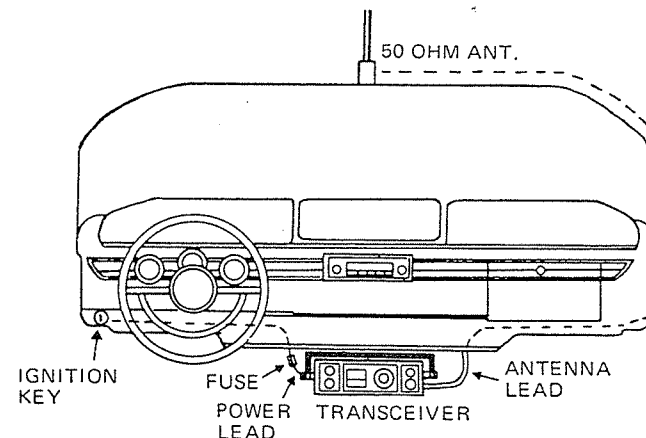
During transmit mode..... it indicates the output power.

For normal operation, be sure if the RF GAIN knob is pushed.

For checking the SWR of your antenna, pull the RF GAIN knob, then the meter will function as SWR meter.

MOBILE INSTALLATION

Mounting bracket and screws are supplied for mounting the transceiver underneath the dashboard. Microphone hanger and screws are also supplied. For electrical connection, first make sure that the transceiver is turned off. Connect the red wire to the ACC terminal of the ignition switch or + terminal of battery and ground the black wire to the chassis of the vehicle. The black wire should be grounded as short as possible to minimize noise interference. This transceiver is designed for use with the negative ground system.



Connect the antenna plug to the antenna jack with an SWR-Meter inserted into the antenna cable.

Connect the microphone to the microphone jack.

Switch the transceiver ON.

The receiving, meter and the channel lamp, shall light up.

Turn the squelch control to min. (ANL OFF)

Turn the Volume control to max. Until you hear a rushing sound from the speaker.

Switch the channel selector to CH. 1.

Push the transmit button on the microphone and check the SWR of your antenna with the SWR-Meter immediately by pulling the RF GAIN knob. The SWR must be less than 1 to 2. Do this within 3 seconds, because if the SWR is higher than 1 to 2 it is very likely that the transmitting transistors will be damaged if you operate the transmitter too long with an antenna having a too high SWR. Also read carefully the recommendations on antennas.

NOTE: In case the SWR is too high, the Automatic protection circuit will switch off the transmitter.

If the SWR is less than 1 to 2 continue checkout; if it is more than 1 to 2 repair or replace your antenna.

Check that the meter needle is near the red mark during transmitting. Talk into the microphone. The meter needle shall move a little. Release the transmit button and switch the channel selector to channel 1,2 etc. until you receive a station.

Wait until this station stops to transmit and turn the Squelch control slowly to max. Until the background noise just disappears. When the station starts to transmit again, you will hear this station, but you will not hear the background noise during non transmitting periods.

OPERATING INSTRUCTIONS

The transceiver is ready to operate when it is installed with an antenna properly connected. Note that the communication range differs depending upon the environment where the transceiver is operated.

You may reach 30 or 40 kilometers where no obstacle exists, but the range may be limited to 5 or 6 kilometers in cities where many high buildings disturb the communication.

- 1) Turn the set on by switching the LOW CH-OFF-HIGH CH. snap switch to the desired channel range and the channel dial will be lighted. Turn the volume control clockwise to increase the audio sound. Note that the volume control knob is only for adjusting the audio volume, not to increase the transmitting power.
- 2) Set the DELTA-TUNE for best reception.
- 3) Turn the squelch control clockwise until incoming noise is eliminated. Do not turn it excessively as the sensitivity may be reduced.
- 4) Turn the squelch control counter-clockwise to switch off the ANL (Automatic Noise Limiter).
- 5) Turn the RF GAIN control to the maximum clockwise position.
- 6) Turn the channel selector knob to the desired channel.
- 7) For transmitting, press the button on the microphone and speak into it normally. Release the button for receiving.

METER

The meter reading indicates the signal strength at receiving, and functions as an output indicator at transmitting, and the meter pointer should be within the red zone under the normal conditions.

CIRCUIT PROTECTION INDICATION LAMP

The lamp is on when the antenna is mismatched, and the transmitting circuit will be cut off. This Lamp is located underneath the channel lens.

