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UNIDEN "EXPORT" SERVICE MANUAL

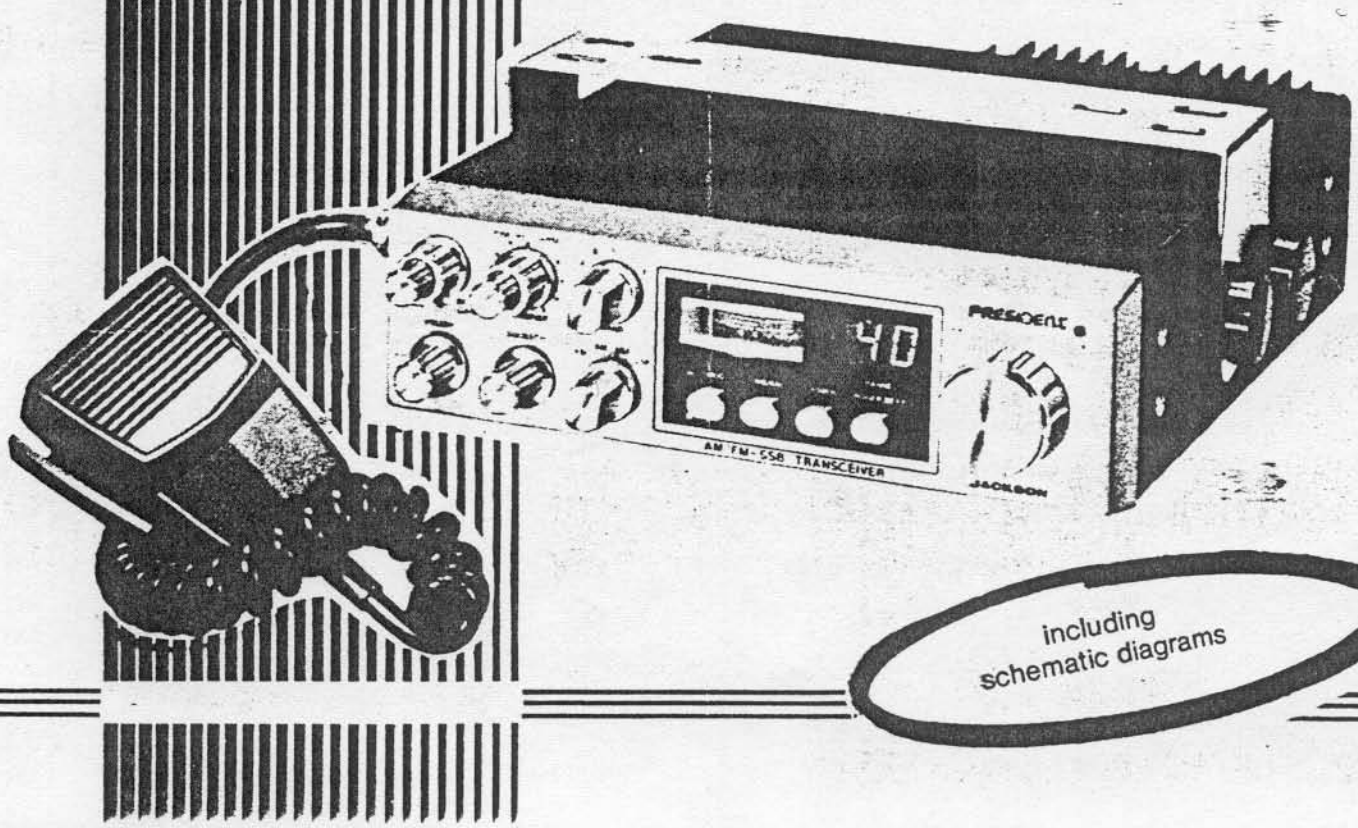
PB010 CHASSIS (COBRA 148GTL-DX, SUPERSTAR 360 FM)
PB042 CHASSIS (PRESIDENT JACKSON)
PC999 CHASSIS (PRESIDENT GRANT)

OTHER UNIDEN CB CHASSIS - APPLICATIONS

The information in this book can be applied to many other Uniden CB radios since all the current production units are basically the same.
Examples are:

Stalker 9-FDX, President McKinley export (PC 893). This uses the MB 8719 and is an 80-channel transceiver using a single loop Oscillator crystal in the 15 MHz range. It is AM/FM/SSB and same versions also have the British CB band which is switched in by another crystal on a separate sub-PC board.

Cobra 146GTL. President AR-144/AX-144, Midland 6001/7000 (new version), Realistic TRC451, Sears 663.3810, Uniden PC-244. This is basically identical except for the lack of FM, and the PLL circuit which uses a uPD2824 ROM chip..



including schematic diagrams

SPECIFICATIONS

PC999

GENERAL

Channels	120FM, 120AM, 120LSB, 120USB
Frequency Range	26.515 to 27.855 MHz
Frequency Control	Phase Locked Loop(PLL) synthesized circuitry.
Frequency Tolerance	0.005%
Frequency Stability	0.001%
Operating Temperature Range	-20°C to +50°C
Microphone	Plug-in type; dynamic with push-to-talk switch and coiled cord.
Input Voltage	13.8V DC nominal, 15.9V max., 11.7V min. (positive or negative ground).
Current Drain	Transmit: AM/FM full mod., 4A maximum. SSB, 21 watts PEP output, 4A maximum Receiver: squelched; 0.5A, maximum audio output 1A.
Cabinet Dimensions	7-7/8"(W) x 2-3/8"(H) x 9-1/4"(D)
Weight	5 pounds
Antenna Connector	UHF, SO-239
Semiconductors	52 transistors, 9 integrated circuits, 65 diodes and 3 light emitting diodes.
Meter	Illuminated; indicates relative RF power output and modulation on Transmit, received signal strength.
Indicators	LED display; channel and TX/RX.

RECEIVER

Sensitivity	SSB: Less than 0.25 μV for 10 dB (S+N)/N at greater than ½ watt of audio output. AM: Less than 0.5 μV for 10 dB, (S+N)/N at greater than ½ watt of audio output. FM: Better than 0.5 μV for 20 dB (S+N)/N at greater than ½ watt of audio output.
Selectivity	SSB 6 dB @4.2 KHz, 60 dB @7.5 KHz AM/FM 6 dB @7.0 KHz, 60 dB @15 KHz
Cross Modulation	More than 60 dB.
Image Rejection	More than 60 dB.
I.F. Frequency	FM and AM: 455 KHz SSB: 10.695 MHz
AM and SSB RF Gain Control	Adjustable for optimum signal reception.
Automatic Gain Control	(AGC): Less than 10 dB change in audio output for inputs from 10 to 500,000 μV.
Squelch	Adjustable; threshold less than 0.5 μV.
Noise Blanker	RF type, effective on AM and SSB.
Clarifier Range	±1.25 KHz.
Audio Output Power	3.5 watts minimum into 8 ohms.
Frequency Response	SSB 400 to 4000 Hz. AM, FM 300 to 3000 Hz.
Distortion	Less than 10% at 3 watts output.
Built-in Speaker	8 ohms, round.
External Speaker (Not Supplied)	8 ohms; disables internal speaker when connected.

PA SYSTEM

Power Output	3.0 watts into external speaker.
External Speaker for PA	8 ohms (not supplied).

TRANSMITTER

Power Output	AM, 10 watts FM 10 watts SSB, 21 watts, P.E.P.
Modulation	High and low level Class B, Amplitude Modulation.
Intermodulation Distortion	SSB: 3rd and 5th order, more than -25 dB. 7th and 9th order, more than -35 dB.
SSB Carrier Suppression	More than -45 dB.
Unwanted Sideband	More than -45 dB.
Frequency Response	AM and FM: 350 to 3000 Hz. SSB: 400 to 4000 Hz.
Output Impedance	50 ohms, unbalanced
SSB Filter	10.695 MHz, crystal lattice type 6 dB @4.2 KHz 60 dB @7 KHz

CHANNEL INFORMATION

	ANT FREQUENCY (MHZ)						
	LOW	MID	HIGH		LOW	MID	HIGH
1	26.515	26.965	27.415	21	26.765	27.215	27.665
2	26.525	26.975	27.425	22	26.775	27.225	27.675
3	26.535	26.985	27.435	23	26.805	27.255	27.705
4	26.555	27.005	27.455	24	26.785	27.235	27.685
5	26.565	27.015	27.465	25	26.795	27.245	27.695
6	26.575	27.025	27.475	26	26.815	27.265	27.715
7	26.585	27.035	27.485	27	26.825	27.275	27.725
8	26.605	27.055	27.505	28	26.835	27.285	27.735
9	26.615	27.065	27.515	39	26.845	27.295	27.745
10	26.625	27.075	27.525	30	26.855	27.305	27.755
11	26.635	27.085	27.535	31	26.865	27.315	27.765
12	26.655	27.105	27.555	32	26.875	27.325	27.775
13	26.665	27.115	27.565	33	26.885	27.335	27.785
14	26.675	27.125	27.575	34	26.895	27.345	27.795
15	26.685	27.135	27.585	35	26.905	27.355	27.805
16	26.705	27.155	27.605	36	26.915	27.365	27.815
17	26.715	27.165	27.615	37	26.925	27.375	27.825
18	26.725	27.175	27.625	38	26.935	27.385	27.835
19	26.735	27.185	27.635	39	26.945	27.395	27.845
20	26.755	27.205	27.655	40	26.955	27.405	27.855

GENERAL

Channels	226FM, 226AM, 226LSB, 226USB
Frequency Range	26.065 to 28.315 MHz
Frequency Control	Phase Locked Loop(PLL) synthesized circuitry.
Frequency Tolerance	0.005%
Frequency Stability	0.001%
Operating Temperature Range	-20°C to +50°C
Microphone	Plug-in type; dynamic with push-to-talk switch and coiled cord.
Input Voltage	13.8V DC nominal, 15.9V max., 11.7V min (positive or negative ground).
Current Drain	Transmit: AM/FM full mod., 3A maximum. SSB, 21 watts PEP output, 3A maximum Receiver: squelched; 0.5A, maximum audio output 1A.
Cabinet Dimensions	7-7/8"(W) x 2-3/8"(H) x 9-1/16"(D)
Weight	5 pounds
Antenna Connector	UHF, SO-239
Meter	Illuminated; indicates relative RF power output and modulation on Transmit, received signal strength.
Indicators	LED display; channel and TX/RX.

TRANSMITTER

Power Output	AM, 10 watts FM 10 watts SSB, 21 watts, P.E.P.
Intermodulation Distortion	SSB: 3rd and 5th order, more than -25 dB. 7th and 9th order, more than -35 dB.
SSB Carrier Suppression	More than -45 dB.
Unwanted Sideband	More than -45 dB.
Frequency Response	AM and FM: 350 to 3000 Hz. SSB: 400 to 4000 Hz.
Output Impedance	50 ohms, unbalanced
SSB Filter	10.695 MHz, crystal lattice type 6 dB @4.2 KHz 60 dB @7 KHz

RECEIVER

Sensitivity	SSB: Less than 0.15μV for 10 dB (S+N)/N at greater than ½ watt of audio output. AM: Less than 0.5μV for 10 dB. (S+N)/N at greater than ½ watt of audio output. FM: Better than 0.5μV for 20 dB (S+N)/N at greater than ½ watt of audio output.
Selectivity	AM/SSB 6 dB @4.2KHz, 60 dB @7.5KHz FM 6 dB @7.0KHz, 60 dB @15KHz
Cross Modulation	More than 60 dB.
Image Rejection	More than 60 dB.
I.F. Frequency	FM 1st : 10.695 MHz FM 2nd : 455 KHz AM/SSB: 10.695 MHz
AM/FM and SSB RF Gain Control	Adjustable for optimum signal reception.
Automatic Gain Control	(AGC): Less than 10 dB change in audio output for inputs from 10 to 500,000 μV.
Squelch	Adjustable; threshold less than 0.5 μV.
Noise Blanker	RF type, effective on AM and SSB.
Clarifier Range	FINE: ±1.25 KHz. (RX only) COARSE: ± 5 KHz. (RX and TX)
Audio Output Power	3.5 watts minimum into 8 ohms.
Frequency Response	SSB 400 to 4000 Hz. FM 300 to 3000 Hz. AM 300 to 2100 Hz.
Distortion	Less than 10% at 3 watts output.
Built-in Speaker	8 ohms, round.
External Speaker (Not Supplied)	8 ohms; disables internal speaker when connedted.

PA SYSTEM

Power Output	3.0 watts into external speaker.
External Speaker for PA	8 ohms (not supplied).

CHANNEL INFORMATION

	ANT FREQUENCY (MHz)									
	A BAND		B BAND		C BAND		D BAND		E BAND	
	Normal	+10 kHz	Normal	+10 kHz	Normal	+10 kHz	Normal	+10 kHz	Normal	+10 kHz
1	26.065	26.075	26.515	26.525	26.965	26.975	27.415	27.425	27.865	27.875
2	26.075	26.085	26.525	26.535	26.975	26.985	27.425	27.435	27.875	27.885
3	26.085	26.095 (3A)	26.535	26.545 (3A)	26.985	26.995 (3A)	27.435	27.445 (3A)	27.885	27.895 (3A)
4	26.105	26.115	26.555	26.565	27.005	27.015	27.455	27.465	27.905	27.915
5	26.115	26.125	26.565	26.575	27.015	27.025	27.465	27.475	27.915	27.925
6	26.125	26.135	26.575	26.585	27.025	27.035	27.475	27.485	27.925	27.935
7	26.135	26.145 (7A)	26.585	26.595 (7A)	27.035	27.045 (7A)	27.485	27.495 (7A)	27.935	27.945 (7A)
8	26.155	26.165	26.605	26.615	27.055	27.065	27.505	27.515	27.955	27.965
9	26.165	26.175	26.615	26.625	27.065	27.075	27.515	27.525	27.965	27.975
10	26.175	26.185	26.625	26.635	27.075	27.085	27.525	27.535	27.975	27.985
11	26.185	26.195 (11A)	26.635	26.645 (11A)	27.085	27.095 (11A)	27.535	27.545 (11A)	27.985	27.995 (11A)
12	26.205	26.215	26.655	26.665	27.105	27.115	27.555	27.565	28.005	28.015
13	26.215	26.225	26.665	26.675	27.115	27.125	27.565	27.575	28.015	28.025
14	26.225	26.235	26.675	26.685	27.125	27.135	27.575	27.585	28.025	28.035
15	26.235	26.245 (15A)	26.685	26.695 (15A)	27.135	27.145 (15A)	27.585	27.595 (15A)	28.035	28.045 (15A)
16	26.255	26.265	26.705	26.715	27.155	27.165	27.605	27.615	28.055	28.065
17	26.265	26.275	26.715	26.725	27.165	27.175	27.615	27.625	28.065	28.075
18	26.275	26.285	26.725	26.735	27.175	27.185	27.625	27.635	28.075	28.085
19	26.285	26.295 (19A)	26.735	26.745 (19A)	27.185	27.195 (19A)	27.635	27.645 (19A)	28.085	28.095 (19A)
20	26.305	26.315	26.755	26.755	27.205	27.215	27.655	26.665	28.105	28.115
21	26.315	26.325	26.765	26.775	27.215	27.225	27.665	27.675	28.115	28.125
22	26.325	26.335	26.775	26.785	27.225	27.235	27.675	27.685	28.125	28.135
23	26.355	26.365	26.805	26.815	27.255	27.265	27.705	27.715	28.155	28.165
24	26.335	26.345	26.785	26.795	27.235	27.245	27.685	27.695	28.135	28.145
25	26.345	26.355	26.795	26.805	27.245	27.255	27.695	27.705	28.145	28.155
26	26.365	26.375	26.815	26.825	27.265	27.275	27.715	27.725	28.165	18.175
27	26.375	26.385	26.825	26.835	27.275	27.285	27.725	27.735	28.175	28.185
28	26.385	26.395	26.835	26.845	27.285	27.295	27.735	27.745	28.185	28.195
29	26.395	26.405	26.845	26.855	27.295	27.305	27.745	27.755	28.195	28.205
30	26.405	26.415	26.855	26.865	27.305	27.315	27.755	27.765	28.205	28.215
31	26.415	26.425	26.865	26.875	27.315	27.325	27.765	27.775	28.215	28.225
32	26.425	26.435	26.875	26.885	27.325	27.335	27.775	27.785	28.225	28.235
33	26.435	26.445	26.885	26.895	27.335	27.345	27.785	27.795	28.235	28.245
34	26.445	26.455	26.895	26.905	27.345	27.355	27.795	27.805	28.245	28.255
35	26.455	26.465	26.905	26.915	27.355	27.365	27.805	27.815	28.255	28.265
36	26.465	26.475	26.915	26.925	27.365	27.375	27.815	27.825	28.265	28.275
37	26.475	26.485	26.925	26.935	27.375	27.385	27.825	27.835	28.275	28.285
38	26.485	26.495	26.935	26.945	27.385	27.395	27.835	27.845	28.285	28.295
39	26.495	26.505	26.945	26.955	27.395	27.405	27.845	27.855	28.295	28.305
40	26.505	26.515	26.955	26.965	27.405	27.415	27.855	27.865	28.305	28.315

PLL SYNTHESIZER CIRCUIT DESCRIPTION

PB010 (PB042)

The PLL circuit consists of IC5, IC6, IC7 and several transistors. IC5 combines a Reference Divider (10.24 Mhz), Binary Programmable Divider (pins 9 - 17), and a Phase Detector. A single Reference Oscillator of 15.00 Mhz (14.55 Mhz) in conjunction with IC6 and IC7 makes possible the total frequency range of the radio with no crystal switching required. Refer to the Master PLL Mixing and Programming Chart and the PLL Block Diagram on the following two pages.

Example: For Ch. 1, LOW Band, the VCO or Voltage Controlled Oscillator operates at 15.82 Mhz. This signal when mixed with the Reference Oscillator of 15.00 Mhz produces the "downmix" signal of 15.82 - 15.00 = 0.82 Mhz which appears at Pin 2 of IC5. When the binary number "82" is set on pins 9 - 17 of IC5, the result is 0.82 Mhz ÷ 82 = 10 Khz, the standard CB channel spacing. At the same time, the Reference Divider section of IC5 divides the 10.24 Mhz signal by 1.024 to give the result of 10.24 Mhz ÷ 1.024 = 10 Khz. When these two signals are compared in the Phase Detector section of IC5, the result is no phase difference, and the VCO (TR26 or TR21 as appropriate) is not forced to shift frequency. This results in the locked loop condition. If the two signals were not exactly the same, there would be a small voltage difference which would be applied to the VCO, driving it up or down in frequency untill lock occurs. The MC145106 PLL device uses a "negative going" Phase Detector; i.e., the lower its input downmix frequency, the higher its DC output to the VCO and vica versa.

The VCO signal in the 15-17 Mhz range mixes with the incoming 27 Mhz signal to produce the First IF of 10.695 Mhz. In addition a sample of the 10.24 Mhz Reference Divider signal mixes with the first IF to produce the second IF of 455 Khz. In the TX mode, the VCO mixes with the 10.695 Mhz Carrier Oscillator signal to produce the direct 27 Mhz on-channel frequency.

In order to broadband the VCO to operate over a range of 2 Mhz, extra capacitance is switched into its circuits as required. In the PB010 chassis, an extra 8 pF is shunted across VCO inductor L18 in the LOW and MID band positions and removed in the HIGH band position. This eliminates having to retune L18. In the PB042 chassis varactors D26 - D29 are used for the same purpose.

For FM transmission, a small sample of the TX audio signal is used to vary the DC control voltage of the VCO a small amount, and at an audio rate to produce FM.

IC6 and IC7 are used to preset the binary programming of IC5 by a fixed amount. A diode matrix, different for each band, is switched in and when added to the binar number of the Channel Selector switch produces the required N-Code. IC6 and IC7 are wired in series so that each succeeding pin has more binary weight. In the PB042 chassis, the "+10 Khz" button makes IC6 Pin 9 HIGH, wich is the CARRY IN (CI) pin thus adding one extra bit. Since each bit represents 10 Khz, the result is a 10 Khz frequency shift of the radio.

PC999: This circuit is virtually identical to the above except that IC5 (MB8719) only has 6 binary program lines (pins 11-16) plus a preset line (pin10) which adds either 64 (pin 10 logic HIGH) or 128 (pin 10 logic LOW) to the binary sum present on pins 11-16. Since there are fewer possible binary numbers, it is necessary to switch in another Reference Oscillator crystal. This is the reason the Chart shows the same VCO, N-Code, and Downmix for the LOW and MID bands. Otherwise, operation is identical to the above chassis.

Details of the CD4008 presettable adders are shown on the following pages. The Channel Selector switch used in all Uniden radios produces the binary numbers 15 (Ch.1) to 59 (Ch.40).

For a more complete description of PLL theory, see THE CB PLL DATA BOOK

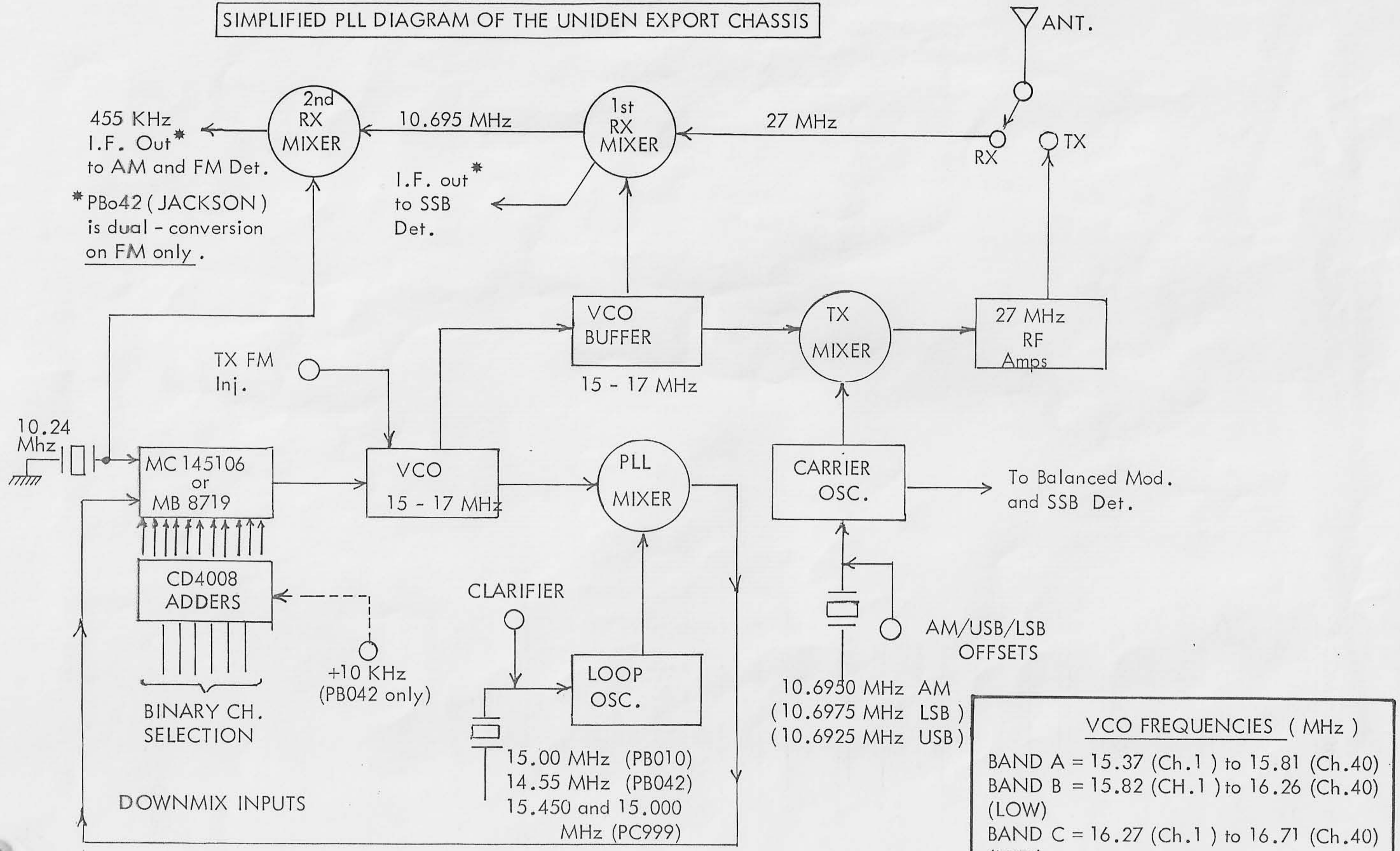
MASTER PLL MIXING AND PROGRAMMING CHART

	PB010 Ref= 15.000 MHz			PB042 Ref= 14.55 MHz			PC999 Ref = 15.00 Mhz LOW; Ref = 15.45 Mhz MID and HIGH		
	RX/TX VCO (MHz)	DOWNMIX INPUT	BINARY N-Code	RX/TX VCO (MHz)	DOWNMIX INPUT	BINARY N-Code	RX/TX VCO (MHz)	DOWNMIX INPUT	BINARY N-Code
BAND A									
Ch.1				15.37	0.82 MHZ	82			
.				.	.	.			
.				.	.	.			
Ch.40				15.81	1.26	126			
BAND B (LOW)									
Ch.1	15.82	0.82 MHz	82	15.82	1.27	127	15.82	0.82 MHz	82
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Ch.40	16.26	1.26	126	16.26	1.71	171	16.26	1.26	126
BAND C (MID)									
Ch.1	16.27	1.27	127	16.27	1.72	172	16.27	0.82	82
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Ch.40	16.71	1.71	171	16.71	2.16	216	16.71	1.26	126
BAND D (HIGH)									
Ch.1	16.72	1.72	172	16.72	2.17	217	16.72	1.27	127
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Ch.40	17.16	2.16	216	17.16	2.61	261	17.16	1.71	171
BAND E									
Ch.1				17.17	2.62	262			
.				.	.	.			
.				.	.	.			
Ch.40				17.61	3.06	306			

NOTES: 1. USB VCO frequency is 2.5 KHz higher; LSB is 2.5 KHz lower.
2. Downmix input is the frequency appearing at Pin 2, MC145106 or Pin 17, MB 8719.
3. For PB010, Pin 9 (256's bit) not required and is grounded. Used in PB042 only.