LIST OF CHANNEL FREQUENCIES

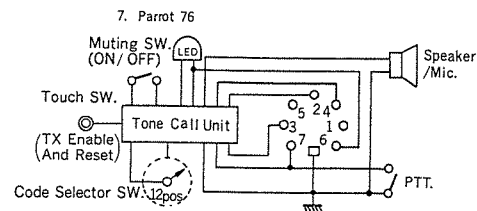
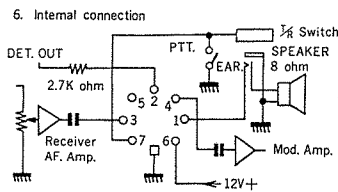
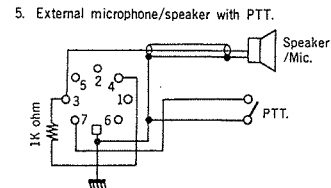
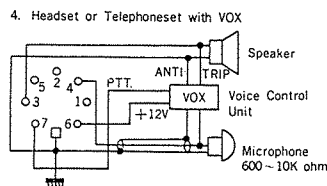
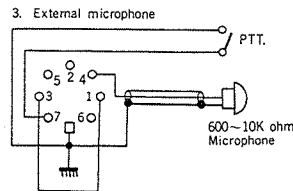
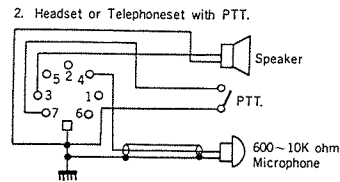
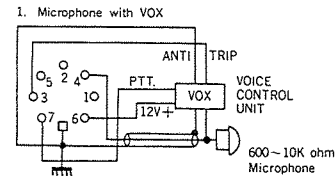
CH.	LOW.CH. (MHz)	HIGH.CH. (MHz)	CH.	LOW.CH. (MHz)	HIGH.CH. (MHz)
1	26. 965	27. 415	21	27. 215	27. 665
2	26. 975	27. 425	22	27. 225	27. 675
3	26. 985	27. 435	23	27. 255	27. 705
4	27. 005	27. 455	24	27. 235	27. 685
5	27. 015	27. 465	25	27. 245	27. 695
6	27. 025	27. 475	26	27. 265	27. 715
7	27. 035	27. 485	27	27. 275	27. 725
8	27. 055	27. 505	28	27. 285	27. 735
9	27. 065	27. 515	29	27. 295	27. 745
10	27. 075	27. 525	30	27. 305	27. 755
11	27. 085	27. 535	31	27. 315	27. 765
12	27. 105	27. 555	32	27. 325	27. 775
13	27. 115	27. 565	33	27. 335	27. 785
14	27. 125	27. 575	34	27. 345	27. 795
15	27. 135	27. 585	35	27. 355	27. 805
16	27. 155	27. 605	36	27. 365	27. 815
17	27. 165	27. 615	37	27. 375	27. 825
18	27. 175	27. 625	38	27. 385	27. 835
19	27. 185	27. 635	39	27. 395	27. 845
20	27. 205	27. 655	40	27. 405	27. 855

MICROPHONE JACK

The 7-pin DIN standard accessory jack has the following internal connections:

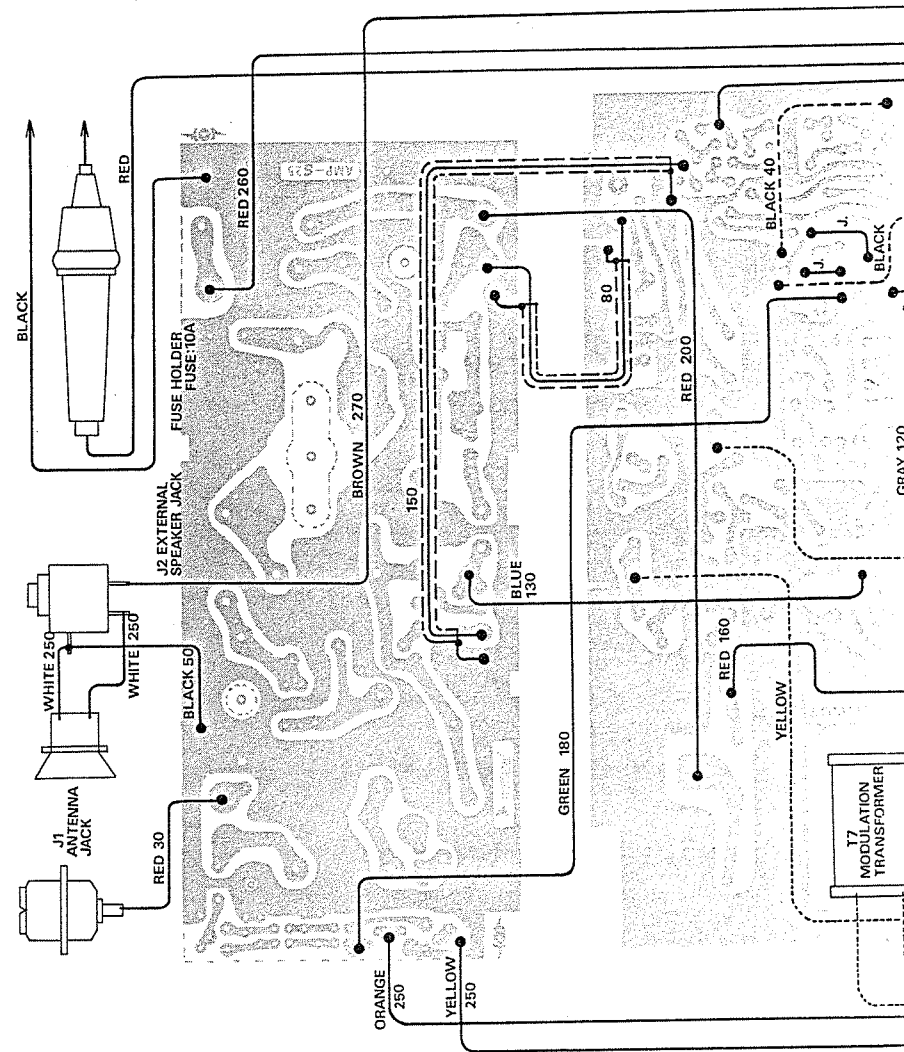
- | | |
|-------------------------------------|--------------------------------|
| 1. Internal speaker | 5. N/C |
| 2. AF. out for selective call. | 6. +12V for VOX unit etc. |
| 3. Audio output (Z 8 ohm-10K ohm) | 7. Transmit/Receive switching. |
| 4. Microphone input (Z 600-10K ohm) | Case = ground |