266T1

SIMPLIFIED PLL DIAGRAM OF THE UNIDEN EXPORT CHASSIS

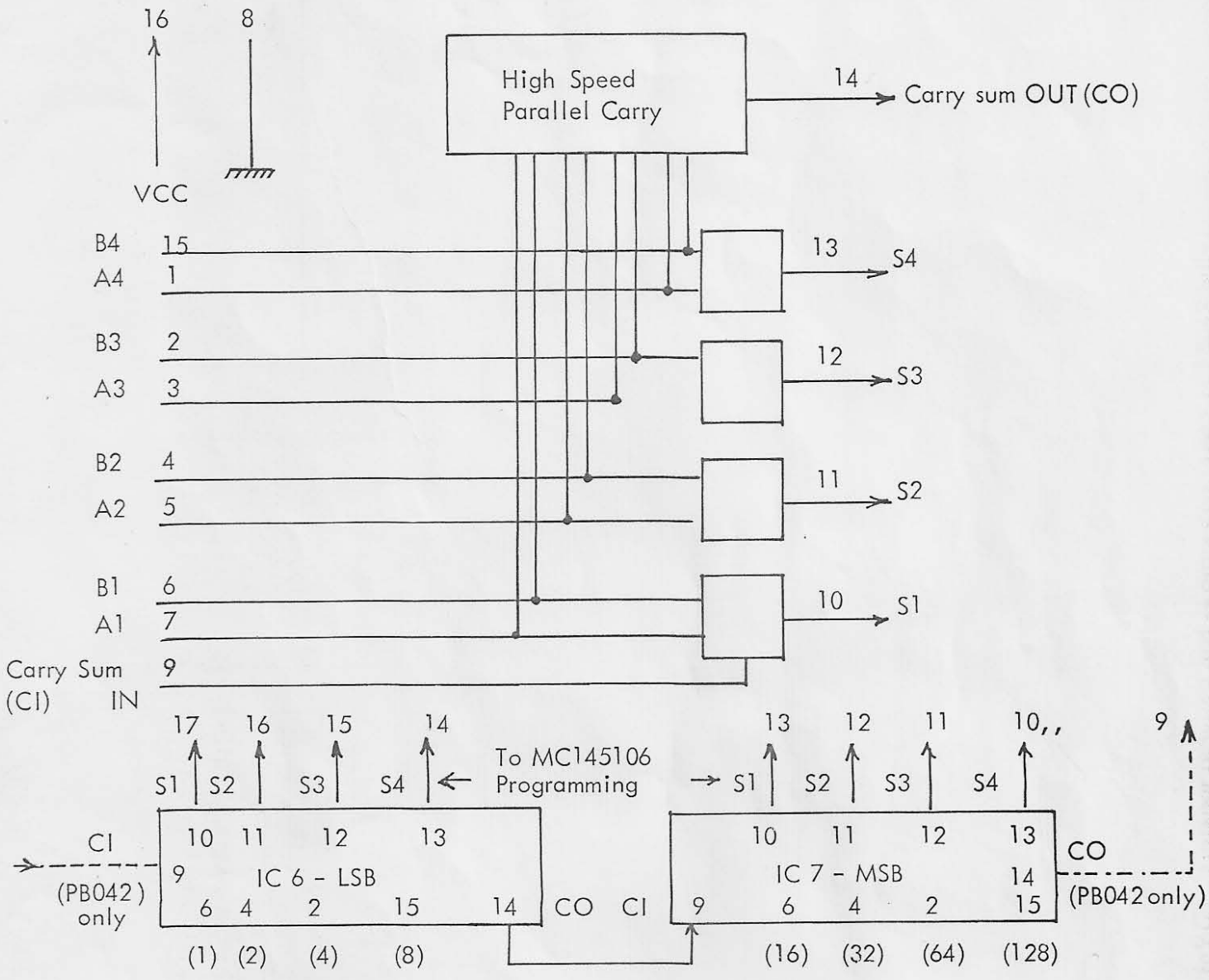


Downmix inputs (at Pin 2 of MC145106 or Pin 17 of MB8719) = VCO Freq. - Loop Osc. Freq. Example: Ch.1, MID (FCC) Band of PB010 chassis is 16.27 MHz - 15.00 MHz = 1.27 MHz. Binary N- Code is 127 here for 10 KHz channel spacing.

VCO FREQUENCIES (MHz)

BAND A = 15.37 (Ch.1) to 15.81 (Ch.40)
BAND B = 15.82 (CH.1) to 16.26 (Ch.40) (LOW)
BAND C = 16.27 (Ch.1) to 16.71 (Ch.40) (MID)
BAND D = 16.72 (Ch.1) to 17.16 (Ch.40) (HIGH)
BAND E = 17.17 (Ch.1) to 17.61 (Ch.40)

The CD4008 CMOS 4 - Bit Full Adder - Internal Description



A1 to A4 are determined by setting of Channel Selector (binary 15 to 59); B1 to B4 are binary numbers which are generated by the setting of the BAND Switch and when added to the Channel Selector binary numbers give logic"1" or "0" outputs at S1 to S4, which are in turn applied to the binary programming of the PLL pins.

The above example shows hookup to the PB010 and PB042 chassis. For the PC999 (GRANT) the principle is identical except that fewer program control lines are required with the MB8719's capabilities. TR28 in this chassis is a switch that will make Pin 10 of the MB8719 go HIGH or LOW as required to preset the extra N - Codes of either 64 + N or 128 + N. (See PLL DESCRIPTION)

CD4008 PRESET ADDER TRUTH CHART

0 = 0.0 VDC;
1 = approx. 8.40 VDC

PB042

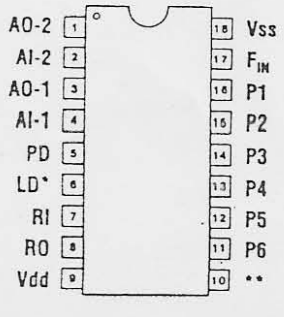
	IC6 (LSB) Binary Weight (1)	(2)	(4)	(8)	IC7 (MSB) Binary Weight (16)	(32)	(64)	(128)
	IC Pin #				IC Pin #			
PINS:	6	4	2	15	6	4	2	15
BAND A (67 + N)	1	1	0	0	0	0	1	0
BAND B (112 + N)	0	0	0	0	1	1	1	0
BAND C (157 + N)	1	0	1	1	1	0	0	1
BAND D (202 + N)	0	1	0	1	0	0	1	1
BAND E (247 + N)	1	1	1	0	1	1	1	1

NOTE: For PB010 chassis, Reference Crystal is shifted up 450 KHz to 15.00 MHz.
Thus, LOW = 67 + N, MID = 112 + N, HIGH = 157 + N of Ch. Selector switch.

PC999

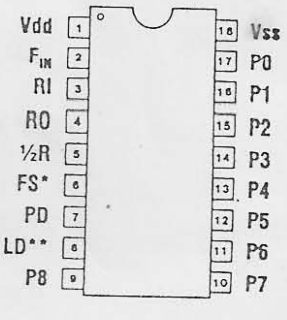
	IC9 (LSB) (1)	(2)	(4)	(8)	IC8 (MSB) (16)	(32)	(64)	(128)
	6	4	2	15	6	4	2	15
LOW BAND 3 + N	1	1	0	0	0	0	0	0
MID BAND 3 + N	1	1	0	0	0	0	0	0
HIGH BAND 48 + N	0	0	0	0	1	1	0	0

MB8719



*1 = Locked, 0 = Unlocked
**N-Code Select:
1 = 64 + N
0 = 128 + N

MC145106



*1 = 10 KHz steps, 0 = 5 KHz steps
**1 = Locked, 0 = Unlocked

ABBREVIATED CIRCUIT DESCRIPTION

The PB010 chassis is the basis for this description but the other UNIDEN chassis are almost identical. The competent technician can simply compare schematics of all three chassis. Also refer to P.15 Block Diagram.

I. LOCAL OSCILLATOR & CARRIER OSCILLATOR:

TR30 is the Carrier Oscillator which generates the 10.695 MHz carrier signal via X4. On USB D66 switches in L38, allowing the USB offset shift to 10.6925 MHz. On LSB D67 switches in L39, allowing the LSB offset shift to 10.6975 MHz. On AM/FM, D65 switches in L37, allowing the 10.6950 MHz center carrier frequency. The offsets are required for cost effectiveness; a single narrow crystal filter can therefore be used for both USB and LSB rather than using two separate filters for each mode.

RECEIVER DESCRIPTION

II. RF STAGE:

The signal from the antenna is fed to TR17, the 27 MHz RF amp. Diodes D17 & D18 protect TR17 from extremely strong input signals, and are also used as an RF attenuator for SSB AGC. The signal passes to TR18, the First Mixer; it mixes with the VCO signal from the PLL circuit of approximately 16 MHz. The result is an IF of 10.695 MHz, ± the SSB offsets.

III. IF STAGE:

The 10.695 MHz IF goes to filter FL3 for SSB/CW, and to filter FL2 for AM/FM modes. The filters have different skirt responses, with the narrower filter for SSB/CW use.

SSB: FL3 removes the undesired sideband on both RX and TX modes, and also provides the main RX selectivity. For CW, the circuit is identical to the LSB mode; i.e., the USB signal is removed by the filter. The signal passes through TR19, TR20, TR21, and TR22, the IF amplifiers. TR15 is a 'product detector' for SSB, and the first AF amp for AM. The SSB signal mixes in TR15 with the proper carrier frequency from TR30; the difference is a signal in the audio frequency range which can then be amplified. CW reception is similar in that the Carrier Oscillator now acts as a BFO to produce the CW tone in the speaker.

AM/FM: the 10.695 MHz signal passes to TR8, the Second Mixer. It mixes with a sample of the 10.24 MHz PLL signal to produce the second IF of 10.695 MHz - 10.240 MHz = 455 KHz. The 455 KHz signal is amplified by TR9, TR10, and TR11. For AM, it is then detected by D11 & D12 and passed to the audio amps. For FM, it is detected in IC2, the FM Detector. This IC has tremendous signal gain, about 80dB, which accounts for the large difference in speaker volume when switching between AM & FM modes.
NOTE: The PB042 chassis (JACKSON) is dual-conversion for FM only and single-conversion for AM/SSB. This accounts for the slightly different RX path and filtering shown on the PB042 schematic.

IV. AUDIO STAGE:

Demodulated audio (all modes) passes from TR15, through the VOLUME CONTROL to TR42, the AF preamp. It then goes to IC8, the audio power amp, and then to the speaker. C42 may be switched in or out to change the audio tone; it is LO with C42 in the circuit. (PB010 chassis only.)

V. SSB AGC:

IC1 is a quad op-amp. One section is the AGC buffer and another section is an AGC amp. A sample of the IF signal is sampled, converted to DC by D8, and used to control the gain of TR19, TR8, and RF attenuator D17/D18. TR12 sets the AGC attack time via R51/C33, and the decay time via R48.

VI. SQUELCH:

Another section of IC1 is a squelch amp. A sample of the received signal is amplified here and sent to TR16. As the signal at the Base of TR16 increases, it turns on harder and harder until it completely turns off TR42, silencing the speaker. Since the RX sensitivity specs are different for SSB/CW and AM/FM modes, different trimmers VR3 & VR4 are used to set the overall squelch range (PB010, PC999 only). This is also the reason different trimmers VR1 & VR2 are used for S-Meter calibration (PB010, PC999 only).

VII. CLARIFIER:

The clarifier allows fine-tuning of X2 (PLL Loop Oscillator) by changing the DC bias voltage across varactor D40. The higher the voltage, the less the capacitance and therefore the higher the frequency. Separate voltage sources are used for the COARSE & FINE controls (PB010, PB042 only). The COARSE source is constant for both RX & TX modes: the FINE source is present during RX mode only. D84 & D85 route the voltages to the

appropriate controls. Thus the COARSE may shift frequency in both RX & TX modes, and the FINE only in the RX mode. The FINE & COARSE controls are wired in series with the FINE being only a small fraction of the total resistance used and therefore will not affect the TX frequency. VR6 is also wired across the varactor circuit and is adjusted such that the RX & TX SSB signals track together. The CLARIFIER control(s) allow precise tuning of the SSB voice signal, or adjustment of the CW pitch by the operator.

VIII. ANL:

A sample of the received AM signal is rectified to DC by D26 & D27 and used to forward-bias D28 such that it will normally pass the audio signal. When a noise spike occurs, it will reverse-bias, reducing the gain of audio preamp TR15 to a less annoying volume. When the ANL is not switched IN, the audio signal is shorted around D28.

IX. NOISE BLANKER:

A sample of the 10.695 MHz IF from L12 is amplified by TR1, TR2, TR3, and detected by D1 & D2. The detected signal feeds the sensor, TR5, which can discriminate pulse type noise from normal signals. The noise pulses are amplified by TR6 which turns on TR7, shunting the normal IF path to ground for the duration of the noise pulse. TR4 provides AGC voltage to disable NB action in the presence of very strong normal signals.

X. TX/RX CONTROL:

The regulated TX/RX voltages come from TR36, TR37, and TR38. When the mike (or CW key) is pressed, the Collector of TR38 goes up to B+ (about 8.0 VDC), supplying the required TX-only voltages. In the RX mode, the Collector of TR36 goes up to B+, supplying the RX-only voltages.

TRANSMITTER DESCRIPTION

I. AM:

The audio mike signal feeds through the MIKE GAIN control to IC4, a quad op-amp. The output from IC4 Pin 1 goes to TR49, TR50, & TR51, the modulators. The audio is amplified and fed to the RF Driver & Final Collectors along with the carrier signal.

The signal from the PLL's VCO (approx. 16 MHz) is fed to one input of the TX Mixer, IC9. The 10.695 MHz carrier signal is fed to the other input: the result is the 27 MHz carrier signal which is amplified by TR47, TR46, TR45, TR44 and delivered to the ANT. socket.

NOTE: The PC999 chassis (GRANT) uses two finals (TR41 & TR42) in parallel to produce double the normal RF power output. Both are identical amplifier circuits driven from a single Driver, TR43. The PB042 chassis (JACKSON) uses a high-gain MRF477 Final amp to also produce double the normal RF power output.

II. FM:

The 27 MHz carrier is produced in exactly the same way as described above for AM. However on FM, TR54 turns on to short the audio output of IC4 before it can reach the TR49-TR51 audio chain. Instead, audio from IC4 Pin 1 feeds through D35, D34, & VR5 to the VCO control point. This is the same point driven by the Phase Detector/Loop Filter of the PLL which causes the channels to change. However the level of voltage coming from IC4 is much smaller and therefore the frequency shift is much smaller. This shift is ± 2.5 KHz from center frequency (5 KHz total deviation) and since the voltage from IC4 changes at an audio rate, the result is FM transmission.

The carrier power level is controlled by VR13 (AM PWR) for both AM and FM. VR13 sets the bias on TR49. TR49, TR50, and TR51 form a voltage regulation circuit in addition to amplifying AM audio. The voltage is adjustable from 0 to about 8.40 VDC. Normal AM/FM operation is about 5.60 VDC. IMPORTANT: It is possible to turn VR13 to maximum carrier power on FM but doing so will make it impossible to fully modulate the carrier on AM. See TRANSMITTER ALIGNMENT PROCEDURE, Step # 5.

III. SSB:

The audio output from IC4 Pin 1 goes to IC3, the Balanced Modulator. A second input of IC3 receives the TR30 Carrier Oscillator signal of either 10.6925 MHz (USB) or 10.6975 MHz (LSB). The carrier is balanced out, leaving a double-sideband, suppressed carrier signal. VR7 allows complete null of the carrier. The output of IC3 goes through D21 to FL3, a very narrow crystal lattice type filter. The undesired sideband is removed by FL3. The resulting output at D19 is Carrier + Audio for USB, or Carrier - Audio for LSB. Since the audio modulating frequencies for voice communications are limited to a range of 0-2.5 KHz, this is the reason why the VCO must be offset ± 2.5 KHz in the appropriate SSB mode. However the Carrier Oscillator is offset in exactly the opposite direction as appropriate such that the offsets cancel each other out to generate the exact on-channel 27 MHz frequency. (Example: USB VCO of 16.4925 MHz + USB Carrier Oscillator of 10.6925 MHz = exactly 27.1850 MHz, Ch. 19.)

The output from FL3/D19 goes to TX Mixer IC9. It mixes here with the 16 MHz VCO from the PLL circuit to produce the 27 MHz carrier signal. This signal is then amplified by TR47, TR46, TR45, TR44 and delivered to the ANT. socket.

RF amplifier biasing is different for AM/FM/CW and SSB; AM/FM/CW is Class C, and SSB is Class AB (linear). The bias is changed by TR52, which in the SSB mode disables the Collector B+ regulation of TR49-TR51 and allows the full 13.8 VDC to be applied to the TR45 & TR44 Collectors insetad.

In all modes, a small sample of the 27 MHz signal is detected by D101 & D102 and used to drive the S/RF meter for a relative RF power output indication. VR8 allows calibration of the output reading.

IV. CW (PB010 only):

CW transmission is basically identical to AM transmission; i.e., the carrier is turned on and off by a CW key rather than the microphone button. The only real difference is that on CW, TR55 turns off when the key is pressed, which turns on D75 & TR31, grounding the mike audio so it cannot modulate the carrier. TR35 is an audio oscillator. When the CW key is pressed, it oscillates. At the same time, TR39 disconnects the normal RX speaker audio so it won't be heard; instead the CW monitor tone is heard. D82 disables the Roger Beep oscillator so it also will not be heard on the air. The time constant produced by C219/R284 of switch TR55 provides a small delay before the radio returns to the RX mode so that annoying speaker noise and thumping will not be heard between Morse characters.

V. AMC CIRCUIT:

TR53 is the AMC Detector which samples modulated AM audio from TR51. When overmodulation occurs it turns on to drive TR34, which in turn drives TR32. TR32 is shunted directly across the mike input line. The harder it turns on, the more the audio modulating signal is reduced. VR14 allows setting the 100% modulation limit. The AMC functions only in the AM mode.

VI. ALC CIRCUIT:

TR48 is the ALC sensor which detects peak RF power on SSB modes. If the power exceeds the level determined by VR12, it drives TR34 and TR32 to reduce the mike audio level and consequently the RF power level. In the AM mode, the TR48 Emitter voltage is pulled up to B+, making it inoperative.

VII. UNLOCK DETECTOR:

Pin 8 of the MC145106 (or Pin 6 of the MB8719) is normally at logic high level, about 8 VDC. If the PLL circuit becomes unlocked, this pin goes LOW (about 0.0 VDC), switching appropriate diodes and transistors which disable the TX and RX circuits, preventing off-frequency operation.

VIII. ROGER BEEP OSCILLATOR:

TR33 is an audio oscillator. It is powered by the TX-only 8 VDC source, TR38. Pressing the mike button turns on D92, grounding the TR33 audio before it would normally pass through R217 to the mike amp. D91 also turns on, activating a timing delay circuit consisting of C270, R206, and one section of IC4. When the mike button is released, the timing circuit keeps the Collector of TR38 at B+ and therefore in the TX mode for a short time longer than normal. Since releasing the mike button simultaneously turns D92 off, the tone burst from TR33 can pass to the mike amp and be heard on the air.

IX. PUBLIC ADDRESS (PB042, PC999 only):

A signal from the mike amp IC4 goes to TR30 (PB042), the PA preamp. The signal is fed to the audio power amp IC501 and then to the PA SP jack.

X. MODULATION METERING (PB042, PC999 only):

A sample of the audio modulation goes to DC amp TR29 (PB042), is rectified by D62 & D63, and used to drive the modulation metering circuit. VR3 allows meter calibration. In the PC999 chassis, an RF signal sample is used instead from TP9. The sample is rectified by D74 and used to drive the metering circuit.

XI. SWR METERING (PB010 only):

The small circuit board, PC958 is actually a microstrip section of 50-ohm transmission line. R601 & R602 form a resistance bridge which is perfectly balanced whenever a 50-ohm load is connected to the ANT. socket. Similarly, C602 & C601 form a capacitive voltage divider which produces equal RF voltages whenever a 50-ohm load is connected to the ANT. socket. With a pure 50-ohm load, the RF currents and voltages in the bridge are exactly equal but of the opposite phase, thus canceling each other out and producing no SWR meter reading. (1:1 SWR match.) D601 samples the Forward RF power and D602 the Reflected RF power. D601 also allows full-scale forward power meter calibration. As the ANT. socket load becomes more and more reactive, the bridge becomes unbalanced and a difference voltage is produced in proportion to the unbalance; this voltage drives the SWR meter and indicates the relative degree of unbalance or 'mismatch'.

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SERVICE NOTES, MODIFICATIONS & IMPROVEMENTS

I. SSB AGC IMPROVEMENT IN JACKSON (PB042):

The time constants were changed for some reason from all previous Uniden chassis. The result is that very strong received SSB signals may grossly distort the audio quality. The following will cure the problem.

1. Remove C31 (.47uF) completely.
2. Change R43 (10K) to 1K; change R41 (150K) to 270K; change R47 (1.5K) to 3.9K. These parts are all found along the rear (ANT. end) pins of the 2902 IC chip.

II. CLARIFIER UNLOCK & FREQUENCY EXPANSION FOR GRANT (PC999):

1. CLARIFIER: Lift the GRAY & BLUE clarifier wires from where they enter the main PC board. Connect the BLUE to the unused hole at the right of the empty 'R120' location. (Front edge of PCB, next to the coils and crystals). Install a 470 ohm, 1/4-watt resistor at 'R120'. Connect the GRAY wire to a constant DC voltage source: there are 2 unused circuit holes in the PC trace leading to the Collector of TR39 voltage regulator that can be used for this purpose.
2. Replace D79 with a bare jumper wire. Remove D45.

This will allow TX/RX clarifier slide about ± 2 KHz from center knob position. If more slide is desired, replace varactors D40 (LOW band) & D44 (MID & HIGH bands) with the Maxitune type, or add some series inductance to the (+) or unbanded ends of the existing varactors, such as 4.7uH. NOTE: If inductance is added, there will be more down-slide than up-slide, and it will probably be necessary to retune all the VCO off-set adjustments (L22,L23,L24 LOW band, L25,L26,L27 MID & HIGH bands) to regain center knob position.

3. FREQUENCIES: Install a 1K, 1/4-watt resistor in the empty hole located in the same PC trace going to Pin 10 of the MB8719 PLL chip. Notice that there is a set (3) of unused terminals on the S/RF-MOD pushbutton. Connect a wire from the center terminal to the loose end of the 1K resistor just installed. Ground the terminal furthest away from the front panel with a wire. There is a ground available right on the pushbutton PC board, 3rd edge terminal from your left if front of radio is facing you. (Has BLACK wire on this terminal).

With the S/RF-MOD pushbutton out, frequencies will be normal. With the pushbutton in and the BAND selector at MID band, frequencies will be 27.605 MHz (Ch.1) to 28.045 MHz (Ch. 40). You may need to touch up the tuning of VCO coil L18 slightly to regain lock at the 28.045 position.

III. DOUBLING THE RF POWER OUTPUT IN THE COBRA 148GTL-DX/SUPERSTAR 360FM (PB010):

This chassis already has all the PC traces and holes available for a parallel set of finals, just exactly like the GRANT (PC999) uses. This will allow twice the RF power output, provided adequate heatsinking is used to prevent transistor damage. Compare PB010 & PC999 schematics for the following steps. Notice that the holes, notches, & silkscreen markings already exist in the area between TR45 & TR44.

1. Add a bare jumper wire at 'JP17'. Add a 100-ohm trimmer pot at VR9. (If not available, you can probably use a 1K, such as Radio Shack 271-33 which will match the hole spacing.) Add a .01uF disc capacitor on the right-hand side of the trimmer just installed. There is no silkscreen marking but the holes are there and one goes to ground, the other to the VR9 hot side. Compare with VR10/C272 already in PC board. Add a 47-ohm 1/4 watt resistor at 'R261'. Add a 150-ohm, ½ watt resistor at 'R262'. Slip a ferrite bead, such as Amidon FB73-101 or Radio Shack 273-098 on to one lead of a 1-ohm (BROWN-BLACK-GOLD) 1/4 watt resistor. The resistor will be 'R259' and the bead will be 'L46', just like the R263/L47 combination already present for the existing final transistor. Mount this combination vertically in the 'L46/R259' holes. Add a 560pF disc capacitor at 'C197' and a 470pF disc capacitor at 'C198'. Get an MV1Y thermistor from COBRA or UNIDEN (see below). Bolt it to the new final transistor and connect between ground and the FB end of R259. NOTE: With adequate heatsinking the thermistor really is not needed since the frame will never get hot enough anyway. (The thermistors are included to heat-track the power transistors; as the transistor heats up, the thermistor, which is actually the bias diode, conducts harder and produces more bias to reduce the current drain of the transistor.) An ordinary silicon rectifier diode of the 1N4000 series type can be used in place of the thermistor. Put it on the solder side of the PC board with banded (-) end to ground, and unbanded (+) end to the foil trace containing ends of VR9/R261/R262/L46. Bolt on the extra power final transistor. The 2SC2312 is preferred but difficult to find. The 2SC1969 currently used in the stock Uniden/Cobra radios has practically the same specs. However, if you use this, you should replace TR44 with another 2SC1969 to maintain balanced RF currents. Mounting hardware such as the greaseless insulators, nylon collar washers nuts & bolts are now sold at Radio Shack, # 276-1366, 276-1373. Finally, bolt on some heatsink material. The black finned material that is flat on one side is preferred. However in a pinch you may be able to just bolt on a heavy gauge piece of aluminum plate, about 1½" x 4" should work if thick enough to draw the heat away from the transistors. Test the heatsink by briefly transmitting and touching the heatsink area until you are sure it stays cool. BIAS ADJUSTMENT: Adjust VR9 & VR10 for equal biases of 50ma. in the USB mode, no modulation. The method is described elsewhere in this book for the PC999 TX Procedure. Readjust VR1 & VR2 for proper S-Meter readings since this modification will peg the needle hard!