Always operate the transceiver with the microphone plug inserted in the microphone jack, or with the following external connections:

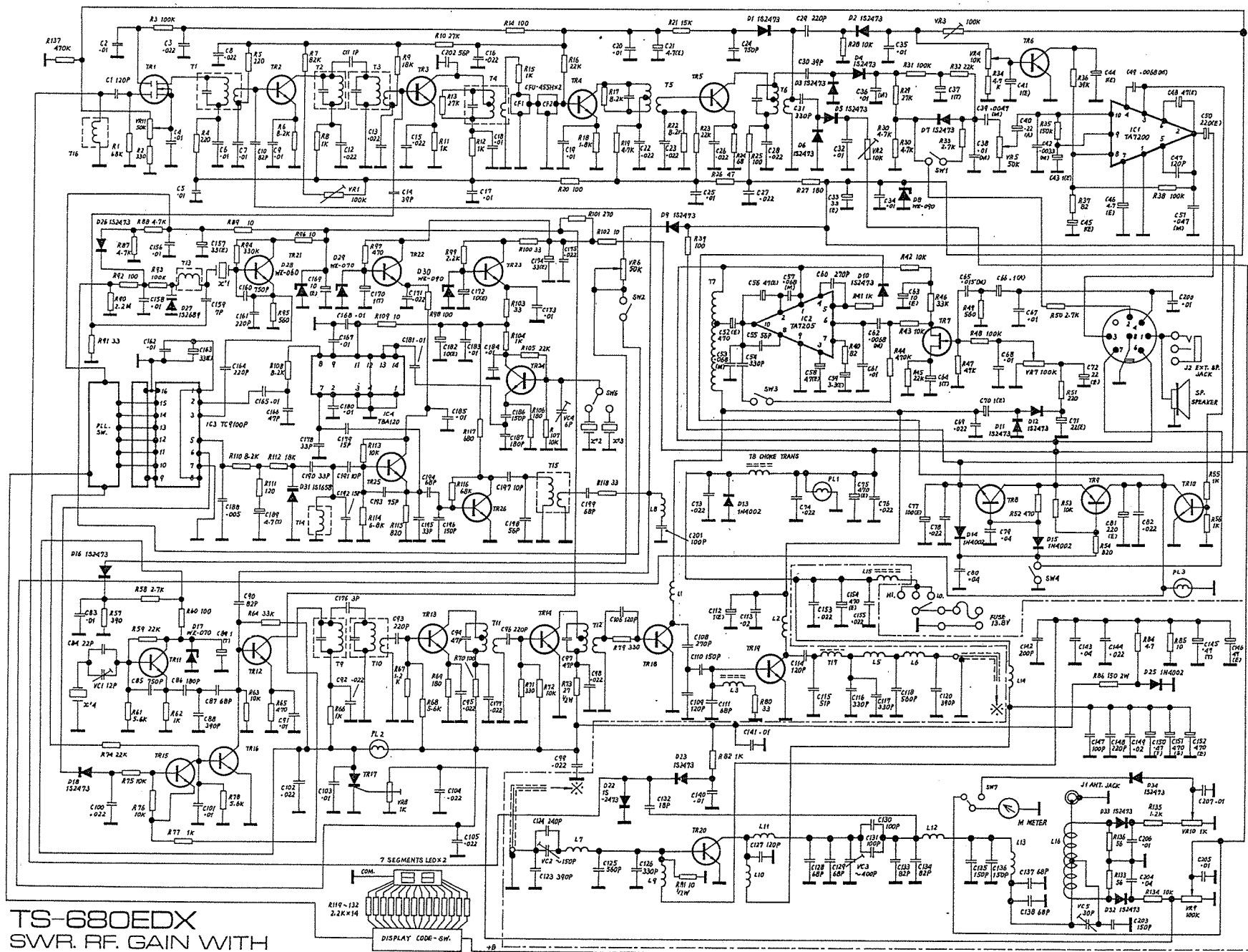


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PRINTED CIRCUIT BOARD PARTS LAYOUT