.01 uf = 103

IV. DISCONNECTION OF ROGER BEEP IN COBRA 148GTL-DX/SUPERSTAR 360FM (PB010):

Many operators wish to disable the ROGER BEEP function, or at least make it switchable as in the other two export models. This can be done very easily. There is an ORANGE wire running into a holed marked 'PEEP' on the main chassis PCB. (Right behind the S-Meter). Simply remove this wire and the ROGER BEEP will be turned off. If you wish you can put the ORANGE wire in series with a SPST switch to turn it on or off as desired.

V. 10 KHz UP-SHIFT FOR THE PB010 & PC999 CHASSIS:

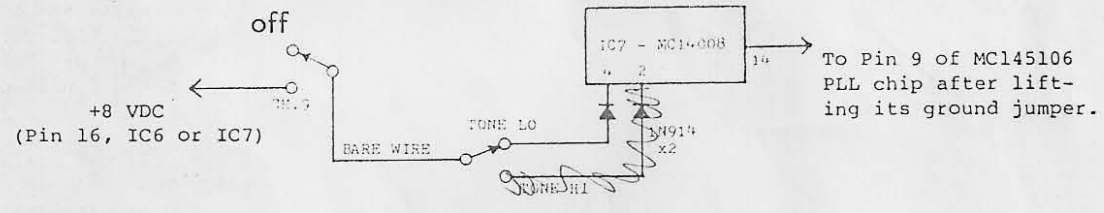
The modification is identical to the stock wiring on the PB042 (JACKSON) chassis for this function. Pin 9 of IC6 (PB010) and Pin 9 of IC9 (PC999) are normally tied to ground, logic LOW. Simply break the ground connection and run Pin 9 through a SPST switch instead. Connect the center common of the switch to Pin 9 through a 1K resistor. Connect the end switch terminals to ground and the 8 VDC IC power which is Pin(s) 16. EXPLANATION: Pin 9 is the CARRY IN input from adder IC6 or IC9 respectively. Changing its logic state adds one more bit to the binary PLL channel programming. Since each binary bit represents 10 KHz, one extra bit means 10 KHz extra. This can be used to get all the normal skips missing from the Channel Selector.

VI. FREQUENCY EXPANSION FOR THE COBRA 148GTL-DX/SUPERSTAR 360FM (PB010):

This chassis is basically identical to the PB042 chassis; it just wasn't fully expanded but can be done, as shown next.

1. Clip off the YELLOW, WHITE & PINK wires from the CH.9 panel switch. Reconnect WHITE & PINK together for normal LED channel display. Cut off the GRAY wire from the HI/LO TONE panel switch. The radio will always be in the HI TONE mode which sounds better anyway. Remove the grounding jumper at Pin 9 of the MC145106 PLL chip. Connect a small bare wire between the center terminals of the now-free poles of the CH.9 & TONE switches. Add the two 1N914 diodes and additional switch wiring as shown below.

   The extra frequencies will now appear in the Ch.12-40 positions of the CHANNEL SELECTOR with the BAND selector in the HIGH band position. (The first 11 channels are repeats of existing channels.) The 'CH9' position activates the expansion. In the LO TONE position you will get 27.875 MHz (Ch.12) to 28.175 MHz (Ch.40) and in the HI TONE position you will get 28.195 MHz (Ch.12) to 28.495 MHz (Ch.40). There are only a few skips and the exact frequencies are shown in the expanded Channel Chart/Spec page of the PB010 chassis which appears earlier in this book. There is no retuning needed and the RF power output and receiver sensitivity are practically unchanged at the high end as is. To get even fancier, by pulling IC7 pins 4 & 2 HIGH at the same time, you will get coverage up to 28.705 MHz of the 10M Amateur Band. (This would obviously require a 3-position switch which means drilling holes in the radio, etc. rather than the clean appearance achieved by using the existing panel toggle switches).



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WHERE TO FIND REPAIR PARTS

Almost all parts used in the export models are also used in the stock U.S. models, such as the Cobra 140/142GTL chassis. Cobra 148/2000GTL chassis, and equivalent in Uniden/President or other brands. You can compare schematics so you know what to order. There is only one catch: The tuning transformers used in the export versions generally have a much lower 'Q' which is what makes them broadbanded enough to cover the expanded frequency range. However a few are identical. If a tuning transformer burns open you may be forced to substitute the stock part which could possibly narrow the frequency range of the radio.

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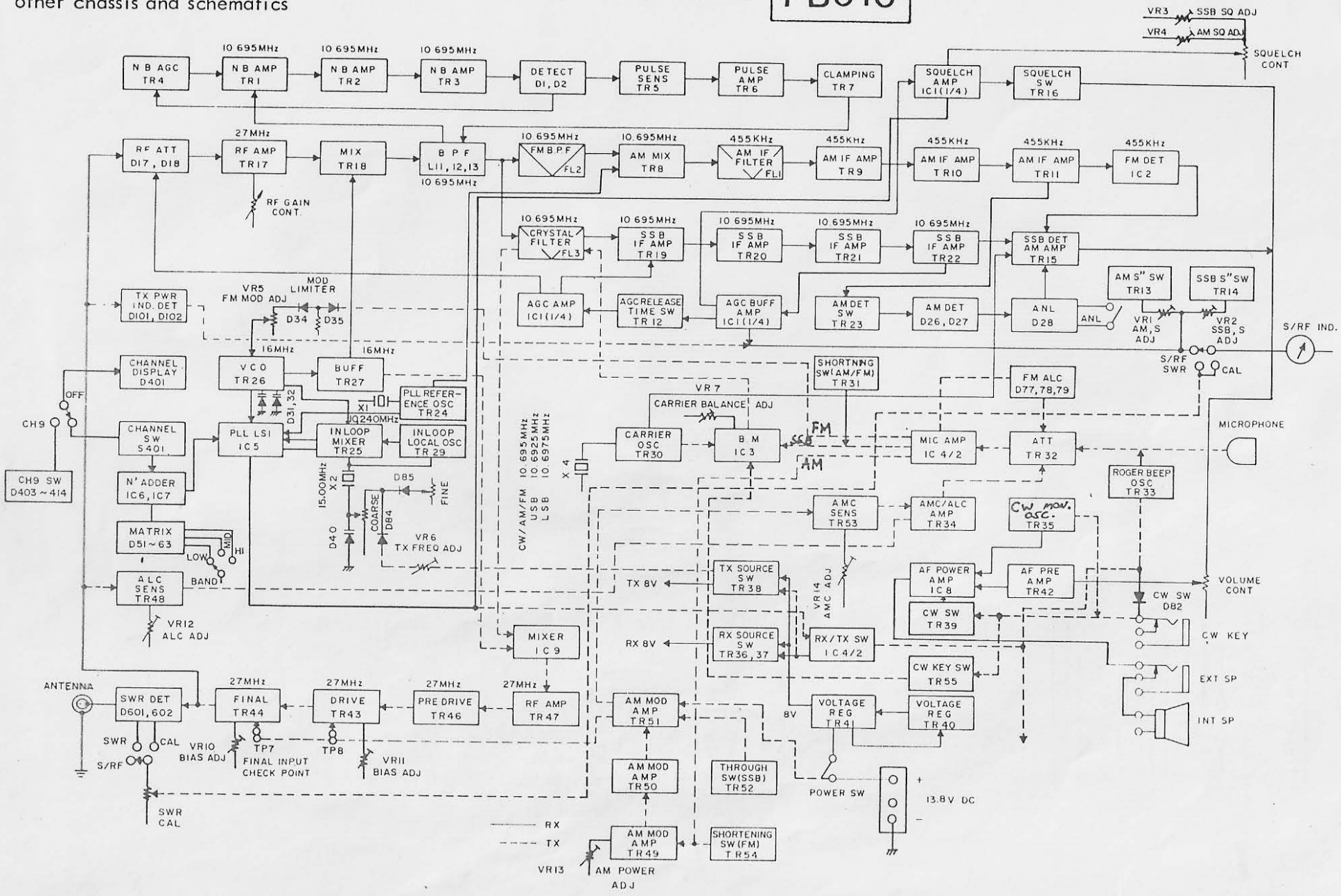
OTHER UNIDEN CB CHASSIS - APPLICATIONS

The information in this book can be applied to many other Uniden CB radios since all the current production units are basically the same. Examples are:

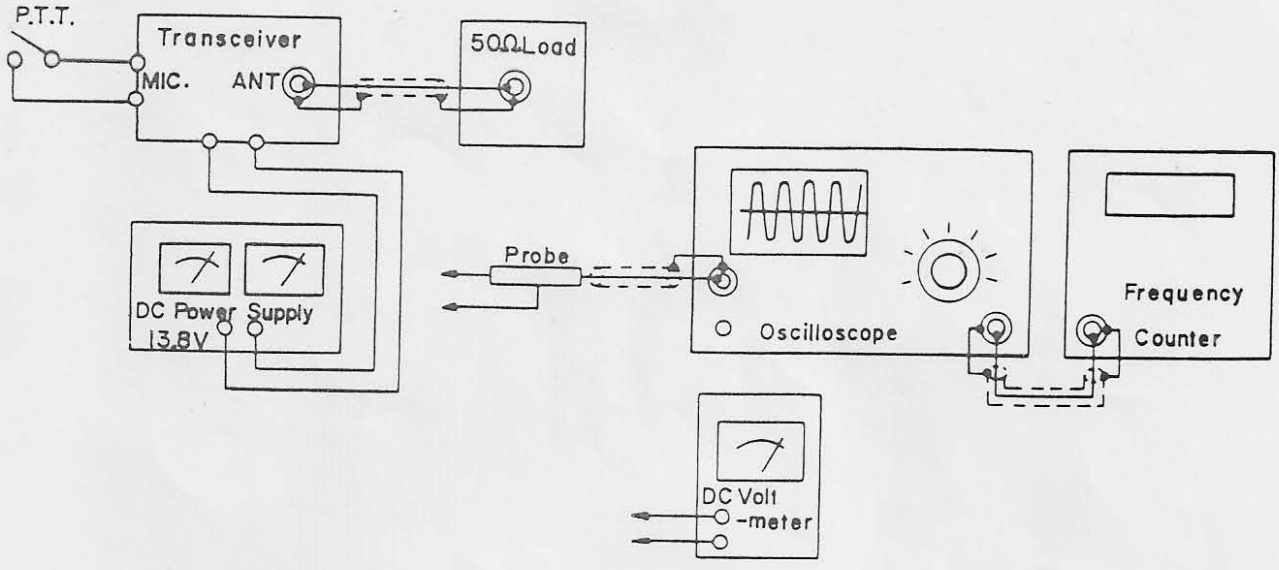
1. Stalker 9-FDX, President McKinley export (PC893). This uses the MB8719 and is an 80-channel transceiver using a single Loop Oscillator crystal in the 15 MHz range. It is AM/FM/SSB and some versions also have the British CB band which is switched in by another crystal on a separate sub-PC board.
2. Cobra 146GTL. President AR-144/AX-144, Midland 6001/7000 (new version), Realistic TRC451, Sears 663.3810, Uniden PC-244. This is basically identical except for the lack of FM, and the PLL circuit which uses a uPD2824 ROM chip. This chassis Service Manual is available from Cobra, Uniden, or Radio Shack if interested. (PC833, PC965)

No other Block Diagrams available.
All chassis basically identical and
this diagram can be compared to the
other chassis and schematics

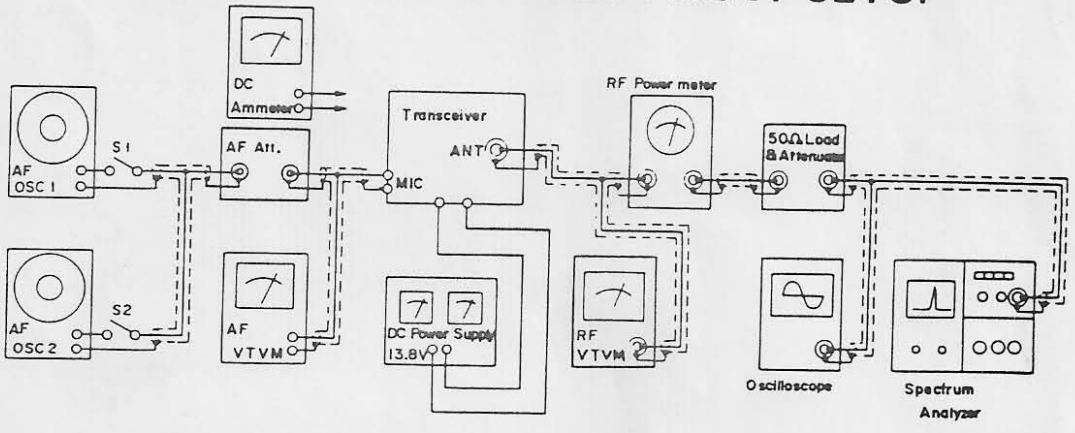
BLOCK DIAGRAM PB010



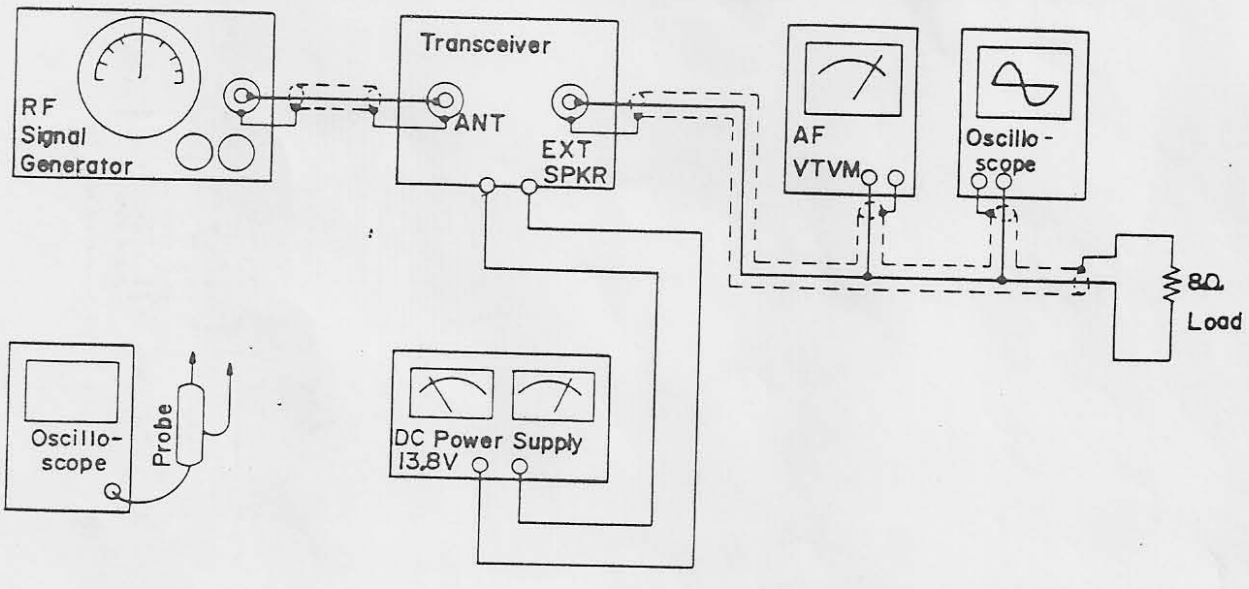
PLL AND CARRIER OSCILLATOR TEST EQUIPMENT SETUP



TRANSMITTER TEST EQUIPMENT SETUP



RECEIVER TEST EQUIPMENT SETUP



ALIGNMENT PROCEDURE

NOTES: PB010 = Cobra 148GTL-DX, Superstar 360FM.
PC999 = President Grant.
PB042 = President Jackson.

n/a = not applicable.

I. PLL SYNTHESIZER ALIGNMENT

Required test equipment:
1. 0-5 MHz oscilloscope.
2. Digital DC Voltmeter.
3. Frequency counter, DC - 30 MHz, 25 mV sensitivity

STEP	PRESET CONDITIONS	PB010 PROCEDURE	PC999 PROCEDURE	PB042 PROCEDURE
1.	RX Mode, AM. Clarifier control(s) at center detent.	MID Band, Ch. 19. Connect 'scope to TP4 (top bare lead of R124) Adjust L17 for max. (0.9V p-p typical)	MID Band, Ch. 19. Connect 'scope to TP4 (top bare lead of R121) Adjust L17 for max. (0.9V p-p typical)	'C' Band, Ch. 19. n/a
2.	Same as Step 1, except: Switch to Ch. 40.	Connect DC voltmeter to TP2 (top bare lead of R126). Adjust L18 for 5.40 VDC.	Connect DC voltmeter to TP2 (top bare lead or R127). Adjust L18 for 4.85 VDC.	Connect DC voltmeter to TP2 (top bare lead of R122). Adjust L12 for 5.40 VDC.
3.	Same as Step 1.	Connect 'scope to TP3 (top bare lead of R84). Adjust L19 for max. (1.0V p-p typical.)	Connect 'scope to TP3 (bare jumper JP47). Adjust L19 for max. (1.0V p-p typical.)	Connect 'scope to TP3 (top bare lead of R73). Adjust L13 for max. (2.8V p-p typical.)
4.	Return to Ch.19. Clarifier control(s) at center detent.	OFFSET ADJUSTMENTS: These are the same for each chassis, except that the PC999 will require two sets as described, since it has 2 crystals. Remove 'scope from TP3 and attach Frequency Counter to this point now.		
	AM:	Adjust L21 for 16.4900 MHz.	Adjust L25 MID band & L22 LOW band for 16.4900 MHz.	Adjust L14 for 16.4900 MHz.
	USB:	Adjust L22 for 16.4925 MHz.	Adjust L26 MID band & L23 LOW band for 16.4925 MHz.	Adjust L15 for 16.4925 MHz.
	LSB:	Adjust L23 for 16.4875 MHz	Adjust L27 MID band & L24 LOW band for 16.4875 MHz.	Adjust L16 for 16.4875 MHz.
5.	Switch to LSB, TX Mode.	Adjust VR6 for 16.4875 MHz.	Adjust VR6 for 16.4875 MHz.	Adjust VR6 for 16.4875 MHz.
6.	Return to RX Mode.	CARRIER OSCILLATOR OFFSETS: These are the same for every chassis. For AM, it will not be possible to read the 10.695 MHz signal directly as it is with USB or LSB/CW. Therefore, the easiest AM adjustment will be to tune the appropriate AM coil in the TX Mode for exact center channel frequency. If the 16 MHz adjustment of Step 4 was properly made, the AM offset will automatically be 10.695 MHz as required. For USB and LSB/CW, the adjustment can be made in the RX mode.		
	USB:	Connect Freq. Counter to TP6 (bare top lead of R60). Adjust L38 for 10.6925 MHz.	Connect Freq. Counter to TP6 (bare top lead of R60). Adjust L29 for 10.6925 MHz.	Connect Freq. Counter to TP4 (bare top lead of R105). Adjust L23 for 10.6925 MHz.
	LSB/CW:	Adjust L39 for 10.6975 MHz.	Adjust L30 for 10.6975 MHz.	Adjust L24 for 10.6975 MHz.
	AM :	TX Mode. Adjust L37 for 27.1850 MHz.	TX Mode. Adjust L28 for 27.1850 MHz.	TX Mode. Adjust L22 for 27.1850 MHz.

II. TRANSMITTER ALIGNMENT

Required test equipment:

1. RF Wattmeter.
2. 50-Ohm Dummy Load, 20 watts minimum power rating.
3. Frequency Counter, 0-30 MHz.
4. Oscilloscope, 30 MHz minimum bandwidth.
5. Audio oscillator and two-tone generator.
6. DC Voltmeter or multimeter with DC Amps capability.
7. Spectrum Analyzer.
8. FM Deviation Meter.

STEP	PRESET CONDITIONS	PB010 PROCEDURE	PC999 PROCEDURE	PB042 PROCEDURE
1.	Band Switch & Channel Selector to 27.185 MHz (MID or 'C' Band, Ch. 19 as appropriate) TX Mode, USB, MIKE GAIN minimum.	Remove jumper PCB connecting TP7,8,9. Connect DC Ammeter between TP9 (+) and TP8 (-)	Remove jumper PCB connecting TP7,8,9. Connect DC Ammeter between TP9 (+) and TP8 (-).	Remove jumper PCB connecting TP6,7,8. Connect DC Ammeter between TP8 (+) and TP6 (-).
	DRIVER BIAS:	Adjust VR11 for 50ma. Move TP8 jumper to TP7 terminal.	Adjust VR11 for 50 ma. Move TP8 jumper to TP7 terminal.	Adjust VR10 for 50 ma. Move TP6 jumper to TP7 terminal.
	FINAL BIAS :	Adjust VR10 for 50 ma.	Unsolder Emitter lead of TR42; adjust VR9 for 25ma. Restore TR42 and unsolder lead of TR41; adjust VR10 for 25ma.* Restore TR41 Emitter.*	Adjust VR9 for 100ma.
		RESTORE SHORTING PCB JUMPER BEFORE PROCEEDING, ALL CHASSIS MODELS.		
2.	Same as Step 1 except: MIKE GAIN at maximum. Inject 50 mV, two-tone audio signal at mike socket.	Adjust L54, L55, L53, L52, L44 for maximum RF output as shown on 'scope or wattmeter.	Adjust L48, L49, L46, L45, L37 for maximum RF output as shown on 'scope or wattmeter.	Adjust L43, L42, L41, L33, L30 for maximum RF output as shown on 'scope or wattmeter.
3.	Remove injected audio signal. Turn MIKE GAIN to minimum.	CARRIER BALANCE: Adjust VR7 for min. carrier leakthrough; recheck for LSB mode.	CARRIER BALANCE: Adjust VR7 for min. carrier leakthrough; recheck for LSB mode.	CARRIER BALANCE: Adjust VR5 for min. carrier leakthrough; recheck for LSB mode.
4.	Same as Step 2 except: Increase two-tone output to 100mV level.	SSB ALC: Adjust VR12 for 12 watts PEP.**	SSB ALC; Adjust VR12 for 21 watts PEP.**	SSB ALC: Adjust VR8 for 21 watts PEP.**
5.	AM Mode, MIKE GAIN at minimum.	AM CARRIER POWER:*** Adjust VR13 for 5 watts power output.	AM CARRIER POWER: *** Adjust VR13 for 10 watts power output.	AM CARRIER POWER:*** Adjust VR11 for 10 watts power output.
6.	Same as Step 5.	RF METER: Adjust VR6 so meter agrees with actual Wattmeter.	RF METER: Adjust VR8 so meter agrees with actual Wattmeter.	RF METER: Adjust VR7 so meter agrees with actual Wattmeter.
7.	Same as Step 4 except, Use single-tone input.	AMC: Adjust VR14 for 95% modulation.	AMC: Adjust VR14 for 95% modulation.	AMC: Adjust VR12 for 95% modulation.
8.	Same as Step 7.	n/a	MODULATION METER: Adjust VR15 so that meter agrees with actual modulation %.	MODULATION METER: Adjust VR3 so that meter agrees with actual modulation %.
9.	Switch to FM Mode, MIKE GAIN maximum. Inject a single-tone audio signal 1 KHz @ 15-25mV at mike jack.	FM DEVIATION: Adjust VR5 for maximum deviation of 5 KHz.	FM DEVIATION: Adjust VR5 for maximum deviation of 5 KHz.	FM DEVIATION: Adjust VR4 for maximum deviation of 5 KHz.
10.	Switch to CW Mode. Plug in CW key or short CW Key jack.	CW SIDETONE MONITOR: Adjust VR15 for the desired speaker volume.	n/a	n/a
11.	USE SPECTRUM ANALYZER TO CHECK FOR SPURIOUS EMISSIONS IN ALL CHASSIS.			

*Make sure TR41 & TR42 are biased for equal current draw: otherwise distortion and possible transistor damage will result. A cross-check method is to measure the base idling voltage to ground, which is typically 0.60V to 0.72V, SSB mode. Adjust VR9 & VR10 for the same reading.

**Since all 3 chassis have a MIKE GAIN control, the ALC can be adjusted for maximum RF power output and then controlled by the MIKE GAIN when less power is needed. To maximize, use a single tone audio signal or whistle with MIKE GAIN at maximum. Adjust ALC trimmer just to the point where further adjustment causes no further power output, then back it down some. CAUTION: Defeating the ALC function also causes 'flat-topping' of the transmitted signal with consequent distortion and possible splatter to adjacent channels.

***AM Carrier power on all these chassis can generally be peaked up about 20% higher with full audio modulation. Do not peak as far as it will go; the audio power is not sufficient for 100% modulation at maximum carrier power. To adjust, use single tone or whistle while viewing 'scope: with maximum MIKE GAIN setting, adjust AM Carrier Power trimmer just to the point where the peaks begin to flatten and no further. Typical possibilities are about 7 watts for the PB010 chassis, and 12 watts for the PC999 & PB042 chassis. (FM not affected by AM limitations).

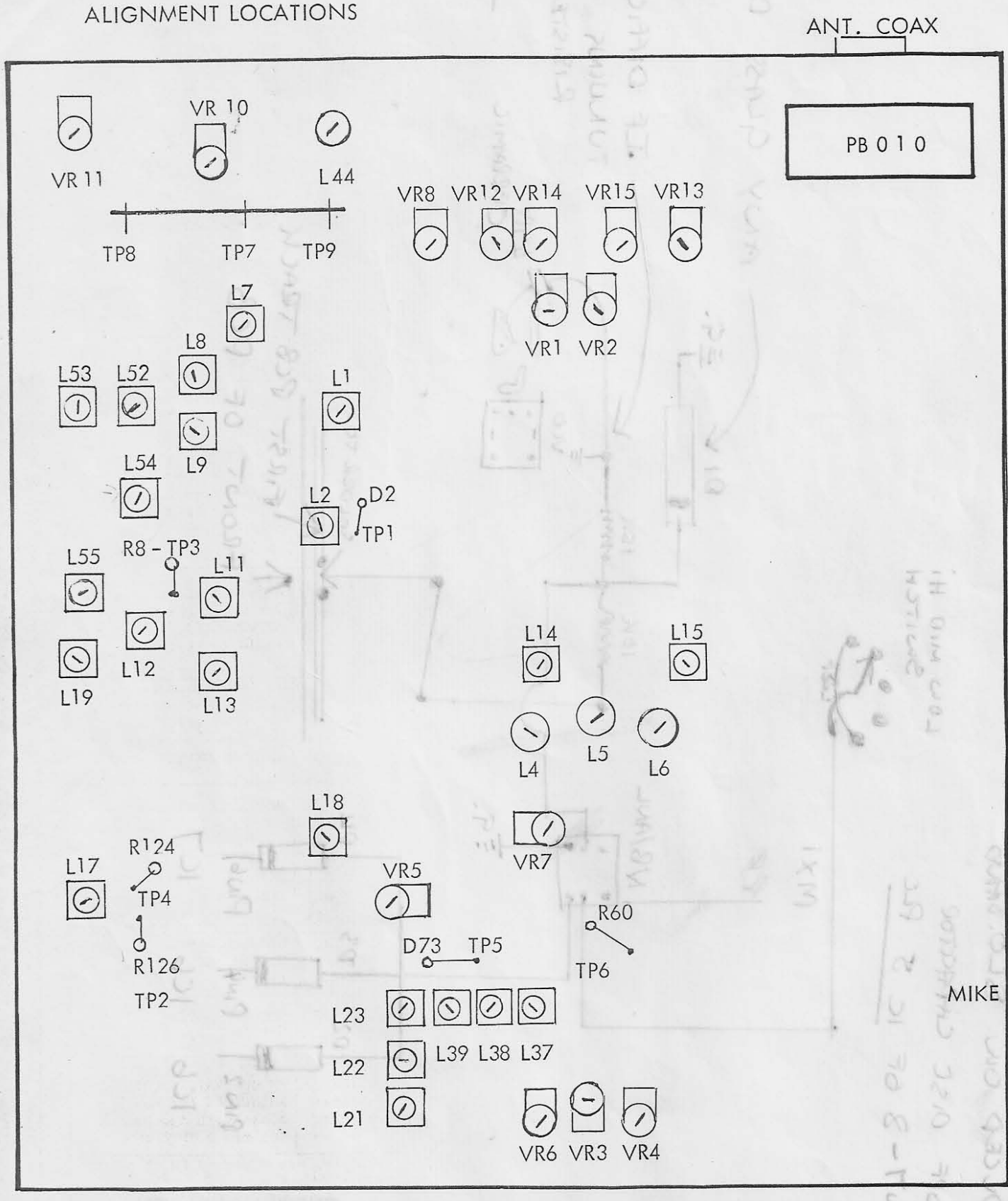
III. RECEIVER ALIGNMENT

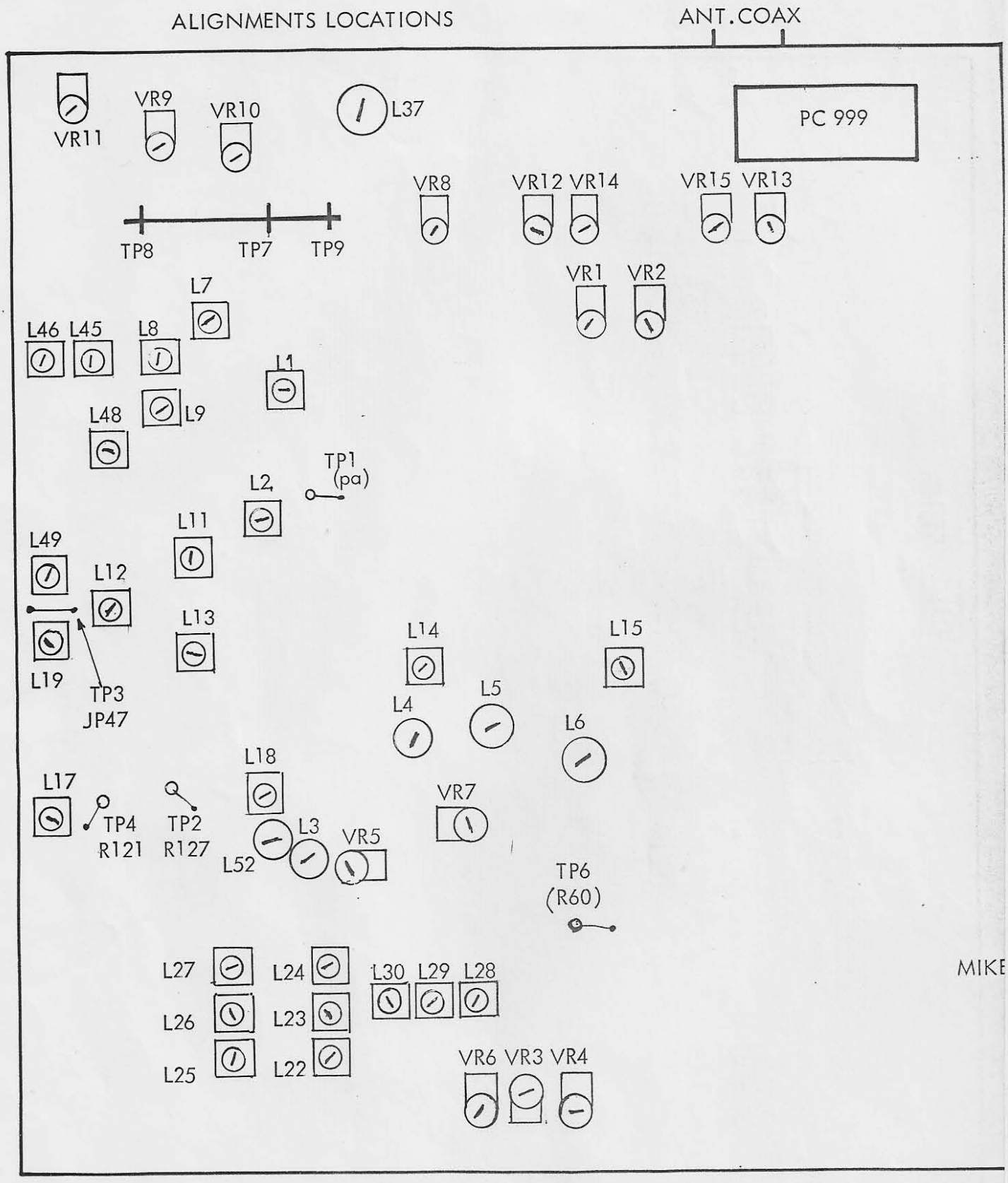
Required test equipment:

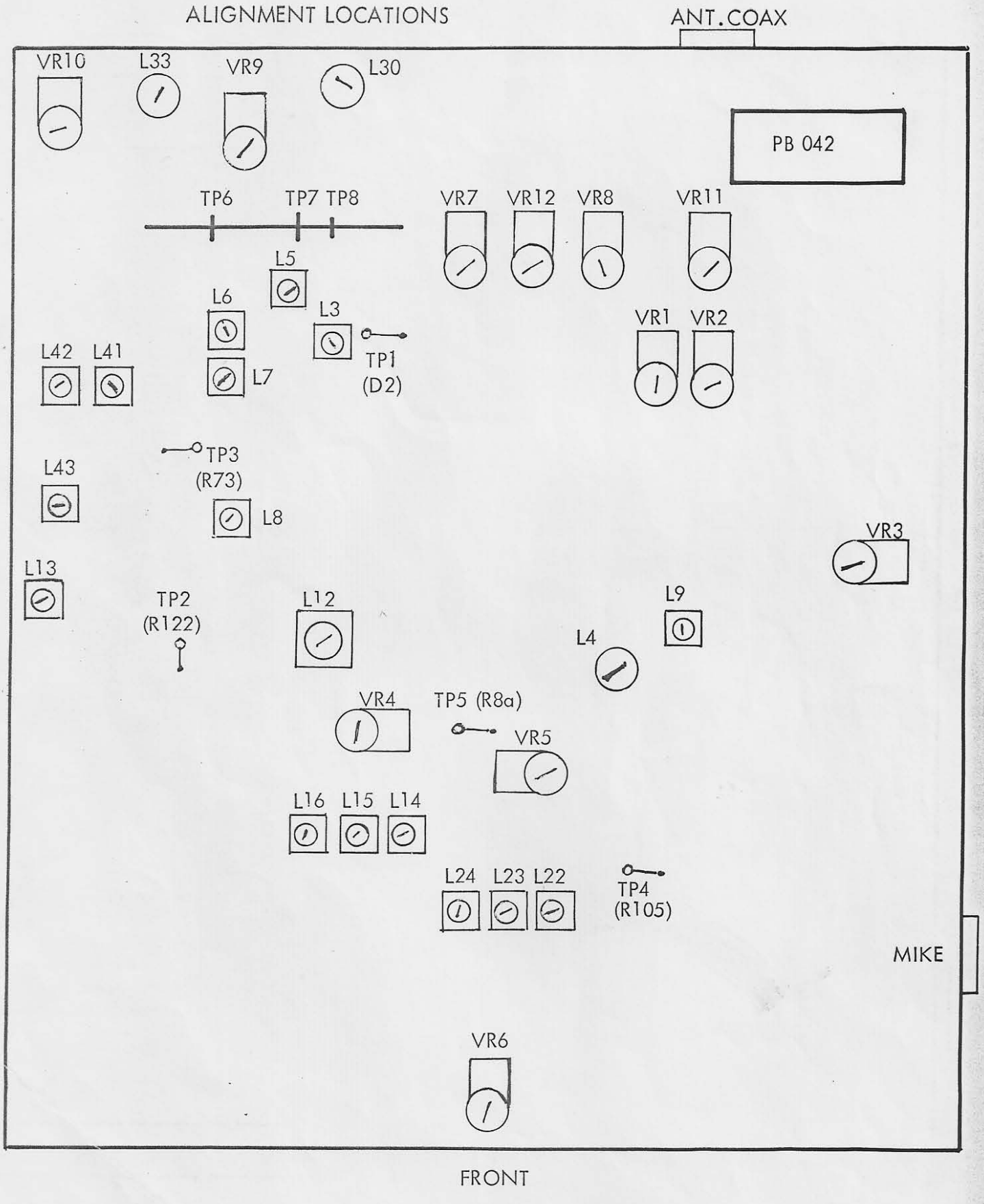
1. Signal Generator with 27 MHz capability. Must have adjustable Modulation % and calibrated output steps.
2. AF VTVM (5V full scale range) or oscilloscope.
3. 8-ohm audio load. (optional if not available.)
4. DC Voltmeter.
5. FM Signal Generator.

STEP	PRESET CONDITIONS	PB010 PROCEDURE	PC999 PROCEDURE	PB042 PROCEDURE
1.	Ch. 19 (27.185 MHz) of MID or 'C' band, AM Mode. Clarifier control(s) at center detent. RF GAIN full on. SQUELCH OFF. Noise Blanker OFF. Set Signal Generator for 27.185 MHz signal of 1uV, 30% modulation, 1 KHz.			
2.	Same as Step 1.	Adjust L5,L4,L13,L12, L11,L9,L8,L7 for maximum reading on AF VTVM, 'scope, or radio S-Meter.	Adjust L5,L4,L3,L13, L12,L11,L9,L8,L7,L52 for maximum reading on AF VTVM, 'scope, or radio S-Meter.	Adjust L9,L8,L7,L6,L5 for maximum reading on AF VTVM, 'scope, or radio S-Meter.
3.	Switch to USB. Remove modulation from Signal Generator. Use Clarifier as required to center signal meter reading.	Adjust L14, L15 for maximum as in Step 2.	Adjust L14, L15 for maximum as in Step 2.	n/a
4.	Increase Generator output to 100uV, unmodulated.	SSB/CW S-METER: Adjust VR2 for S-9 reading.	SSB S-METER: Adjust VR2 for S-9 reading.	n/a
5.	Increase Generator output to 1000uV. SQUELCH fully clockwise	SSB/CW SQUELCH RANGE: Adjust VR3 so that squelch just breaks.	SSB SQUELCH RANGE: Adjust VR3 so that squelch just breaks.	n/a
6.	Return to AM Mode. Set Clarifier at center detent.	AM/FM SQUELCH RANGE: Adjust VR4 so that squelch just breaks.	AM/FM SQUELCH RANGE: Adjust VR4 so that squelch just breaks.	SQUELCH RANGE: Adjust VR2 so that squelch just breaks.
7.	Reduce Generator output to 100uV, SQUELCH fully counterclockwise.	AM/FM S-METER: Adjust VR1 for S-9 reading.	AM/FM S-METER: Adjust VR1 for S-9 reading.	S-METER: Adjust VR1 for S-9 reading.
8.	Set to FM Mode. Reduce VOLUME as required. Inject modulated FM SIGnal of 100uV, 1 KHz tone 5 KHz deviation.	FM QUADRATURE COIL: Adjust L6 for maximum audio with 'scope on IC2 Pin 7.	FM QUADRATURE COIL: Adjust L6 for maximum audio with 'scope on IC2 Pin 7.	FM QUADRATURE COIL: Adjust L4 for maximum audio with 'scope on IC1 Pin 9.
		NOTE: If no FM Signal Generator is available, use a second FM CB or HAM transceiver having 5 KHz deviation. Adjust appropriate quadrature coil in each chassis for best-sounding audio quality of received signal.		
9.	Return to AM Mode. Set AM Signal Generator for 1uV unmodulated. Turn on NOISE BLANKER switch.	NOISE BLANKER: Adjust L1 & L2 for maximum DC voltage as measured at TP1(- of D2).	NOISE BLANKER: Adjust L1 & L2 for maximum DC voltage as measured at TP1 (- of D2).	NOISE BLANKER: Adjust L3 for maximum DC voltage as measured at TP1 (- of D2).

ALIGNMENT LOCATIONS




ALIGNMENTS LOCATIONS
ANT. COAX
VR11
VR9
VR10
L37
PC 999
VR8
VR12
VR14
VR15
VR13
TP8
TP7
TP9
VR1
VR2
L7
L46
L45
L8
L1
L48
L9
TP1
(pa)
L2
L11
L49
L12
L13
L19
TP3
JP47
L14
L15
L4
L5
L6
L18
L17
VR7
TP4
R121
TP2
R127
L3
VR5
L52
TP6
(R60)
L27
L24
L30
L29
L28
L26
L23
L25
L22
VR6
VR3
VR4
MIKE
FRONT


ALIGNMENT LOCATIONS
ANT.COAX
VR10
L33
VR9
L30
PB 042
TP6
TP7 TP8
VR7
VR12
VR8
VR11
L5
L6
L3
VR1
VR2
L42
L41
TP1
(D2)
L7
TP3
(R73)
L43
L8
VR3
L13
TP2
(R122)
L12
L9
L4
VR4
TP5 (R8a)
VR5
L16
L15
L14
L24
L23
L22
TP4
(R105)
MIKE
VR6
FRONT

VOLTAGE MEASUREMENTS

Vcc = 13.75 VDC. All measurements made with Digital Voltmeter, in the AM Receive Mode unless otherwise noted.

COBRA 148GTL-DX/SUPERSTAR 360FM (PB010 CHASSIS)

PB010

TR1 - Noise Blanker
B - 1.90 NB
C - 8.00 NB
E - 1.10 NB

TR2 - Noise Blanker
B - 0.70 NB
C - 2.60 NB
E - 0.0

TR3 - Noise Blanker
B - 2.60 NB
C - 8.00 NB
E - 1.80 NB

TR4 - Noise Blanker
B - 0.0 NB
C - 8.30 NB
E - 1.12 NB

TR5 - Noise Blanker
B - 0.0 NB
C - 7.70 NB
E - 0.0 NB

TR6 - Noise Blanker
B - 7.70 NB
C - 0.0 NB
E - 8.30 NB

TR7 - Noise Blanker
B - 0.0 NB
C - 0.0 NB
E - 0.0

TR8 - 2nd RX Mixer
B - 0.70
C - 7.40 AM/FM
E - 0.20 AM/FM

TR9 - AM/FM IF Amp
B - 0.70 AM/FM
C - 3.20 AM/FM
E - 0.0

TR10 - AM/FM IF Amp
B - 3.20 AM/FM
C - 7.40 AM/FM
E - 2.40 AM/FM

TR11 - AM/FM IF Amp
B - 2.40 AM/FM
C - 7.20 AM/FM
E - 1.70 AM/FM

TR12 - SSB AGC Sw/Timing
B - 0.70 SSB
C - 0.0 SSB
E - 0.0

TR13 - AM S-Met Sw.
B - 0.70 AM/FM
C - 0.0 AM/FM
E - 0.0 AM/FM

TR14 - SSB/CW S-Met Sw.
B - 0.70 SSB/CW
C - 0.0 SSB/CW
E - 0.0 SSB/CW

TR15 - SSB Det/AF Amp
B - 1.30
C - 5.40
E - 0.70

TR16 - Squelch Sw.
B - 0.80 TX & Sq.
C - 0.0
E - 0.0

TR17 - RX RF Amp
B - 2.20
C - 8.00
E - 1.50

TR18 - 1st RX Mixer
B - 0.80
C - 8.30
E - 0.10

TR19 - SSB IF Amp
B - 1.60 SSB/CW
C - 6.60 SSB/CW
E - 0.80 SSB/CW

TR20 - SSB IF Amp
B - 0.70 SSB/CW
C - 3.60 SSB/CW
E - 0.0

TR21 - SSB IF Amp
B - 3.60 SSB/CW
C - 6.10 SSB/CW
E - 2.90 SSB/CW

TR22 - SSB IF Amp
B - 0.0
C - 2.90 SSB/CW
E - 7.40 SSB/CW

TR23 - AM Det. Sw.
B - 0.70 AM
C - 0.0
E - 0.0

TR24 - 10.24 MHz Osc.
B - 2.50
C - 6.40
E - 1.80

TR25 - PLL Mixer
B - 1.40
C - 4.80
E - 0.90

TR26 - VCO
B - 2.10
C - 7.30
E - 1.40

TR27 - VCO Buffer
B - 0.60
C - 3.80
E - 0.0

TR28 - not present

TR29 - 15 MHz Loop Osc.
B - 1.30
C - 7.70
E - 0.60

TR30 - Carrier Osc.
B - 3.00 SSB/CW
C - 6.40 SSB/CW
E - 2.40 SSB/CW

TR31 - SSB Sw.
B - 0.70 AM/FM
C - 3.00 SSB/CW; 0 AM/FM
E - 0.0

TR32 - AMC Shunt
B - 0.70 RX; 0.0 TX
C - 0.0
E - 0.0

TR33 - Roger Beep Osc.
B - 0.55 TX
C - 0.60 TX
E - 0.0

TR34 - AMC Amp
B - 7.80 TX
C - 0.60 TX
E - 8.30 TX

TR35 - CW Tone Osc.
B - 8.20 CW
C - 8.30 CW
E - 7.70 CW

TR36 - RX Voltage Sw.
B - 7.80
C - 8.40 RX; 0.0 TX
E - 8.30

TR37 - RX Voltage Sw.
B - 0.0 TX; 0.66 RX
C - 0.10 RX; 7.80 TX
E - 0.0

TR38 - TX Voltage Sw.
B - 7.90 RX; 7.60 TX
C - 0.0 RX; 8.20 TX
E - 8.40

TR39 - CW Sw.
B - 0.70 CW
C - 0.0 CW; 2.75 AM/FM/SSB

TR40 - Voltage Regulator
B - 1.60
C - 12.90 RX; 11.90 AM/FM TX; 12.70 SSB/CW TX
E - 1.00

TR41 - Voltage Regulator
B - 13.00 SSB/CW; 12.10 AM/FM TX
C - 8.40
E - 13.80 RX; 13.60 SSB/CW TX; 13.00 AM/FM TX

TR42 - AF Preamp
B - 1.20
C - 3.20
E - 0.60

TR43 - not present

TR44 - RF Final Amp
B - 0.70 SSB/CW TX; 0.60 AM/FM TX
C - 5.60 AM/FM/CW TX; 13.70 SSB TX
E - 0.0

TR45 - RF Driver
B - 0.70 SSB/CW TX; 0.60 AM/FM TX
C - 5.60 AM/FM/CW TX; 13.70 SSB TX
E - 0.0

TR46 - RF Predriver
B - 1.40 TX
C - 8.10 SSB/CW TX; 7.40 AM/FM TX
E - 0.80 TX

TR47 - RF Amp & Buffer
B - 1.40 TX
C - 6.10 TX
E - 0.70 TX

TR48 - ALC Sense
B - 0.0
C - 7.70
E - 0.50 SSB/CW TX; 3.60 AM/FM TX

TR49 - AM Reg & Mod.
B - 6.10 AM/FM/CW TX; 12.80 SSB TX
C - 13.20 SSB TX; 12.10 AM/FM TX
E - 5.60 AM/FM/CW TX; 13.40 SSB TX

TR50 - AM Reg & Mod.
B - 12.10 AM/FM TX; 12.60 CW TX; 13.20 SSB TX
C - 5.60 AM/FM/CW TX; 13.70 SSB TX
E - 12.50 AM/FM TX; 13.00 SSB/CW TX

TR51 - AM Reg & Mod.
B - 12.50 AM/FM TX; 13.00 SSB/CCB/CW TX
C - 5.60 AM/FM/CW TX; 13.70 SSB TX
E - 13.00 AM/FM TX; 13.70 SSB/CW TX

TR52 - SSB Sw.
B - 0.0 AM/FM/CW; 7.80 SSB
C - 5.60 AM/FM/CW; 13.70 SSB
E - 0.0 AM/FM/CW; 7.10 SSB

TR53 - AMC Amp
B - 0.90
C - 7.70
E - 1.70 AM/FM/CW; 4.20 SSB

TR54 - FM Sw.
B - 0.70 FM
C - 0.0
E - 0.0

TR55 - CW Keying Sw.
B - 0.70
C - 0.0
E - 0.0

IC1 - SQ Amp, AGC Amp
1 - NC
2 - NC
3 - NC
4 - 8.40
5 - 0.0
6 - 0.0
7 - 0.0
8 - 0.90 Sq.
9 - 1.90
10- 1.50
11- 0.0
12- 0.30
13- 0.30
14- 0.60

IC2 - FM Det.
1 - 1.20 FM
2 - 1.30 FM
3 - 7.10 FM
4 - 0.0
5 - 3.20 FM
6 - 3.30 FM
7 - 5.10 FM

IC3 - Balance Mod.
1 - 3.0 SSB/CW TX
2 - 3.4 SSB TX
3 - 3.4 SSB TX
4 - 0.0
5 - 6.0 SSB TX
6 - 7.5 SSB TX
7 - 4.0 SSB TX

IC4 - Mike Preamp
1 - 4.40 TX
2 - 4.40 TX
3 - 4.40 TX
4 - 0.0
5 - 2.20 TX
6 - 3.20 TX
7 - 2.30 TX
8 - 8.10 TX

IC5 - PLL
1 - 8.40
2 - 4.30
3 - 4.30
4 - 4.30
5 - NC
6 - NC
7 - 3.2 to 4.7, LOW to HIGH
8 - 8.20
9 - 0.0
10- 0.0
11-17: Depends on Channel: 0 or 8.30
18- 0.0

IC6,IC7-Adders
Pin 8 both - 0.0
Pin 16 both - 8.30
Pin 9,IC6 - 0.0
Pin 9,IC7 - 0.0 LOW & MID, 8.30 HIGH
Pin 14, IC6 0.0 LOW & MID, 8.30 HIGH
All others depend on Band & Channel, either 0 or 8.30

IC8 - Audio Power
1 - 13.80
2 - 6.60
3 - 0.0
4 - 0.0
5 - 1.10
6 - 1.10
7 - 0.0
8 - 0.0
9 - 7.00
10- 13.10

IC9 - TX Mixer
1,4,6,9,14 - 0.0
2,3,5 - 8.00
7,8 - 2.70
10,12 - 1.00
11,13 - 1.40

PC999

VOLTAGE MEASUREMENTS

Vcc = 13.75 VDC. All measurements made with digital voltmeter. Voltages measured in the AM, RECEIVE Mode unless otherwise noted. Measurements may vary ± 10%.