TS-680EDX
SWR. RF. GAIN WITH
532089

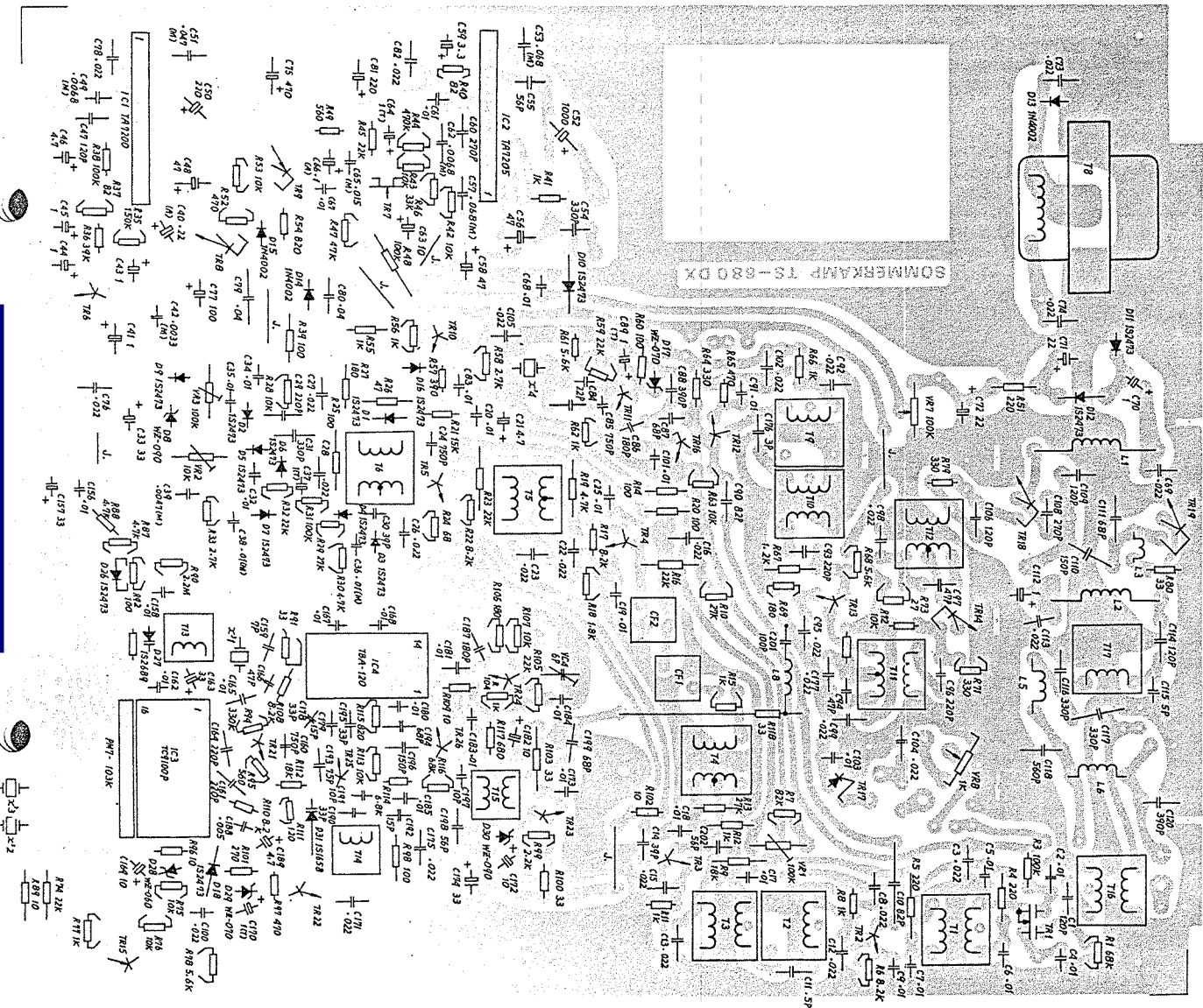
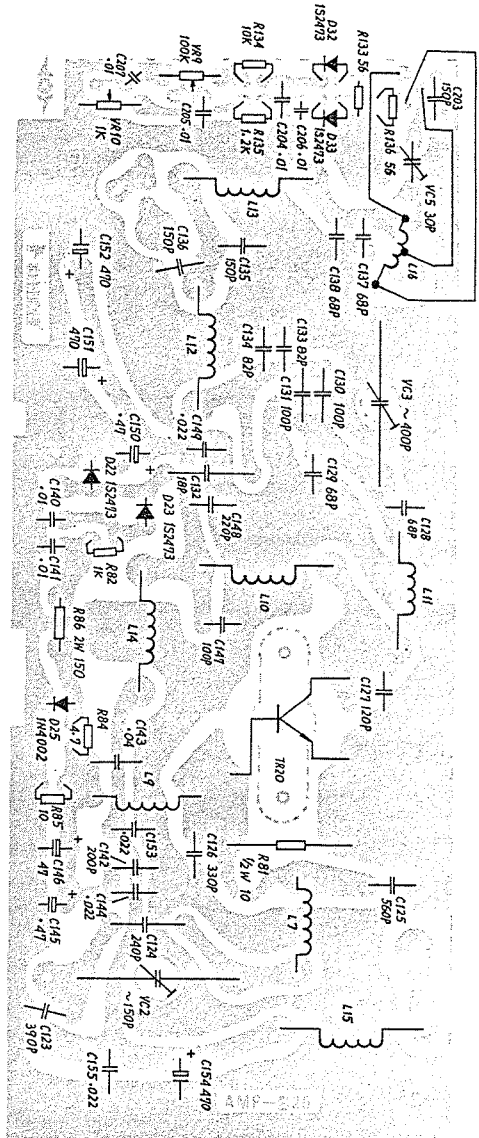


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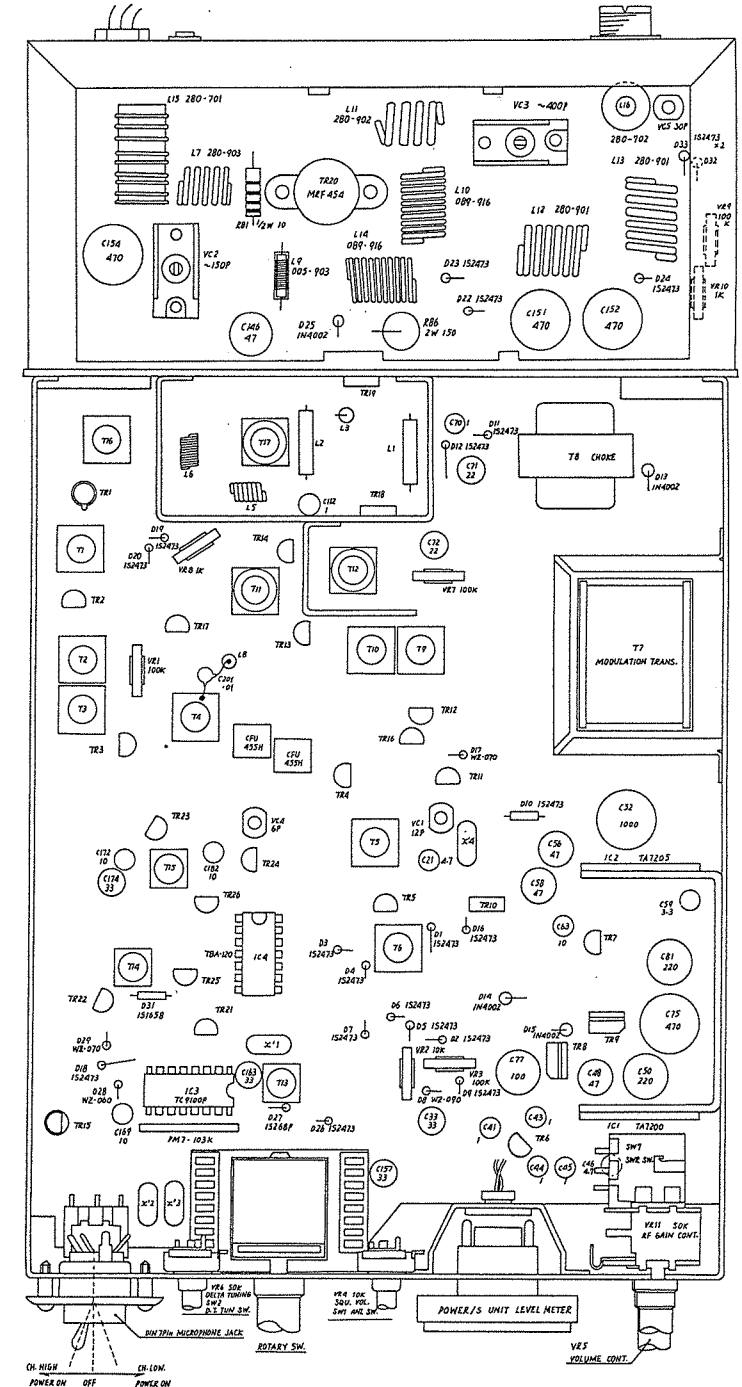
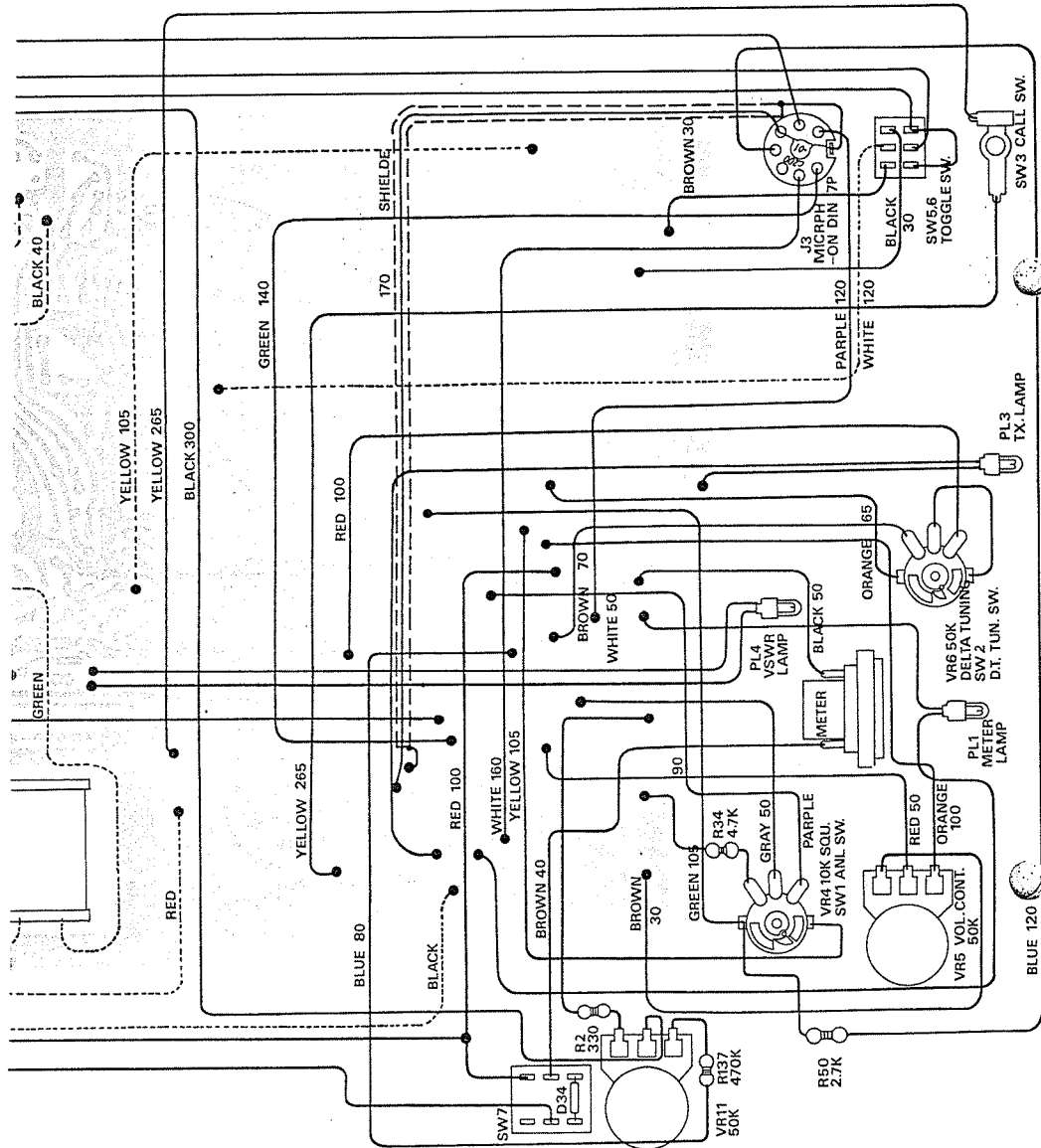
The diagram illustrates the internal wiring of a radio receiver, centered around a PCB labeled "SOMMERKAMP TS-610 DX". Key components and their connections include:

- External Connections:**
 - J1 ANTENNA JACK:** Connected to WHITE 250 and BLACK 50.
 - J2 EXTERNAL SPEAKER JACK:** Connected to RED 260 and RED 200.
 - FUSE HOLDER FUSE:10A:** Connected to RED 260.
- Internal Components and Connections:**
 - T7 MODULATION TRANSFORMER:** Connected to GREEN 180, RED 160, and RED 120.
 - VR1 50K:** Connected to SW7, R2 3.3K, and R34 4.7K.
 - VR4 10K SQU. SW1 ANL SW:** Connected to BROWN 40, WHITE 160, and YELLOW 105.
 - VR5 VOL CONT. 50K:** Connected to RED 50, ORANGE 100, and RED 100.
 - VR6 50K DELTA TUNING SW 2:** Connected to ORANGE 65, BLACK 50, and WHITE 50.
 - VR3 CALL SW:** Connected to SW3 CALL SW.
 - VR11 50K, VR13 470K, R50 2.7K, R51 2.7K, R52 470K, R53 470K, R54 470K:** Various resistors connected to different points on the PCB.
 - VR1 50K, VR4 10K SQU. SW1 ANL SW, VR5 VOL CONT. 50K, VR6 50K DELTA TUNING SW 2, VR3 CALL SW:** Various potentiometers and switches connected to different points on the PCB.
 - VR1 50K, VR4 10K SQU. SW1 ANL SW, VR5 VOL CONT. 50K, VR6 50K DELTA TUNING SW 2, VR3 CALL SW:** Various potentiometers and switches connected to different points on the PCB.