PRESIDENT GRANT (PC999 CHASSIS

TR1 - Noise Blanker
B - 1.9 NB
C - 8.0 NB
E - 1.10 NB

TR2 - Noise Blanker
B - 0.70 NB
C - 2.60 NB
E - 0.0

TR3 - Noise Blanker
B - 2.60 NB
C - 8.0 NB
E - 1.80 NB

TR4 - Noise Blanker
B - 0.0
C - 8.30 NB
E - 1.12 NB

TR5 - Noise Blanker
B - 0.0
C - 7.70 NB
E - 0.0

TR6 - Noise Blanker
B - 7.70 NB
C - 0.0
E - 8.30 NB

TR7 - Noise Blanker
B - 0.0
C - 0.0
E - 0.0

TR8 - AM/FM IF Amp
B - 0.70
C - 7.40 AM/FM
E - 0.20 AM/FM

TR9 - AM/FM IF Amp
B - 0.70 AM/FM
C - 3.20 AM/FM
E - 0.0

TR10 - AM/FM IF Amp
B - 3.20 AM/FM
C - 7.40 AM/FM
E - 2.40 AM/FM

TR11 - AM/FM IF Amp
B - 2.40 AM/FM
C - 7.20 AM/FM
E - 1.70 AM/FM

TR12 - SSB RX AGC/TIMING
B - 0.70 SSB
C - 0.0
E - 0.0

TR13 - AM/FM S-Meter Sw.
B - 0.7 AM/FM
C - 0.0 AM/FM
E - 0.0 AM/FM

TR14 - SSB S-Meter Sw.
B - 0.70 SSB
C - 0.0
E - 0.0

TR15 - SSB Det. AF Preamp
B - 1.30
C - 5.40
E - 0.70

TR16 - Squelch Sw.,T/R Sw.
B - 0.8 TX or Squelched
C - 0.0 TX
E - 0.0 TX

TR17 - RX RF Amp
B - 2.20
C - 8.00
E - 1.50

TR18 - 1st Mixer
B - 0.80
C - 8.30
E - 0.10

TR19 - SSB IF Amp
B - 1.60 SSB RX
C - 7.19 SSB RX
E - 0.80 SSB RX

TR20 - SSB IF Amp
B - 0.70 SSB RX
C - 3.60 SSB RX
E - 0.0

TR21 - SSB IF Amp
B - 3.60 SSB RX
C - 6.80 SSB RX
E - 2.90 SSB RX

TR22 - SSB IF Amp
B - 2.96 SSB RX
C - 7.27 SSB RX
E - 2.20 SSB RX

TR23 - AM/SSB Det. Sw.
B - 0.70 AM RX
C - 0.0 AM RX
E - 0.0 AM RX

TR24 - PLL Mixer
B - 1.46
C - 5.07
E - 0.90

TR25 - VCO
B - 2.10
C - 7.63
E - 1.45

TR26 - VCO Buffer
B - 0.70
C - 3.43
E - 0.0

TR27 - 15 MHz PLL Osc.
B - 2.45
C - 7.06
E - 3.16

TR28 - Program Bit Sw.
B - 0.70 HIGH Band only
C - 8.23 LOW, MID Band
E - 0.0

TR29 - Carrier Osc.
B - 3.35 SSB
C - 6.95 SSB
E - 2.66 SSB

TR30 - AM/SSB Audio Sw.
B - 0.70 AM/FM; 0.0 SSB
C - 0.0 AM/FM; 3.0 SSB
E - 0.0

TR31 - AMC Shunt
B - 0.73
C - 0.0
E - 0.0

TR32 - Roger Beep Osc.
B - 0.70 TX
C - 0.82 TX
E - 0.0

TR33 - PA Switch
B - 4.50 PA
C - 5.80 PA
E - 3.90 PA

TR34 - AMC
B - 7.80 TX
C - 0.78 TX
E - 8.3 TX

TR35 - RX voltage source
B - 7.70 RX
C - 0.26 TX; 8.40 RX
E - 8.4

TR36 - RX voltage source
B - 0.10 TX; 0.70 RX
C - 7.86 TX; 0.10 RX
E - 0.0

TR37 - TX voltage source
B - 7.60 TX
C - 0.0 RX; 8.20 TX
E - 8.40 TX

TR38 - Voltage Regulator
B - 1.60
C - 12.90
E - 1.00

TR39 - Voltage Regulator
B - 12.95
C - 8.30
E - 13.65

TR40 - AF Preamp
B - 1.14
C - 3.51
E - 0.53

TR41, TR42 - RF Finals
B - 0.55 TX AM/FM; 0.70 TX SSB
C - 13.69 TX SSB; 6.12 TX AM/FM
E - 0.0

TR43 RF Driver
B - 0.70 TX SSB; 0.84 TX AM/FM
E - 0.0

TR44 - RF Predriver
B - 1.40 TX
C - 8.1 TX SSB; 6.68 TX AM/FM
E - 0.80 TX

TR45 - RF Amp & Buffer
B - 1.50 TX
C - 6.68 TX
E - 0.88 TX

TR46 - SSB ALC Sense
B - 0.0 SSB TX no mod.
C - 7.70 SSB TX
E - 1.05 SSB TX

TR47 - AM Mod. & Pwr
B - 13.28 AM/FM
C - 6.16 TX AM/FM; 13.70 TX SSB
E - 13.75

TR48 - AM Mod. & Pwr
B - 13.27 AM/FM
C - 6.18 AM/FM; 13.73 SSB
E - 13.12

TR49 - AM Mod. & Pwr
B - 12.61 SSB; 6.67 AM/FM
C - 13.12
E - 6.20 AM/FM; 13.20 SSB

TR50 - SSB Sw.
B - 7.15 SSB
C - 13.02
E - 6.45 SSB

TR51 - AMC Amp
B - 1.00 AM TX
C - 7.79 AM TX
E - 2.00 AM TX

TR52 - FM Sw.
B - 0.70 FM
C - 0.0
E - 0.0

IC1 - Squelch Amp.
AGC Amp & Buffer
1,2,3 - NC
4 - 8.30
5 - 0.0
6 - 0.0
7 - 0.0
8 - 6.93 SQ.
9 - 1.96
10- 2.27 SQ.
11- 0.0
12- 0.23
13- 0.23
14- 0.50

IC2 - FM Det.
1 - 1.26 FM
2 - 1.30 FM
3 - 7.10 FM
4 - 0.0
5 - 3.26 FM
6 - 3.21 FM
7 - 4.23 FM

IC3 - Balance Mod.
1 - 3.00 SSB TX
2 - 3.38 SSB TX
3 - 3.37 SSB TX
4 - 0.0
5 - 6.04 SSB TX
6 - 7.60 SSB TX
7 - 7.67 SSB TX

IC4 - Mike Preamp
1 - 4.52 TX
2 - 4.49 TX
3 - 4.52 TX
4 - 0.0
5 - 2.31 TX; 4.26 RX
6 - 3.22 TX
7 - 2.50 TX; 7.30 RX
8 - 8.06

IC5 - PLL
1 - 4.67
2 - 4.14
3 - 3.61
4 - 3.70
5 - 3.70
6 - 8.23
7 - 4.31
8 - 4.63
9 - 8.28
10-*
11-*
12-*
13-*
14-*
15-*
16-*
17- 3.71
18- 0.0

*Depends on channel

IC6 - Audio Power Amp
1 - 0.0
2 - 0.0
3 - 1.24
4 - 0.0
5 - 6.68
6 - 12.57
7 - 13.68

IC7 - TX Mixer
1 - 0.18 TX
2 - 7.99 TX
3 - 7.99 TX
4 - 0.18 TX
5 - 7.99 TX
6 - 0.18 TX
7 - 3.02 TX
8 - 3.02 TX
9 - 0.0
10- 1.34 TX
11- 1.59 TX
12- 1.34 TX
13- 1.59 TX
14- 0.0

IC9, IC 9 - PLL Adder
Pin 8 (both) = 0.0
Pin 16 (both) = 8.28
Pin 9, Pin 14 (both) always 0.0. All other pins depend upon the Channel & Band.

296171

TYPICAL STAGE GAIN MEASUREMENTS

The following measurements will give the technician some approximate gain figures for troubleshooting. Measurement conditions: AM, no modulation except as noted, Vcc = 13.75 VDC. Measurements made with 50 MHz 'scope and 10X probe, and are peak-to-peak (p-p) except where noted. May vary ± 20% by models.

	PB010	PC999	PB042
TX RF AMPS	IC9, Pin 5: 1.5V p-p TR47 Buffer: 2.0V p-p Base, 2.5V p-p Collector TR46 Pre-driver: 2.0V p-p Base, 15.0V p-p Collector TR45 Driver: 3.5V p-p Base, 17.0V p-p Collector TR44 Final: 8.0V p-p Base, 35.0V p-p Collector	IC7, Pin 5: 1.5V p-p TR45 Buffer: 1.0V p-p Base, 1.6V p-p Collector TR44 Pre-driver: 1.0V p-p Base, 7.0V p-p Collector TR43 Driver: 5.0V p-p Base, 18.0V p-p Collector TR41/42 Finals: 7.5V p-p Bases, 40.0V p-p Collectors	IC8, Pin 9: 2.0V p-p TR39 Buffer: 0.8V p-p Base, 1.0V p-p Collector TR38 Pre-driver: 0.90V p-p Base, 2.3V p-p Collector TR37 Driver: 2.0V p-p Base 8.0V p-p Collector TR36 Final: 4.0V p-p Base, 35.0V p-p Collector
OSCILLATORS	TR24, 10.24 MHz: 2.50V p-p, Emitter TR29, 15 MHz: 0.60V p-p, Emitter TR30, Carrier, 1.0V p-p SSB, Emitter	Pin 7, MB8719: 8.0V p-p TR27, 15 MHz: 0.35V p-p, Emitter TR29, Carrier: 1.0V p-p SSB, Emitter	TR19, 10.24 MHz: 1.60V p-p, Emitter TR23, 14.55 MHz: 1.90V p-p, Emitter TR24, Carrier: 1.6V p-p SSB, Emitter
PLL DOWNMIX	Pin 2, MC145106 0.70V p-p	Pin 17, MB8719 0.85V p-p	Pin 2, MC145106: 1.40V p-p
AUDIO AMPS	IC4, Pin 1: 1.5V p-p TX, loud whistle, MIKE GAIN full on. IC8, Pin 9: 0.20V p-p sine wave, 100uV 30% mod. input sig.	IC4, Pin 1: 2.0V p-p TX, loud whistle, MIKE GAIN full on. IC6, Pin 5: 0.25V p-p sine wave, 100uV 30% mod. input sig.	IC4, Pin 2: 2.0V p-p TX, loud whistle, MIKE GAIN full on. IC501, Pin 5: 0.25V p-p sine wave, 100uV 30% mod. input sig.
AM MODULATOR	TP7,8,9: 8.0V p-p sine wave, TX, loud whistle, MIKE GAIN max.	TP7,8,9: 12.0V p-p sine wave, TX, loud whistle, MIKE GAIN max.	TP6,7,8: 8.0V p-p sine wave, TX, loud whistle, MIKE GAIN max.

266T71

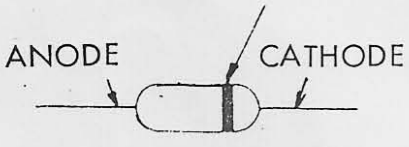
SEMI CONDUCTOR PIN CONFIGURATION

2SA733-P
2SC945A-Q
2SC1674-L
2SC1675-L
2SC1730-L
2SC1973
2SD471-L

2SA473-O
2SA1012-O
2SC2166-C DRIVER
2SC2312-C FINAL
MRF477
2SB754

2SB525-C
2SC2086-D
2SD355

CATHODE MARK

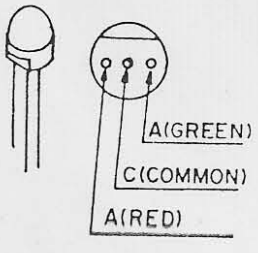


1N60-AM
MC - 301
1N4003
MV - 201
1S2339G
RD5.1EB2
RD7.5EB2
KB262
1S2075K

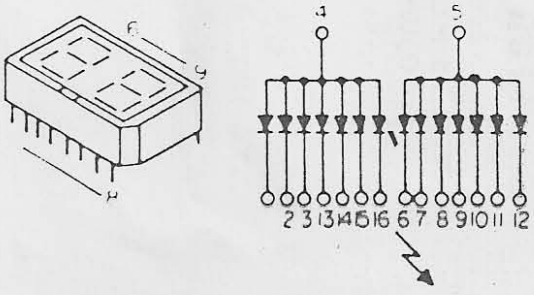
MV1Y

A + C -

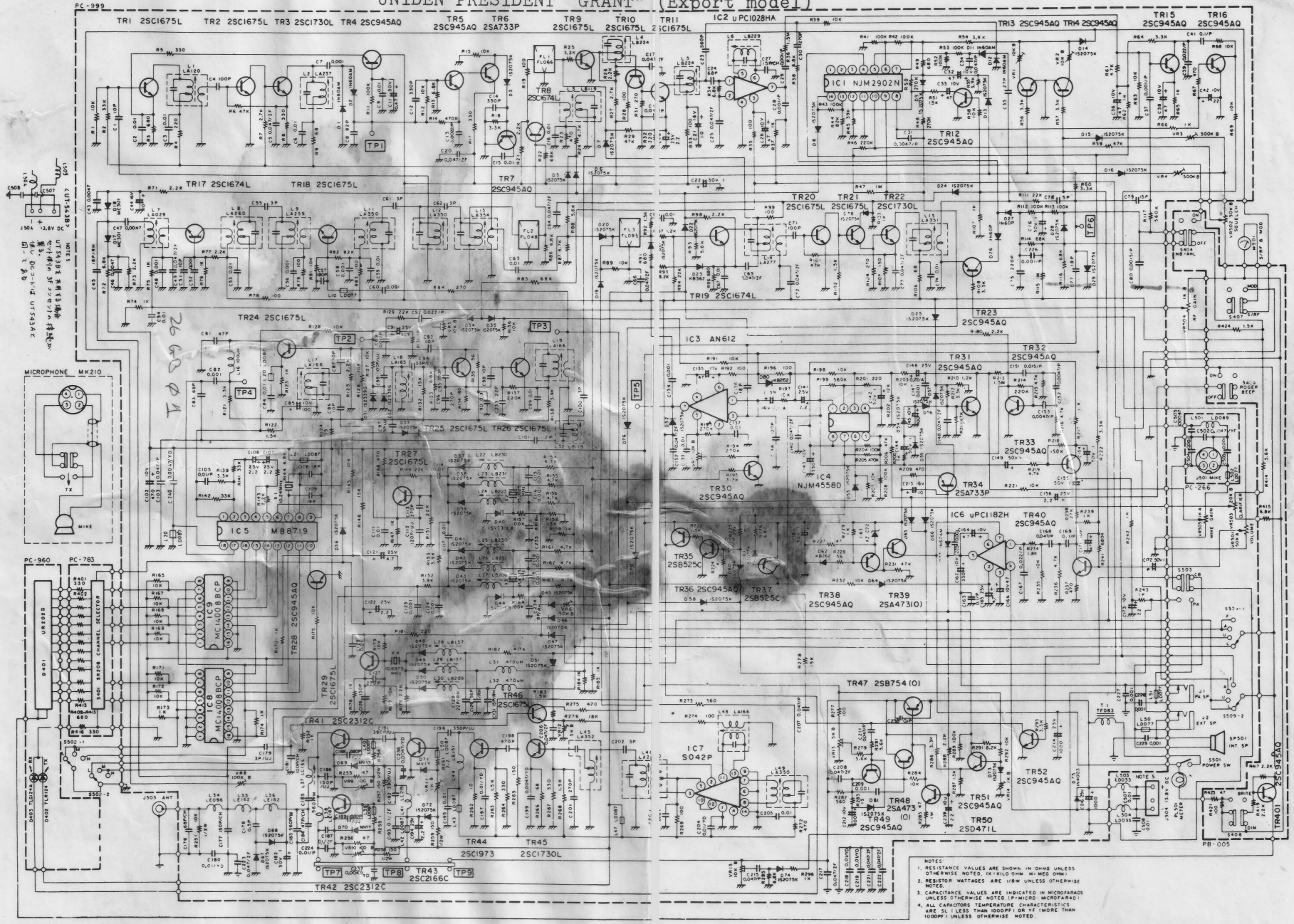
TLRG 101



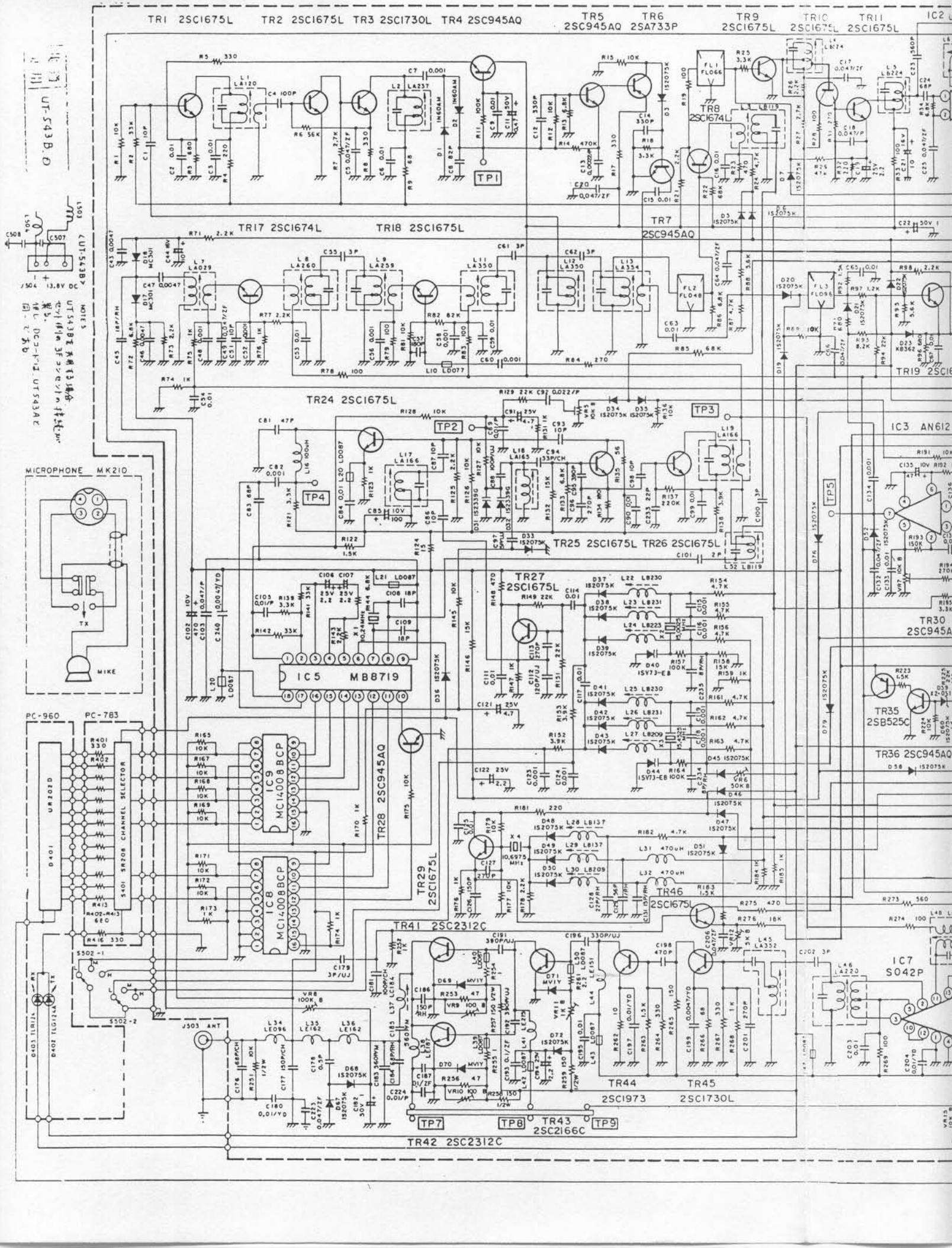
UR202



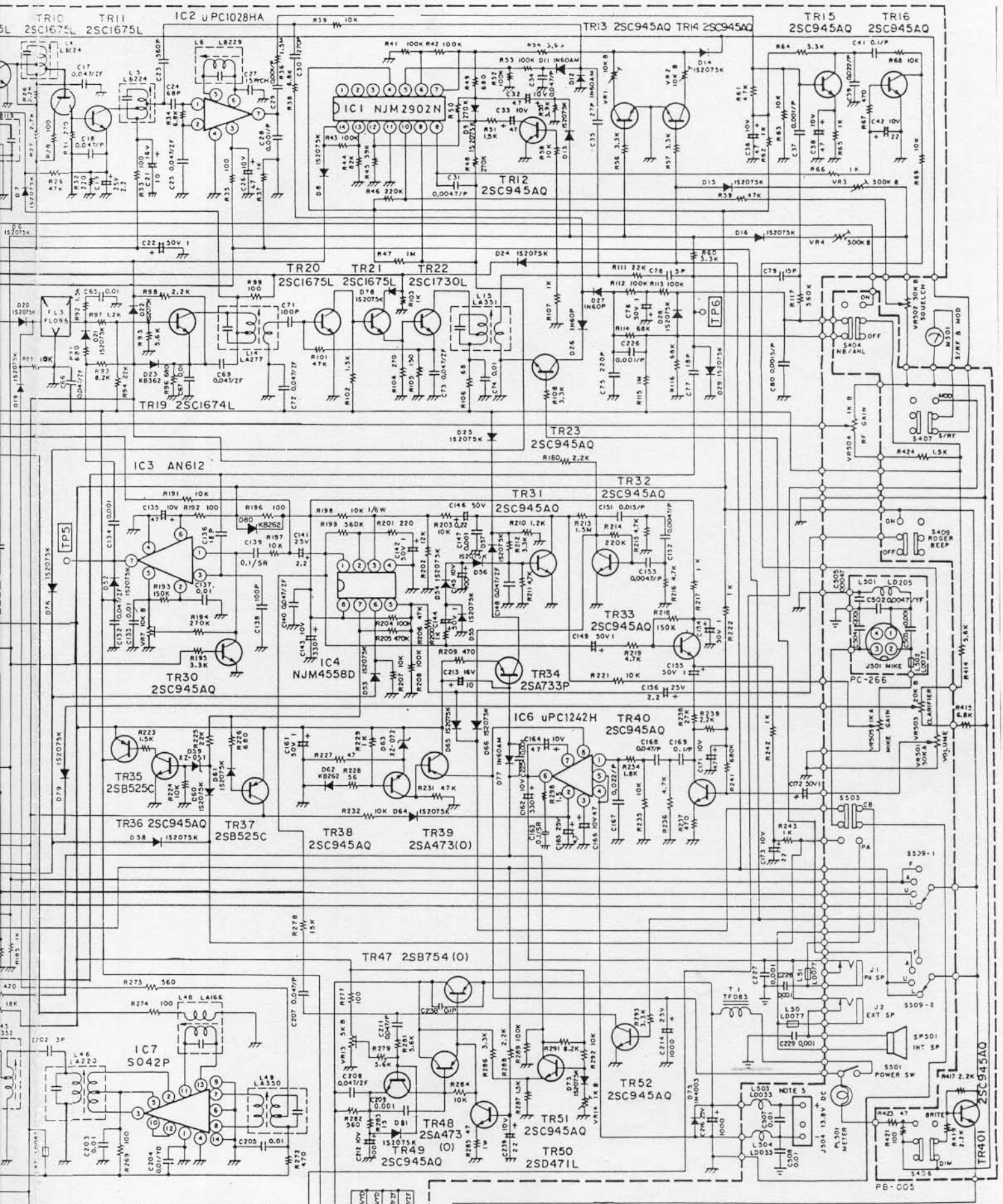
UNIDEN PRESIDENT "GRANT" (Export model)



PRESIDENT


TR1 2SC1675L
TR2 2SC1675L
TR3 2SC1730L
TR4 2SC945AQ
TR5 2SC945AQ
TR6 2SA733P
TR9 2SC1675L
TR10 2SC1675L
TR11 2SC1675L
TR8 2SC1674L
TR7 2SC945AQ
TR17 2SC1674L
TR18 2SC1675L
TR19 2SC1
TR24 2SC1675L
TR25 2SC1675L
TR26 2SC1675L
TR27 2SC1675L
TR28 2SC945AQ
TR29 2SC1675L
TR30 2SC945A
TR35 2SB525C
TR36 2SC945AQ
TR41 2SC2312C
TR42 2SC2312C
TR43 2SC2166C
TR44 2SC1973
TR45 2SC1730L
TR46 2SC1675L
IC2
IC3 AN612
IC5 MB8719
IC7 S042P
IC8 MC14008BCP
IC9 MC14008BCP
MICROPHONE MK210
MIKE
TX
PC-960
PC-783
CHANNEL SELECTOR
TP1
TP2
TP3
TP4
TP5
TP7
TP8
TP9
J503 ANT
13.8V DC

GRANT N



NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=KILO OHM M=MEG OHM)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICROFARAD)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED

DES. ON BY.	DRAWN BY.	UNIDEN NO.	MODEL NO.
		UT-543A	GRANT
	APPRO BY.	E12-1847	

PRESIDENT

TR1 2SC1675L TR2 2SC1675L TR3 2SC1675L TR4 2SC945AQ TR5 2SC945AQ TR6 2SA733P TR8 2SC1675L TR7 2SC1675L TR10 2SC945AQ TR11 2SC1674L TR12 2SC1674L TR13 2SC1675L TR15 2SC1675L TR17 2SC1730L TR14 2SC1674L TR16 2SC1675L TR18 2SC945AQ TR19 2SC1675L TR20 2SC1675L TR21 2SC1675L TR22 2SC1675L TR23 2SC1675L TR24 2SC1675L TR25 2SC945AQ TR26 2SC945AQ TR27 2SC945AQ TR28 2SA733P TR29 2SC945AQ TR30 2SC945AQ TR31 2SD355E TR32 2SC945AQ TR33 2SB525D TR34 2SC945AQ TR35 2SC945AQ TR36 2SC945AQ TR37 2SC1675L TR38 2SC2086D TR39 2SC1675L TR40 2SC945AQ TR41 2SC945AQ TR501 2SA473(O) TR502 MRF477 TR503 2SC2166C

IC1 IR3N06 IC2 NJM2902N IC3 AN612 IC4 NJM4558S IC5 MC145106P IC6 MC14008BCP IC7 MC14008BCP IC8 TA7320P IC501 uPC1242H

MC951 MICROPHONE

B351 PC-960 B301 PC-783 B601 PB-044/2 B651 PB-043 B501 PC-834 B001 PB-042 B401 PC-266 B601 PB-044/2

S301 CHANNEL SELECTOR S314 S501 S502 S503-1 S503-2 S509-1 S509-2

M501 S/RF/MOD

SP501 INT SP

J1 MIC J2 EXT SP J3 PA SP J4 PA CB J501 ANT J502 POWER SW J503 DC13.8V DC POWER

RL901 METER LAMP F951 6A

TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8

VR1 20KB VR2 100KB VR3 50KB VR4 10KB VR5 10KB VR6 VR7 300KB VR8 10KB VR9 VR10 VR11 10KB VR12 1KB VR301-1 1KB RF GAIN VR301-2 1KB FINE VR302-1 20KB COARSE VR302-2 1KA MIC GAIN VR303 50KA VOLUME VR304 50KB SQUELCH VR501 50KA VOLUME

D1 1N60AM D2 1N60AM D3 1S2075K D4 60V0.47 D5 1S2075K D6 1S2075K D7 1N60AM D8 1S2075K D9 1S2075K D10 MC301 D11 MC301 D12 MC301 D13 1S2075K D14 1S2075K D15 1S2075K D16 1S2075K D17 1S2075K D18 1S2075K D19 1S2075K D20 1S2075K D21 1N60AM D22 1S2075K D23 1S2075K D24 2274 D25 1S2075K D26 1S2396 D27 1S2396 D28 1S2396 D29 1S2396 D30 1S2396 D31 1S2396 D32 2270 D33 1S2075K D34 1S2075K D35 1S2075K D36 1S2075K D37 1S2075K D38 1S2396 D39 1S2075K D40 1S2075K D41 1S2075K D42 1S2075K D43 1S2075K D44 1S2075K D45 1S2075K D46 1S2075K D47 1S2075K D48 1S2075K D49 XZ-051 D50 XZ-054 D51 1S2075K D52 1S2075K D53 1S2075K D54 1S2075K D55 1S2075K D56 1S2075K D57 1S2075K D58 1S2075K D59 1S2075K D60 1S2075K D61 1S2075K D62 1S2075K D63 1S2075K D64 1S2075K D65 1S2075K D66 KB262 D67 1S2075K D68 1N4003 D69 XZ-054 D70 1S2075K D71 1S2075K D72 1S2075K D73 1S2075K D74 1S2075K D75 1S2075K D76 1S2075K D77 1S2075K D78 1S2075K D79 1S2075K D80 1S2075K D81 1S2075K D82 1S2075K D83 1S2075K D84 1S2075K D85 1S2075K D86 1S2075K D87 1S2075K D88 1S2075K D89 1S2075K D90 1S2075K D91 1S2075K D92 1S2075K D93 1S2075K D94 1S2075K D95 1S2075K D96 1S2075K D97 1S2075K D98 1S2075K D99 1S2075K D100 1S2075K D101 1S2075K D102 1S2075K D103 1S2075K D104 1S2075K D105 1S2075K D106 1S2075K D107 1S2075K D108 1S2075K D109 1S2075K D110 1S2075K D111 1S2075K D112 1S2075K D113 1S2075K D114 1S2075K D115 1S2075K D116 1S2075K D117 1S2075K D118 1S2075K D119 1S2075K D120 1S2075K D121 1S2075K D122 1S2075K D123 1S2075K D124 1S2075K D125 1S2075K D126 1S2075K D127 1S2075K D128 1S2075K D129 1S2075K D130 1S2075K D131 1S2075K D132 1S2075K D133 1S2075K D134 1S2075K D135 1S2075K D136 1S2075K D137 1S2075K D138 1S2075K D139 1S2075K D140 1S2075K D141 1S2075K D142 1S2075K D143 1S2075K D144 1S2075K D145 1S2075K D146 1S2075K D147 1S2075K D148 1S2075K D149 1S2075K D150 1S2075K D151 1S2075K D152 1S2075K D153 1S2075K D154 1S2075K D155 1S2075K D156 1S2075K D157 1S2075K D158 1S2075K D159 1S2075K D160 1S2075K D161 1S2075K D162 1S2075K D163 1S2075K D164 1S2075K D165 1S2075K D166 1S2075K D167 1S2075K D168 1S2075K D169 1S2075K D170 1S2075K D171 1S2075K D172 1S2075K D173 1S2075K D174 1S2075K D175 1S2075K D176 1S2075K D177 1S2075K D178 1S2075K D179 1S2075K D180 1S2075K D181 1S2075K D182 1S2075K D183 1S2075K D184 1S2075K D185 1S2075K D186 1S2075K D187 1S2075K D188 1S2075K D189 1S2075K D190 1S2075K D191 1S2075K D192 1S2075K D193 1S2075K D194 1S2075K D195 1S2075K D196 1S2075K D197 1S2075K D198 1S2075K D199 1S2075K D200 1S2075K D201 1S2075K D202 1S2075K D203 1S2075K D204 1S2075K D205 1S2075K D206 1S2075K D207 1S2075K D208 1S2075K D209 1S2075K D210 1S2075K D211 1S2075K D212 1S2075K D213 1S2075K D214 1S2075K D215 1S2075K D216 1S2075K D217 1S2075K D218 1S2075K D219 1S2075K D220 1S2075K D221 1S2075K D222 1S2075K D223 1S2075K D224 1S2075K D225 1S2075K D226 1S2075K D227 1S2075K D228 1S2075K D229 1S2075K D230 1S2075K D231 1S2075K D232 1S2075K D233 1S2075K D234 1S2075K D235 1S2075K D236 1S2075K D237 1S2075K D238 1S2075K D239 1S2075K D240 1S2075K D241 1S2075K 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D473 1S2075K D474 1S2075K D475 1S2075K D476 1S2075K D477 1S2075K D478 1S2075K D479 1S2075K D480 1S2075K D481 1S2075K D482 1S2075K D483 1S2075K D484 1S2075K D485 1S2075K D486 1S2075K D487 1S2075K D488 1S2075K D489 1S2075K D490 1S2075K D491 1S2075K D492 1S2075K D493 1S2075K D494 1S2075K D495 1S2075K D496 1S2075K D497 1S2075K D498 1S2075K D499 1S2075K D500 1S2075K D501 1S2075K D502 1S2075K D503 1S2075K D504 1S2075K D505 1S2075K D506 1S2075K D507 1S2075K D508 1S2075K D509 1S2075K D510 1S2075K D511 1S2075K D512 1S2075K D513 1S2075K D514 1S2075K D515 1S2075K D516 1S2075K D517 1S2075K D518 1S2075K D519 1S2075K D520 1S2075K D521 1S2075K D522 1S2075K D523 1S2075K D524 1S2075K D525 1S2075K D526 1S2075K D527 1S2075K D528 1S2075K D529 1S2075K D530 1S2075K D531 1S2075K D532 1S2075K D533 1S2075K D534 1S2075K D535 1S2075K D536 1S2075K D537 1S2075K D538 1S2075K D539 1S2075K D540 1S2075K D541 1S2075K D542 1S2075K D543 1S2075K D544 1S2075K D545 1S2075K D546 1S2075K D547 1S2075K D548 1S2075K D549 1S2075K D550 1S2075K D551 1S2075K D552 1S2075K D553 1S2075K D554 1S2075K D555 1S2075K D556 1S2075K D557 1S2075K D558 1S2075K D559 1S2075K D560 1S2075K D561 1S2075K D562 1S2075K D563 1S2075K D564 1S2075K D565 1S2075K D566 1S2075K D567 1S2075K D568 1S2075K D569 1S2075K D570 1S2075K D571 1S2075K D572 1S2075K D573 1S2075K D574 1S2075K D575 1S2075K D576 1S2075K D577 1S2075K D578 1S2075K D579 1S2075K D580 1S2075K D581 1S2075K D582 1S2075K D583 1S2075K D584 1S2075K D585 1S2075K D586 1S2075K D587 1S2075K D588 1S2075K D589 1S2075K D590 1S2075K D591 1S2075K D592 1S2075K D593 1S2075K D594 1S2075K D595 1S2075K D596 1S2075K D597 1S2075K D598 1S2075K D599 1S2075K D600 1S2075K D601 1S2075K D602 1S2075K D603 1S2075K D604 1S2075K D605 1S2075K D606 1S2075K D607 1S2075K D608 1S2075K D609 1S2075K D610 1S2075K D611 1S2075K D612 1S2075K D613 1S2075K D614 1S2075K D615 1S2075K D616 1S2075K D617 1S2075K D618 1S2075K D619 1S2075K D620 1S2075K D621 1S2075K D622 1S2075K D623 1S2075K D624 1S2075K D625 1S2075K D626 1S2075K 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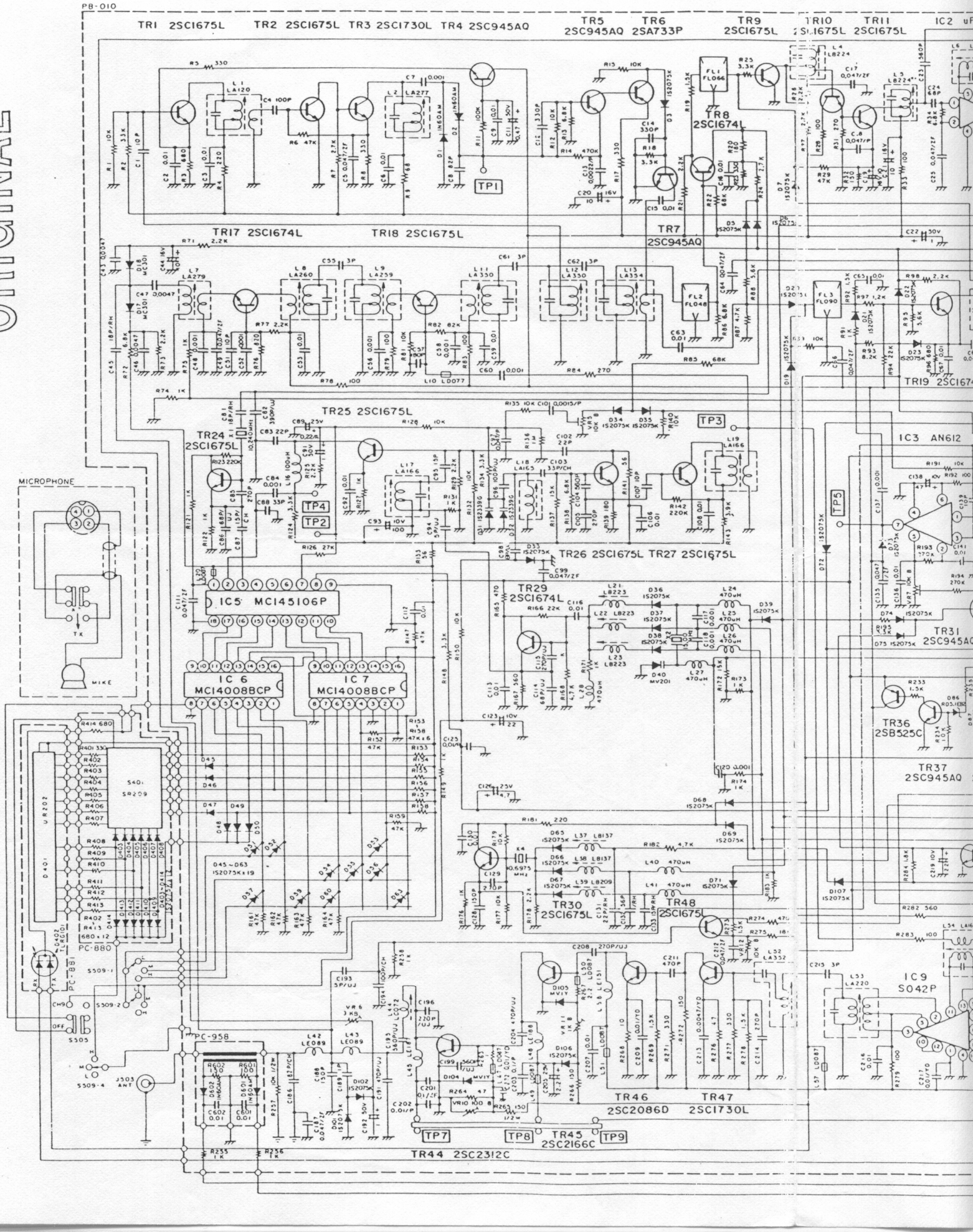
NOTES.
1 RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=KILO OHM M=MEG OHM)
2 RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED
3 CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED (P=MICRO-MICROFARAD)
4 ALL CAPACITORS TEMPERATURE CHARACTERISTIS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

DESIGN. BY	DRAWN. BY	UNIDEN NO.	MODEL NO.
		UT-847	JACKSON
CHECK. BY	APPROV. BY	87.12.14	TITLE: SCHEMATIC DIAGRAM
		DRAWING NO. E12-2108	REV. MARK

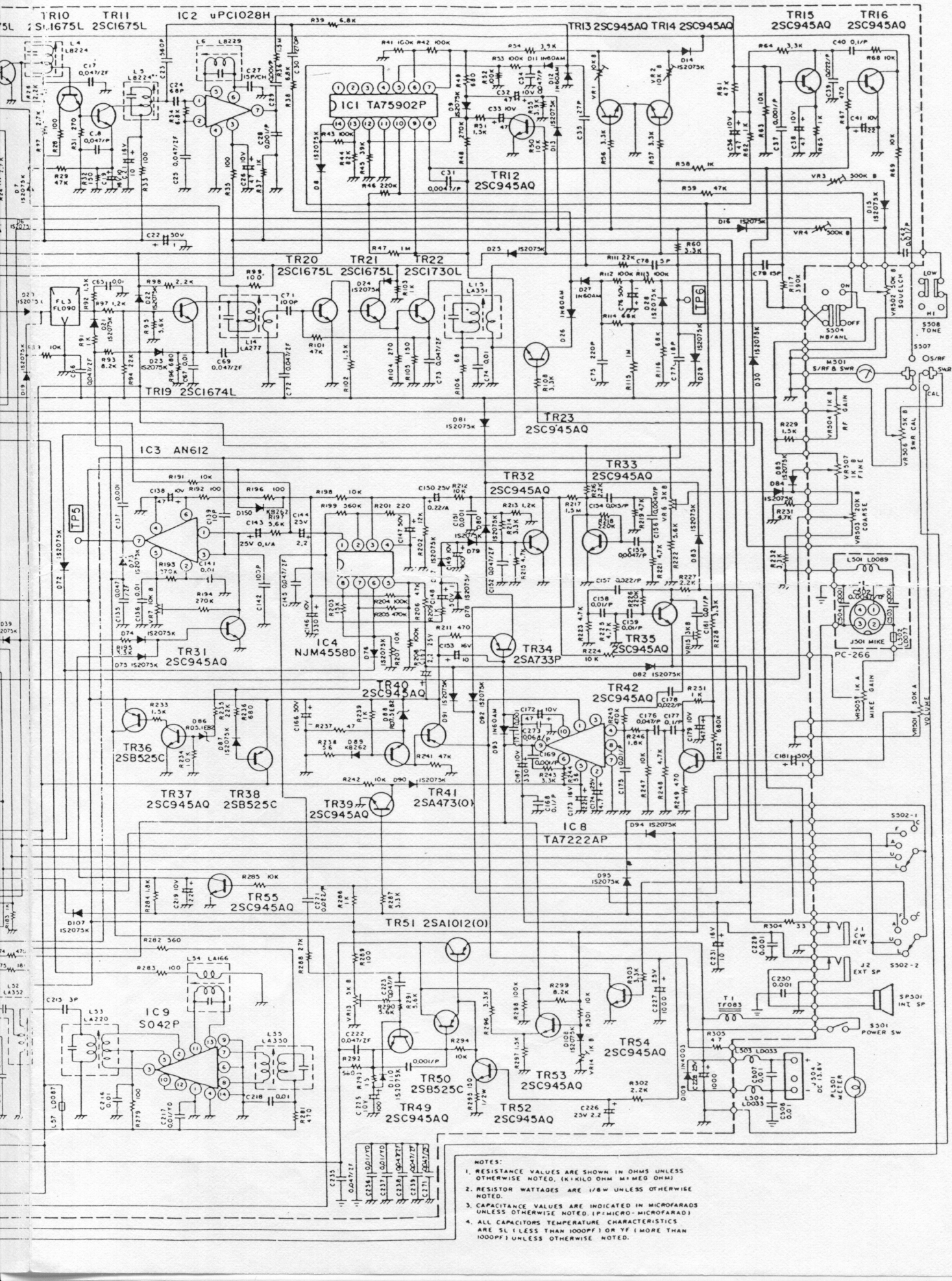
UNIDEN CORP.

CSI FRANCE

ORIGINAL



SS-360

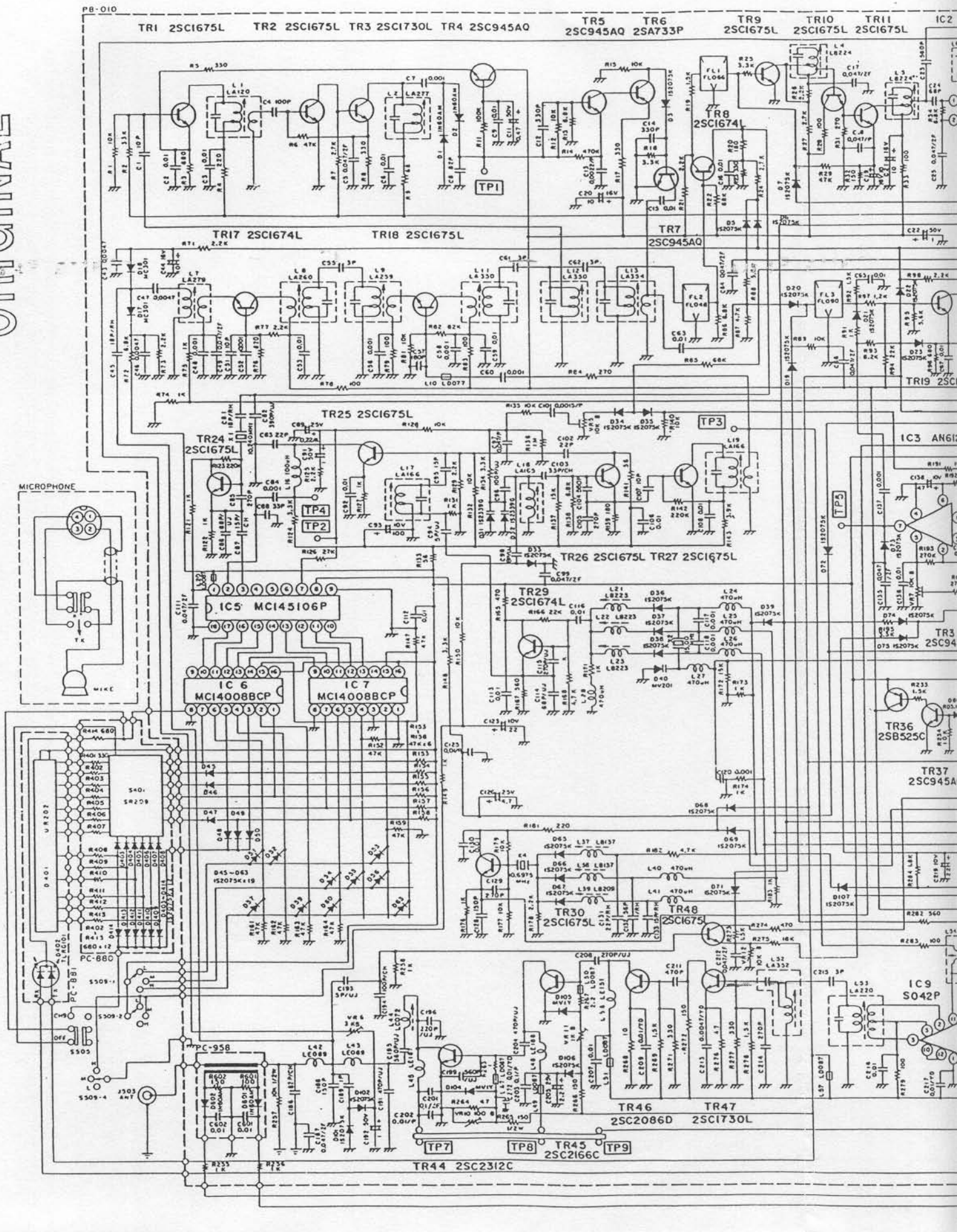


NOTES:

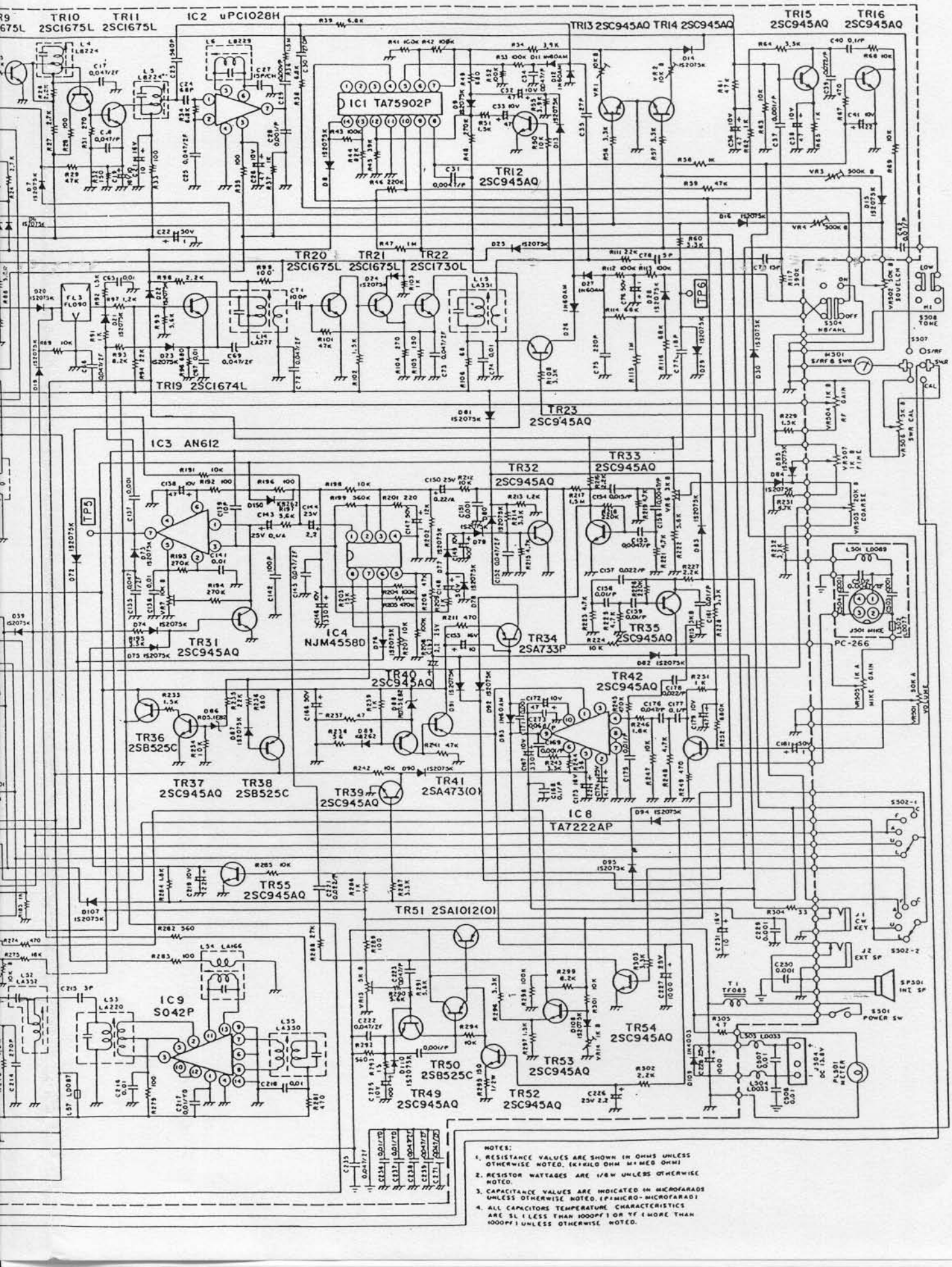
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K: KILO OHM M: MEG OHM)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED. (P: MICRO-MICROFARAD)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