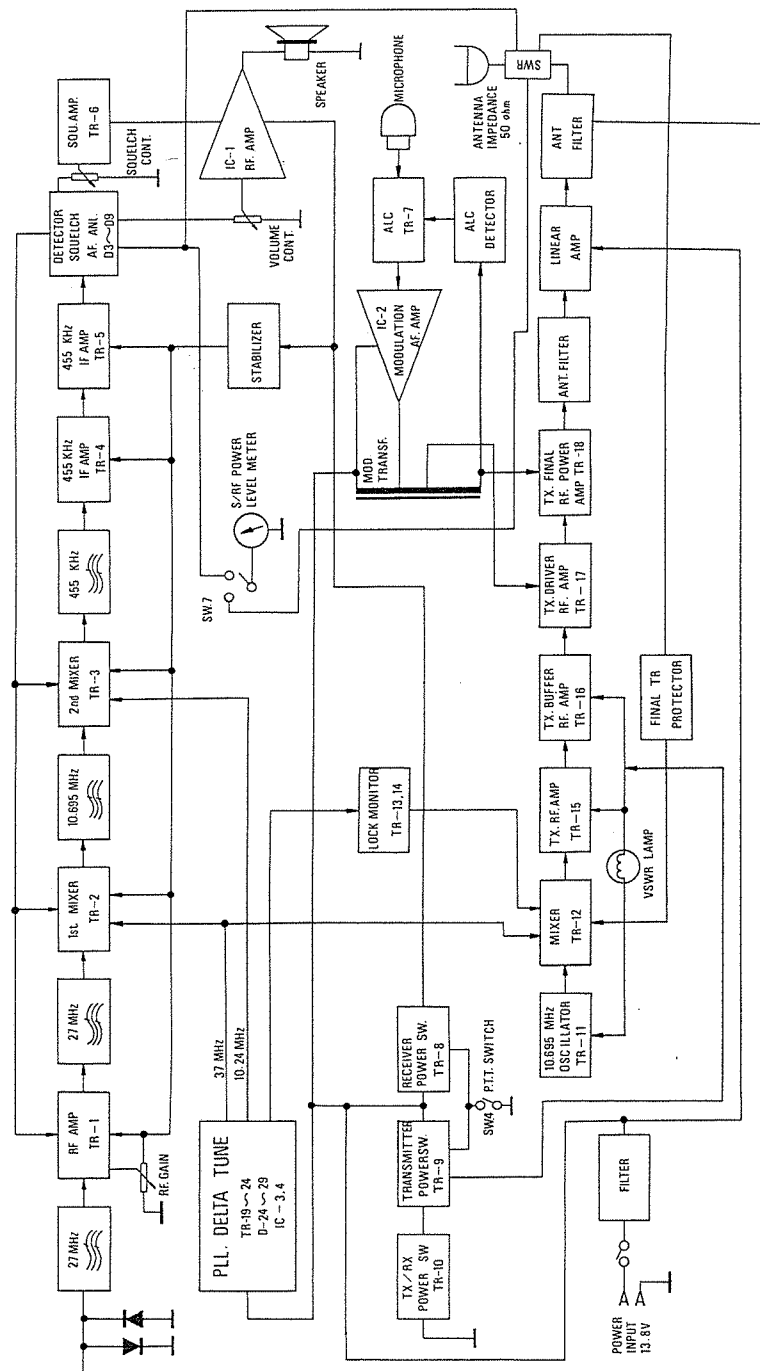
WIRING LAYOUT



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BLOCK DIAGRAM



PARTS LIST for TS-680EDX (B)

DESIGNATION	PARTS NAME	PARTS NO.
MP-455	Front Frame	524405
MP-463	Chassis Frame	522055
MP-456	Back Pannel	524447
MP-105	Cabinet Cover (Upper)	483016
MP-124	Cabinet Cover (Lower)	514346
MP-107	Mounting Bracket	484085
MP-457	Booster Chassis	523060
MP-458	Heatsink	523059
MP-522	Front Plate (R)	524392
MP-523	Front Plate (L)	534525
MP-459	Brand Plate	524443
MP-460	Back Plate	524444
MP-110	Mounting Bracket for Meter	484064
MP-461	Heatsink for IC	524378
MP-211	Meter Lamp Reflection Plate	484063
MP-111	Call Switch Contact	484086
MP-112	Call Switch Spring	484087
MP-307	Knob for Squ./Delta. Control	494199
MP-117	Knob for Channel Selector	484116
MP-17	Knob for Vol./Swr. Control	474011
MP-118	Nut for Channel Selector	484073
MP-120	Screw for Mounting Bracket	484098
MP-356	Heatsink for 2SC1957	494250
MP-19	Call Button	484057
MP-5	Mounting Bracket for Speaker	504335
MP-109	Supporter for Mic. Consent	484084
MP-500	PLL, Unit Cover (Upper)	524376
MP-501	PLL, Unit Cover (Lower)	524386
MP-462	Booster Chassis Cover	524421
	Heatsink (Small)	524385
VC4	Trimmer Condenser 6PF	CV05-A060
VC5 1	Trimmer Condenser 12PF	CV05-C120
VC5	Trimmer Condenser 30PF	CV05-E300
VC2	Trimmer Condenser ~150PF	AL-150B
VC3	Trimmer Condenser ~400PF	AL-400B
CF1, 2	Ceramic Filter	CFU455H

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PARTS LIST for TS-680EDX (B)

DESIGNATION	PARTS NAME	PARTS NO.
IC1	Integrated Circuit	TA-7200
IC2	Integrated Circuit	TA-7205
IC3	Integrated Circuit	TC-9100P
IC4	Integrated Circuit	TBA-120
TR7	FET	2SK30
TR1	FET	3SK40
TR10	Transistor	2SC496
TR15	Transistor	2SA562
TR9	Transistor	2SA634
TR6, 16	Transistor	2SC945
TR8	Transistor	2SC1096
TR2~5, 11~13	Transistor	2SC1675
TR19	Transistor	2SC1678
TR21, 24~26	Transistor	2SC1739
TR22, 23	Transistor	2SC1741
TR18	Transistor	2SC1957
TR14	Transistor	2SC2086
TR17	SCR	2SF656
TR20	MRF	MRF454
D ^{1~7, 9~12, 16, 18} 22, 23, 26, 32~34	Silicon Diode	IS2473
D13~15, 25	Silicon Diode	IN4002
D27	Varicap Diode	IS2689
D31	Varicap Diode	IS1658
D28	Zener Diode	WZ-060
D17, 29	Zener Diode	WZ-070
D8, 30	Zener Diode	WZ-090
VR2	Semi Variable Resistor 10K ohm	SVR010KS2
VR1, 3	Semi Variable Resistor 100K ohm	SVR100KS2
VR8, 10	Semi Variable Resistor 1K ohm	SVR001KS3
VR7, 9	Semi Variable Resistor 100K ohm	SVR100KS3
VR5	Variable Resistor (Volume) 50K ohm	VR1650KB
VR4, SW1	Variable Resistor (Squelch) 10K ohm	V12M4-IS
VR6, SW2	Variable Resistor (D. Tune) 50K ohm	V12M4-IS
VR11, SW7	Variable Resistor (RF. Gain) 50K ohm	VM13E-UER22
SW5, 6	Toggle Switch	8A-2021
SW4	PLL Rotary Switch	SRS-303U112
LED	LED Display	GL-6P202

PARTS LIST for TS-680EDX (B)

DESIGNATION	PARTS NAME	PARTS NO.
T1, 16	RX RF Tuning Coil	089-905
T2, 3	IFT 10.7 MHz	089-901
T4	IFT 455 KHz	089-902
T5	IFT 455 KHz	087-102
T6	IFT 455 KHz	145-101
T7	Modulation Trans	EI-42
T8	Power Filter Trans	EI-24
T9, 10	TX Mixer Coil	087-904
T11	TX 27MHz Filter Coil	231-801
T12	TX 27MHz Buffer Tuning Coil	005-905
T13	10.24 MHz OSC Coil	231-002
T14	PLL VCO Coil	231-001
T15	VCO AMP Coil	231-003
T17	TX Final Tuning Coil	005-907
L1, 2	TX Power Choke Coil	010-907
L3, 8	TX Final Choke Coil	005-901
L5	TX π Matching Coil	145-903
L6	TX π Matching Coil	145-902
L7	Booster Input Coil	280-903
L9	Booster Base Choke Coil	005-903
L10, 14	Booster Collector Choke Coil	089-916
L11	Booster Output Tuning Coil	280-902
L12, 13	Booster π Matching Coil	280-901
L15	DC Input Filter Coil	280-701
L16	SWR Coil	280-702
J1	Antenna Jack	MRM/INCH
J2	EXT. Speaker Jack	SJ-269
J3	Microphone Jack Din Type 8P	
K-1	Connector 8 pin	K8P-780BS-A
K-2	Connector 8 pin	K8P-780BS-B
R	Resistor	PM7-103K
MIC	Microphone Complete	
F1	Fuse 10A	F-10A
P, C	Power Cord with Contact & Fuse Holder	523066
M	Meter	510119
SP	Speaker	77-08
PL1~3	Pilot Lamp 14V-80mA	524387