PRESIDENT

ORIGINAL



RICHARD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IC3 AN612
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TR36 2SB525C
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TR38 2SB525C
TR39 2SC945AQ
TR41 2SA473(O)
IC8 TA7222AP
TR55 2SC945AQ
TR51 2SA1012(O)
IC9 S042P
TR50 2SB525C
TR49 2SC945AQ
TR53 2SC945AQ
TR52 2SC945AQ
TR54 2SC945AQ
TP5
TP6
PC-266
NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=KILO OHM M=MEG OHM)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICROFARAD)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

PC 893 STALKER 9F DX

TR6 2SA733P TR8 2SC1674L TR9 2SC1675L IC2 uPC1028H

TR1 2SC1675L TR2 2SC1675L TR32SC1730 TR4 2SC945AQ TR5 2SC945AQ TR10 2SC1730L TR11 2SC945AQ TR13 TR14 2SC945AQ

1= SCREEN
2= AUDIO
3= TX
4= RX

TX

IC 1 NJM2902N

TR7 2SC945AQ

TR14 2SC1674L TR15 2SC1675L TR16 2SC1674L

TR17 2SC1675L TR18 2SC1675L TR19 2SC1730L TR20 2SC945AQ

TR21 2SC1675L TR22 2SC1675L TR23 2SC1675L

TR28 2SC945AQ TR30 2SC945AQ TR32 2SA733P

IC3 AN612

TR33 2SC945AQ

TR24 2SC1675L TR26 2SC1675L TR27 2SC945AQ TR29 2SC945LQ TR31 2SC945AQ

IC4 MB8719

TR35 2SB525C TR37 2SB 52 5C TR36 2SC945AQ TR38 2SC945AQ TR539 2SA473 (0) TR40 2SC945AQ

IC507 uPC1182H

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IC301 MC14008BCP IC302 MC14008BCP

CHANNEL SELECTOR

TR301 2SC945AQ

UK 27/81 BOARD B 701 PR–023

B 351 PC – 897 B301 PB-024

RE DRAWN BY DZ63 OLDHAM UK OCT 2005

Edited by Rick Jackson EURO RADIO CO SEP 2006

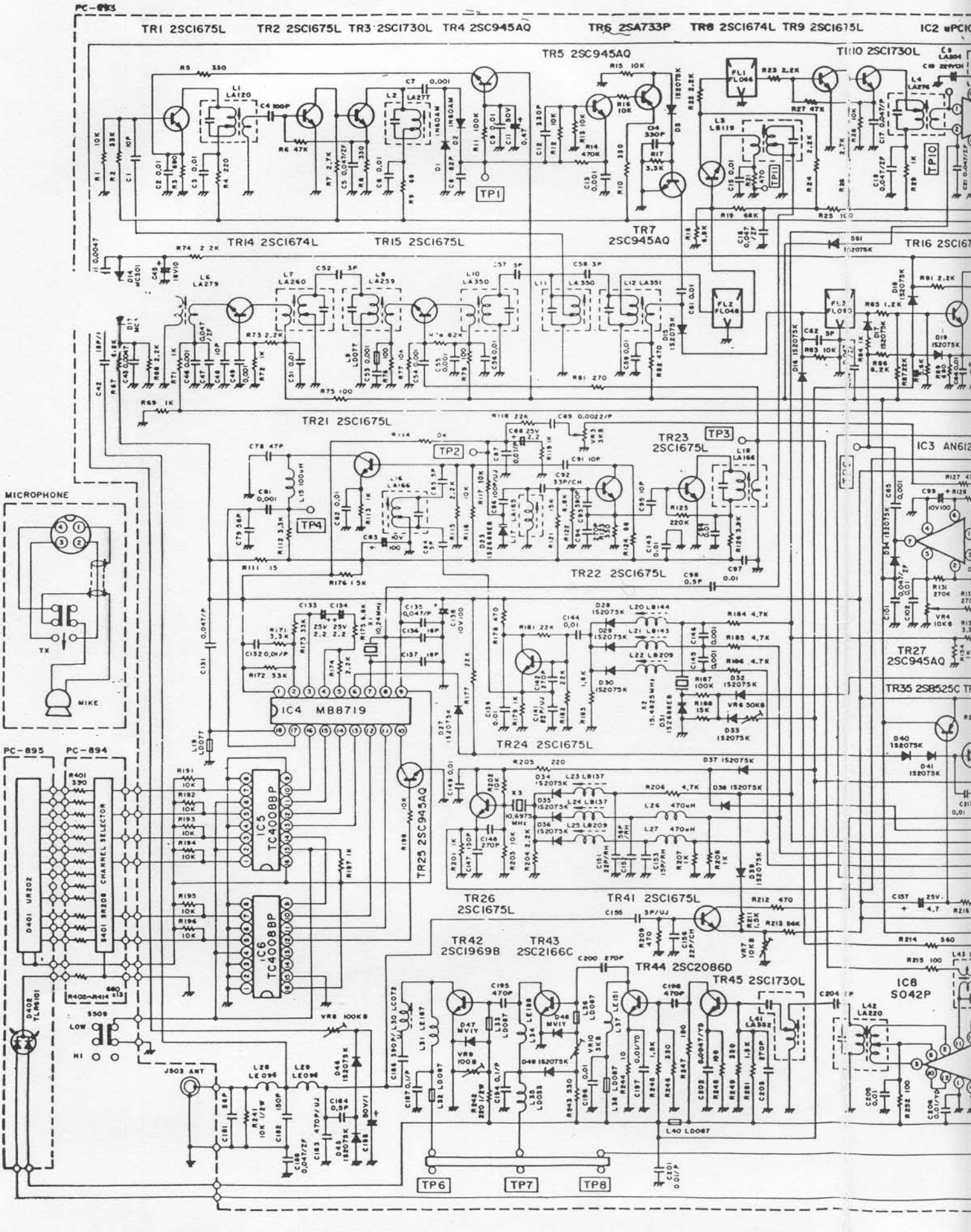
Meter lamp

IN60AM D 1,2,5,9,10 IS2075K or IN4148 D 3,4,6,7,8,11,15,16,17,18,19,20,21,22,24, 26,27,28,29,30,31,32,32,34,35,37,38,39,40,41,43, 45,46, 51,57,147,252,253,261

NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=10^3 OHMS M=10^6 OHMS)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED.(P=MICRO-MICROFARADS)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE "L" (LESS THAN 1000PF) OR "F" (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

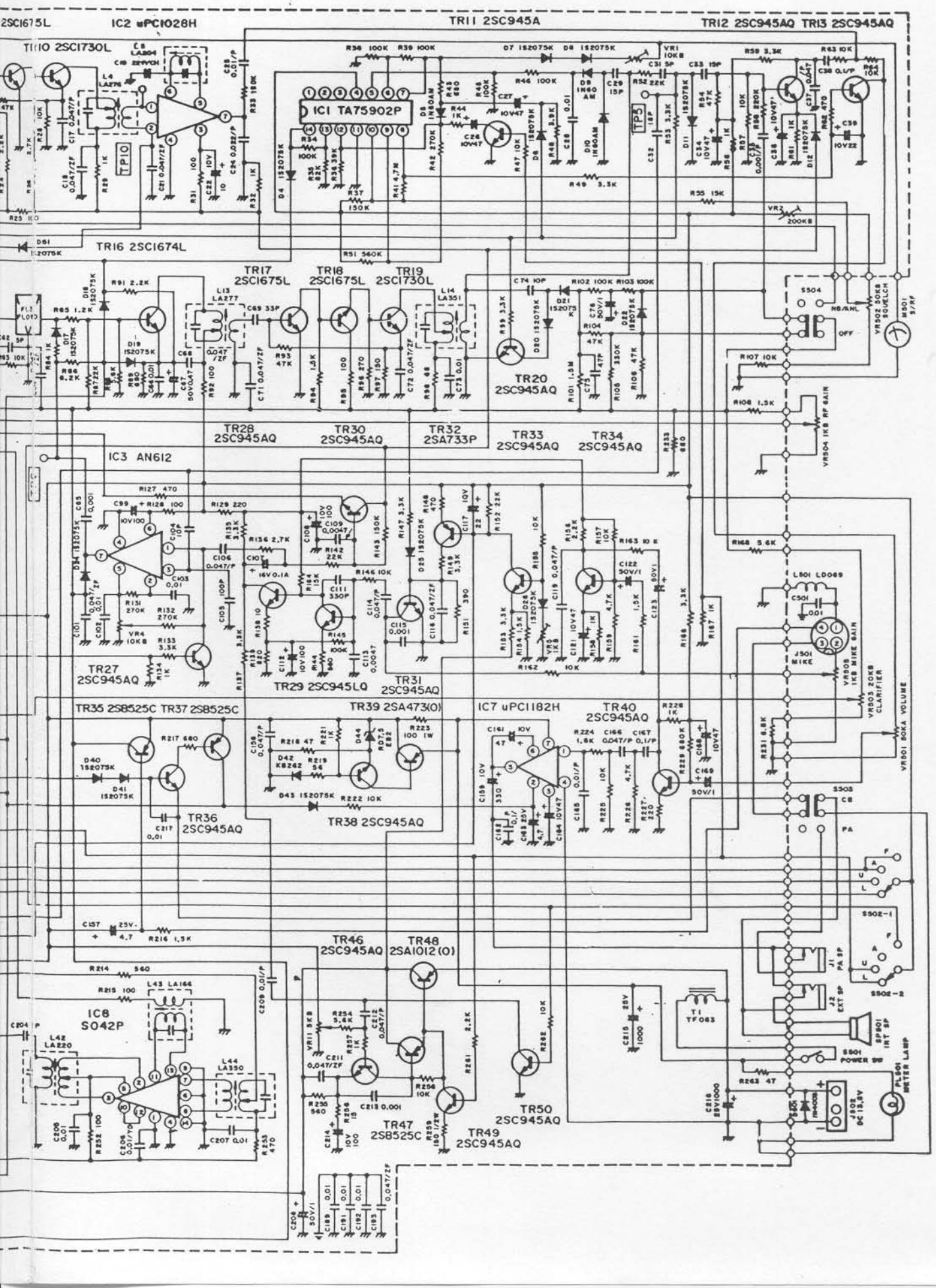
CS IMPORT
Zone Industrielle - B.P. 36
34540 BALARUC
Tél.(67) 53.22.88 - télex: 490 534 F

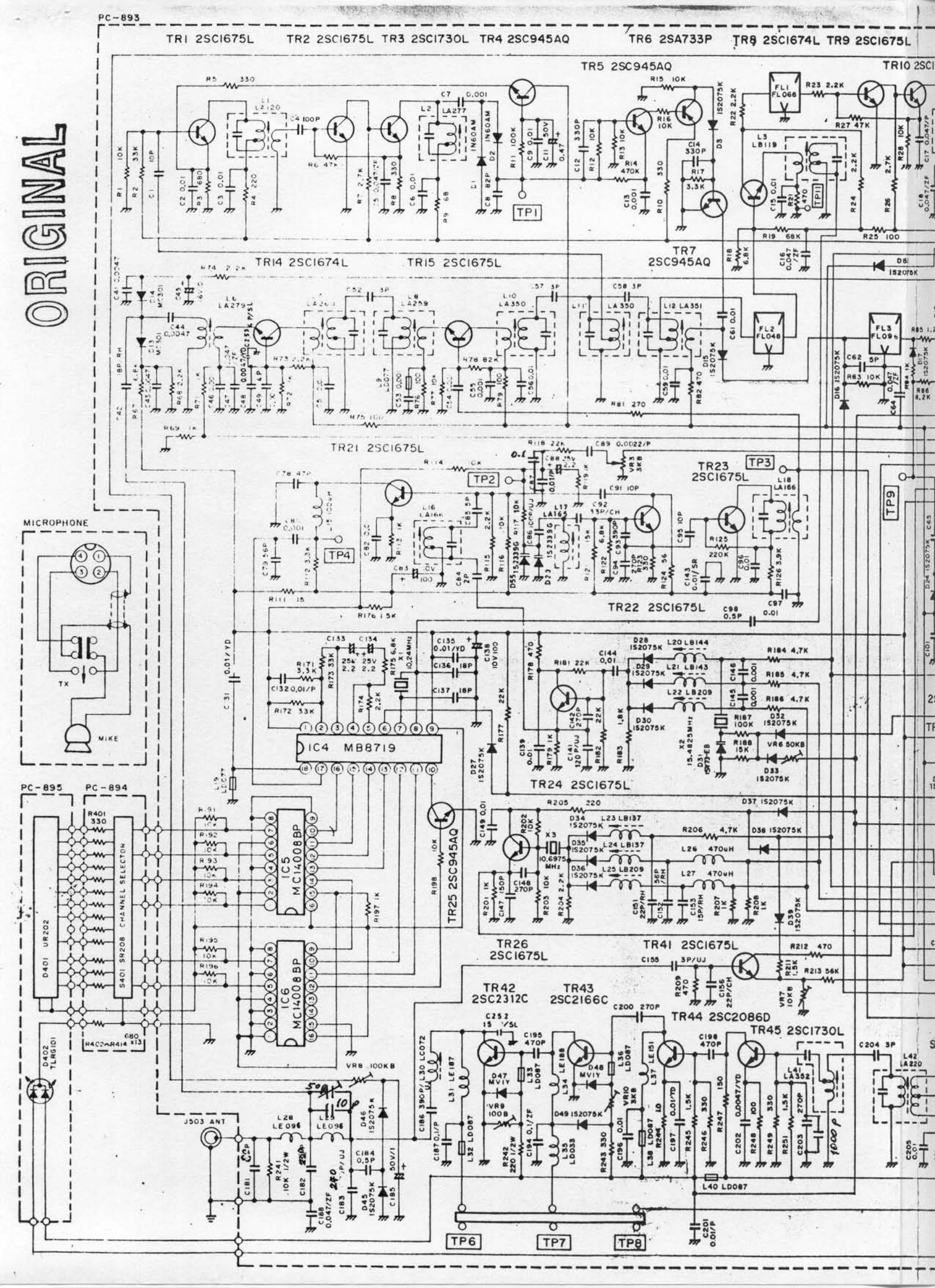
14. CIRCUIT DIAGRAM (GEN



PRESIDENT McKinley. FM 1981

DIAGRAM (GENERAL)

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TR43 2SC2166C
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TR45 2SC1730L
IC4 MB8719
IC5 MC14008BP
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MICROPHONE
TX
MIKE
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PC-894
CHANNEL SELECTOR
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TP2
TP3
TP4
TP6
TP7
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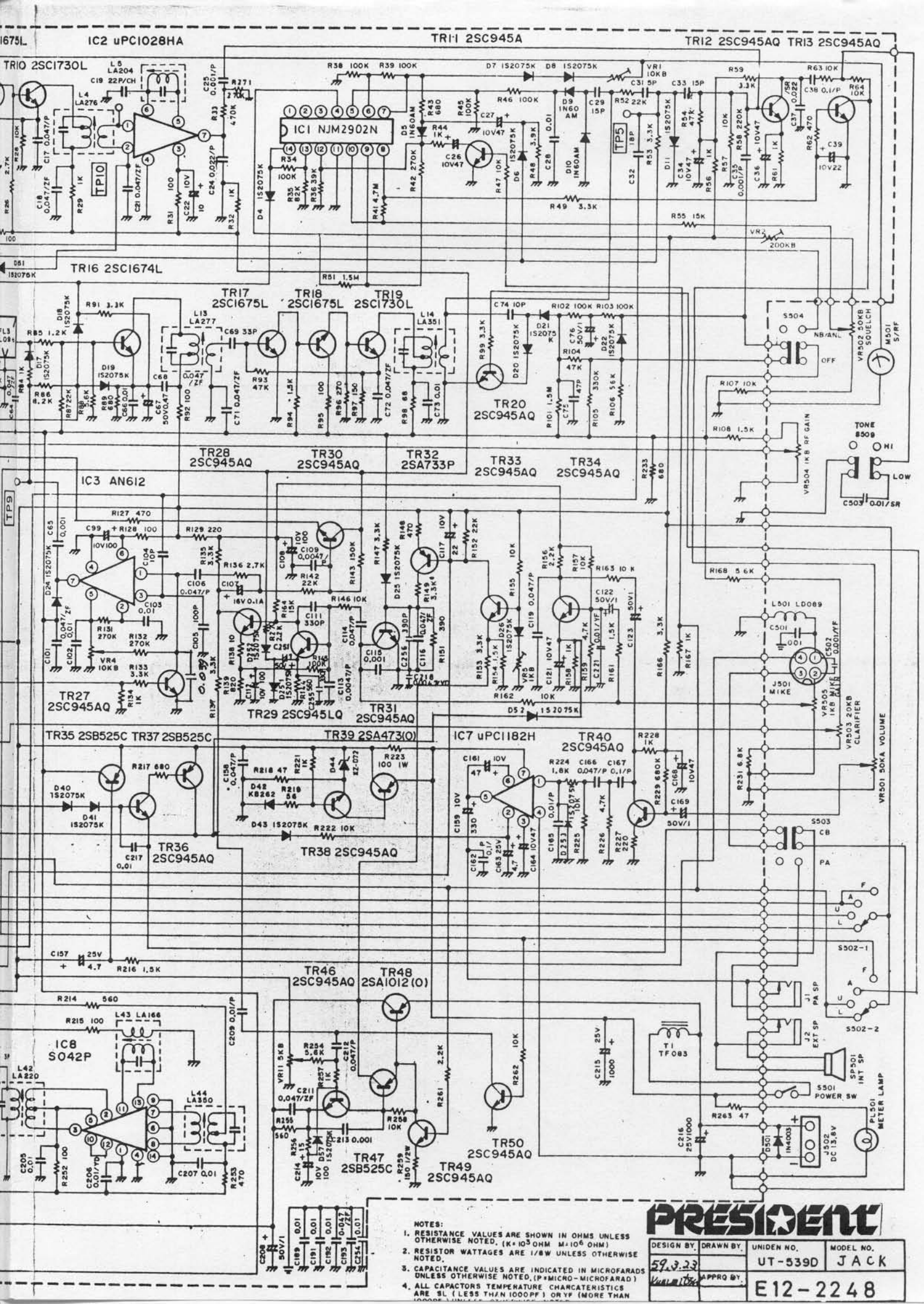
TP9



NOTES:

1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=10^3 OHM M=10^6 OHM)
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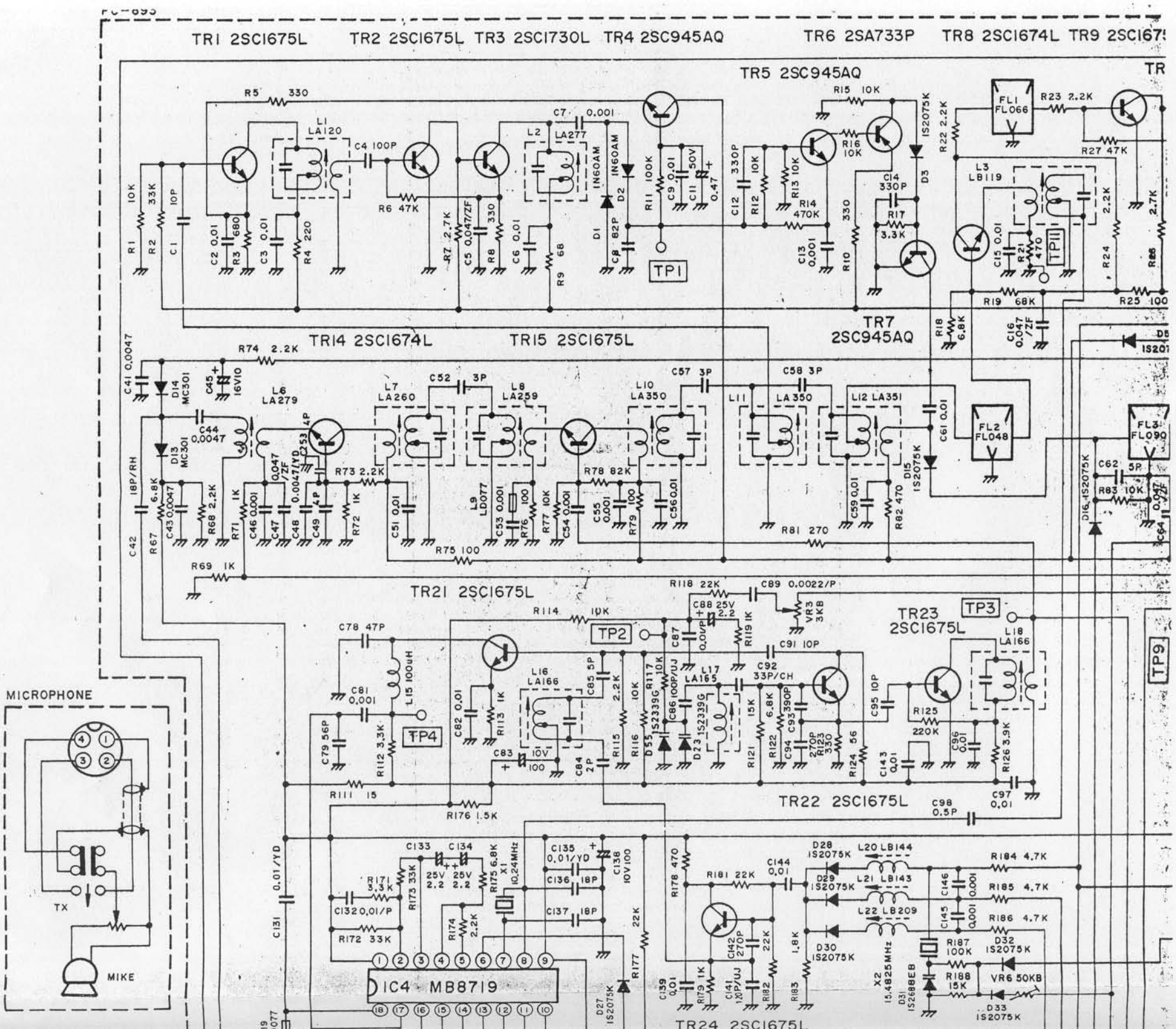
4. ALL CAPACTORS TEMPERATURE CHARCATERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN

PRESIDENT

DESIGN BY.	DRAWN BY.	UNIDEN NO.	MODEL NO.
59.3.23		UT-539D	JACK
	APPRO BY.	E12-2248	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L10 LA350
L11 LA350
L12 LA351
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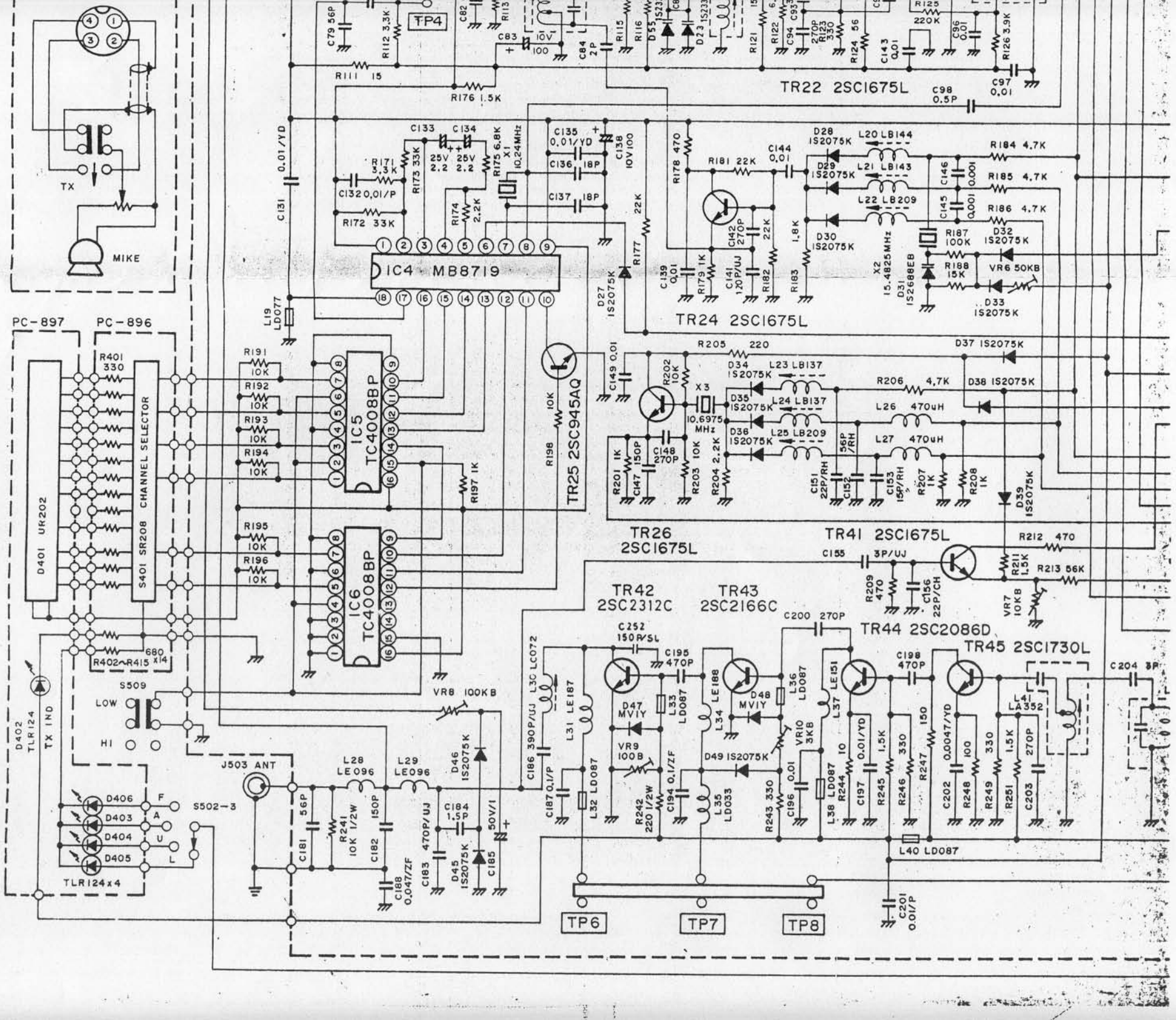
X2 15.4825MHz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D401 UR202
S401 SR208 CHANNEL SELECTOR
R401 330
IC5 TC4008BP
IC6 TC4008BP
TR25 2SC945AQ
TR26 2SC1675L
TR41 2SC1675L
TR42 2SC2312C
TR43 2SC2166C
TR44 2SC2086D
TR45 2SC1730L
R402~R415 680 x14
S509
LOW
HI
VR8 100KB
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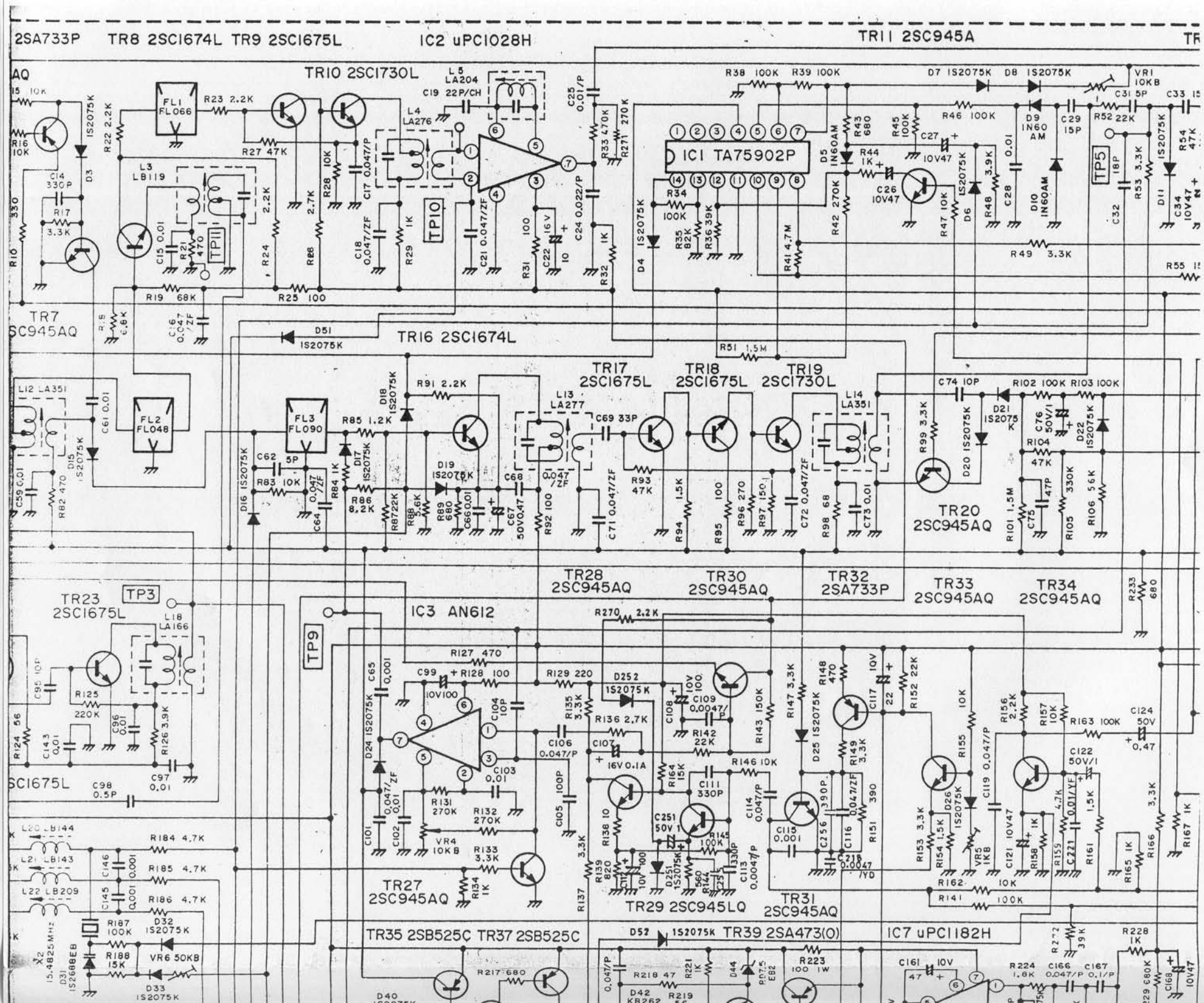
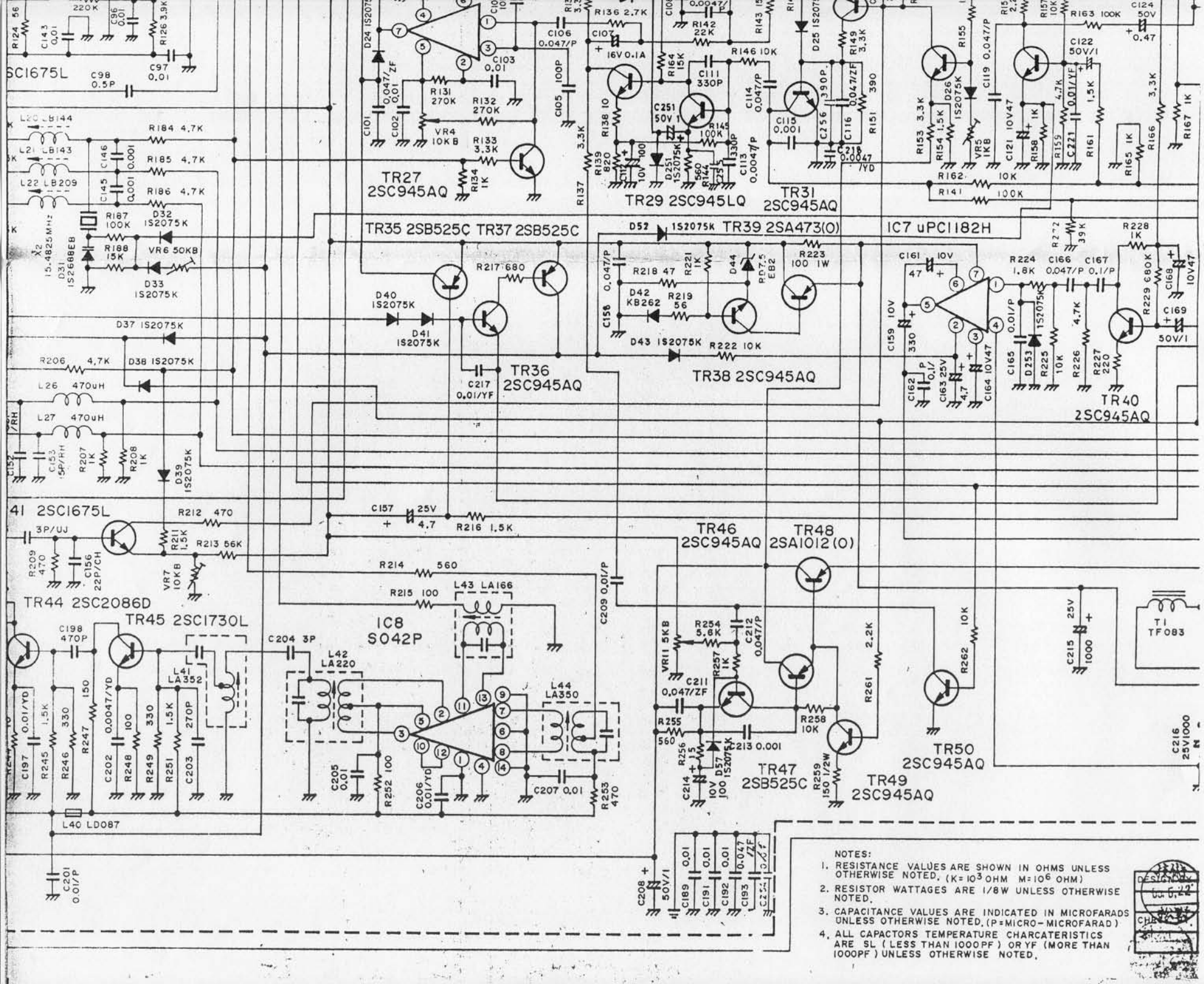
TP8


2SA733P TR8 2SC1674L TR9 2SC1675L IC2 uPC1028H
TR11 2SC945A
TR10 2SC1730L
IC1 TA75902P
TR7 2SC945AQ
TR16 2SC1674L
TR17 2SC1675L
TR18 2SC1675L
TR19 2SC1730L
TR20 2SC945AQ
TR23 2SC1675L
IC3 AN612
TR27 2SC945AQ
TR28 2SC945AQ
TR29 2SC945LQ
TR30 2SC945AQ
TR31 2SC945AQ
TR32 2SA733P
TR33 2SC945AQ
TR34 2SC945AQ
TR35 2SB525C
TR37 2SB525C
TR39 2SA473(O)
IC7 uPC1182H
FL1 FL066
FL2 FL048
FL3 FL090
TP3
TP5
TP9
TP10
TP11
VR1 10KB
VR4 10KB
VR5 1KB
VR6 50KB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TR29 2SC945LQ
TR31 2SC945AQ
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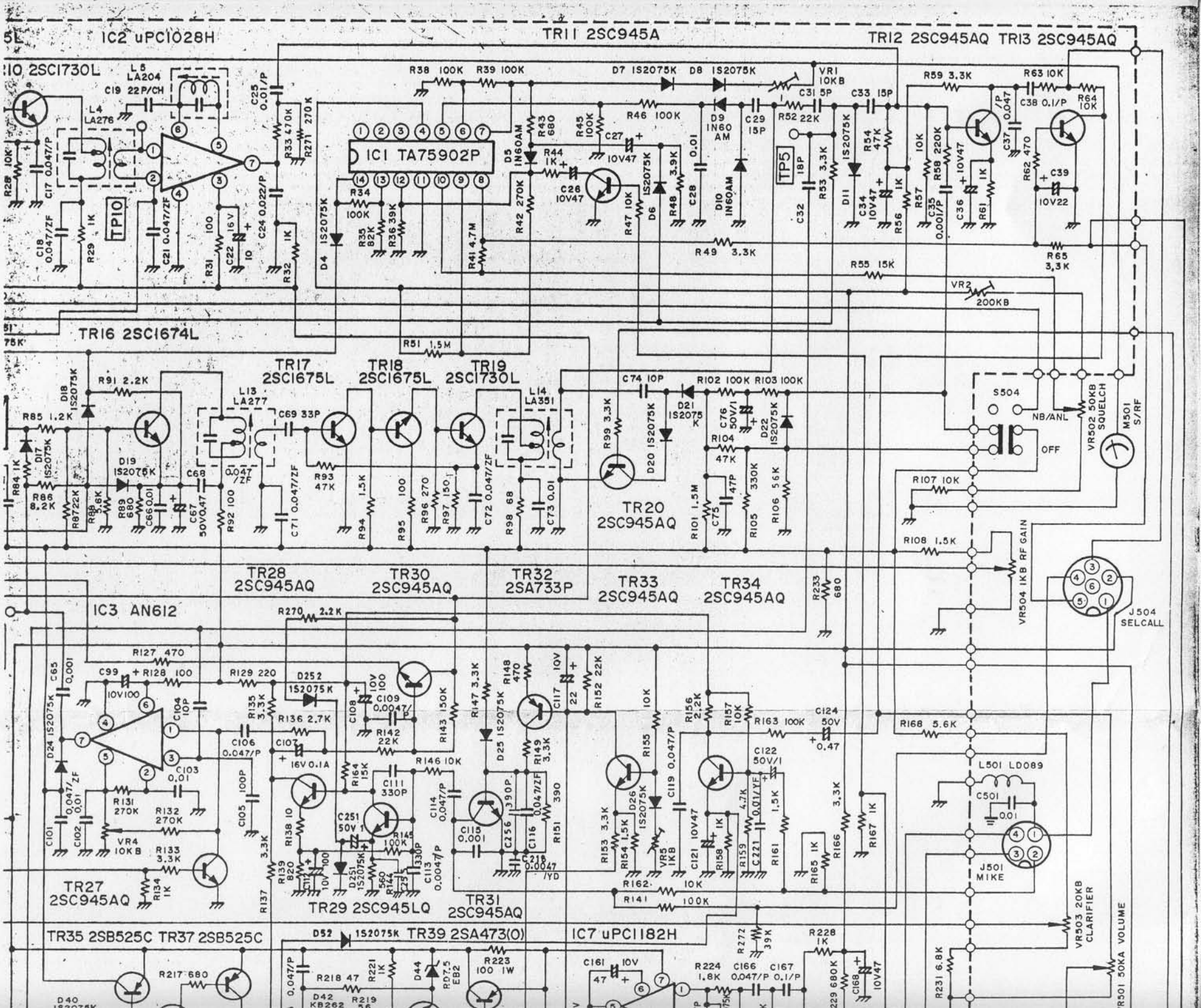
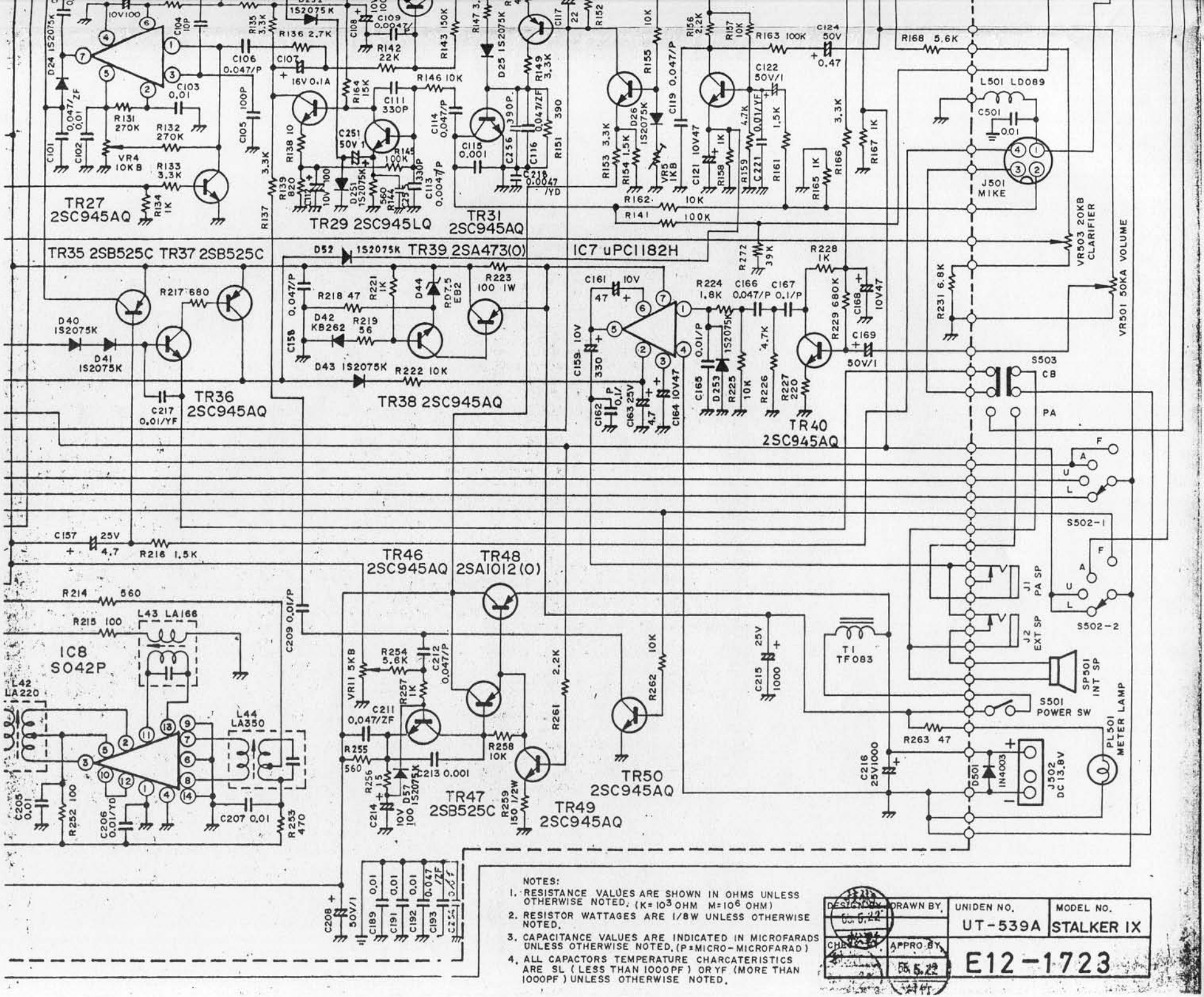
TR37 2SB525C
TR39 2SA473(0)
IC7 uPC1182H
TR36 2SC945AQ
TR38 2SC945AQ
TR40 2SC945AQ
TR41 2SC1675L
TR44 2SC2086D
TR45 2SC1730L
IC8 S042P
TR46 2SC945AQ
TR48 2SA1012(0)
TR47 2SB525C
TR49 2SC945AQ
TR50 2SC945AQ
T1 TF083
L40 LD087
NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=10³ OHM M=10⁶ OHM)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICROFARAD)
4. ALL CAPACTORS TEMPERATURE CHARCATERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

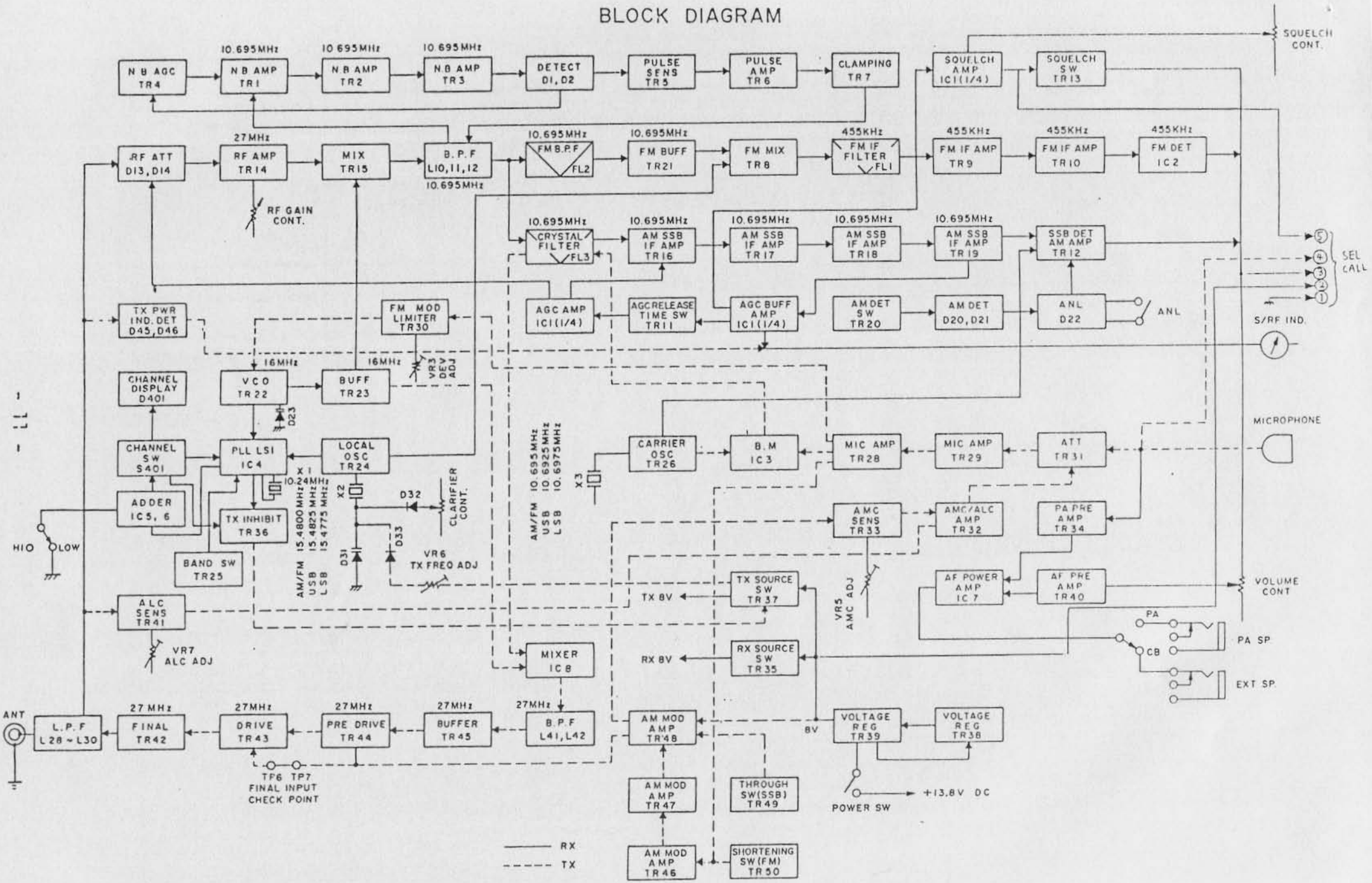

IC2 uPC1028H
TR11 2SC945A
TR12 2SC945AQ TR13 2SC945AQ
TR10 2SC1730L
L5 LA204
L4 LA276
IC1 TA75902P
TP10
TP5
VR1 10KB
VR2 200KB
TR16 2SC1674L
TR17 2SC1675L
TR18 2SC1675L
TR19 2SC1730L
L13 LA277
L14 LA351
TR20 2SC945AQ
S504
NB/ANL
OFF
VR502 50KB SQUELCH
M501 S/RF
R107 10K
R108 1.5K
VR504 1KB RF GAIN
J504 SELCALL
TR28 2SC945AQ
TR30 2SC945AQ
TR32 2SA733P
TR33 2SC945AQ
TR34 2SC945AQ
IC3 AN612
TR27 2SC945AQ
TR29 2SC945LQ
TR31 2SC945AQ
L501 LD089
J501 MIKE
VR503 20KB CLARIFIER
VR501 50KA VOLUME
TR35 2SB525C
TR37 2SB525C
TR39 2SA473(O)
IC7 uPC1182H



NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K= 10^3 OHM M= 10^6 OHM)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICROFARAD)
4. ALL CAPACTORS TEMPERATURE CHARCATERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

DESIGN BY	DRAWN BY	UNIDEN NO.	MODEL NO.
CHK BY	APPRO BY	UT-539A	STALKER IX
		E12-1723	

BLOCK DIAGRAM



PC-833

NOTES
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=10^3 OHM, M=10^6 OHM)
2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE SPACIFIED.
3. CAPACITANCE VALUES ARE INDICATED IN MICROFARDS UNLESS OTHERWISE NOTED. (P=PICOFARDS)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SL(LESS THAN 1000PF) OR Z5(MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

MICROPHONE

MIKE

PB-007

PB-008

PB-009

PB-006

PC-266

TR1 2SC1675L TR2 2SC1675L TR3 2SC1730L TR4 2SC945AQ TR5 2SC945AQ TR6 2SA733P TR7 2SC945AQ

TR8 2SC945AQ TR9 2SC945AQ TR10 2SC945AQ TR11 2SC945AQ

IC1 TA75902P

TR12 2SC1674L TR13 2SC1675L TR14 2SC1674L TR15 2SC1675L TR16 2SC1675L TR17 2SC1730L TR18 2SC945AQ

TR19 2SC1675L TR20 2SC1675L TR21 2SC1675L TR22 2SC1675L

IC2 uPD2824C

TR23 2SC1675L TR24 2SC945AQ

IC3 AN612

TR25 2SC945AQ TR26 2SC1312F TR27 2SC945AQ TR28 2SA733P TR29 2SC945AQ TR30 2SC945AQ

TR31 2SB525C TR32 2SC945AQ TR33 2SB525C TR34 2SC945AQ (O) TR35 2SA473

IC4 uPC1182H TR36 2SC945AQ

TR37 2SC1675L TR38 2SC2312C TR39 2SC2166C TR40 2SC1973 TR41 2SC1730L

TR42 2SC945AQ TR44 2SA1012(O) TR43 2SC945AQ TR45 2SC945AQ TR46 2SC945AQ

IC5 S042P

TR401 2SC945AQ

M501 S/RF

VR502 50K-B SQUELCH

VR504 1K-B RF GAIN

VR503 20K-B CLARIFIER

VR505 1K-A MIKE GAIN

VR501 50K-A VOLUME

S404-1 NB/ANL ON OFF

S404-2 NB/ANL ON OFF

S403-1 CB PA

S403-2 CB PA

S405-1 CH 9 OFF

S405-2 OFF CH 9

S406-1 BRI DIM

S406-2 BRI DIM

S401 CHANNEL SW

S501 POWER

J1 PA SP

J2 EXT SP

SP501 INT SP

PL501 METER

J501 MIKE

J504 DC 13.8V

J505 ANT

TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8

DESIGN BY	DRAWN BY	UNIDEN NO.	MODEL NO.
		UT-524E	AX-144
CHECKED BY	APPROVED BY	TITLE	
		SCHEMATIC DIAGRAM	
		E12-1844	