2. SPECIFICATIONS AND ACCESSORIES

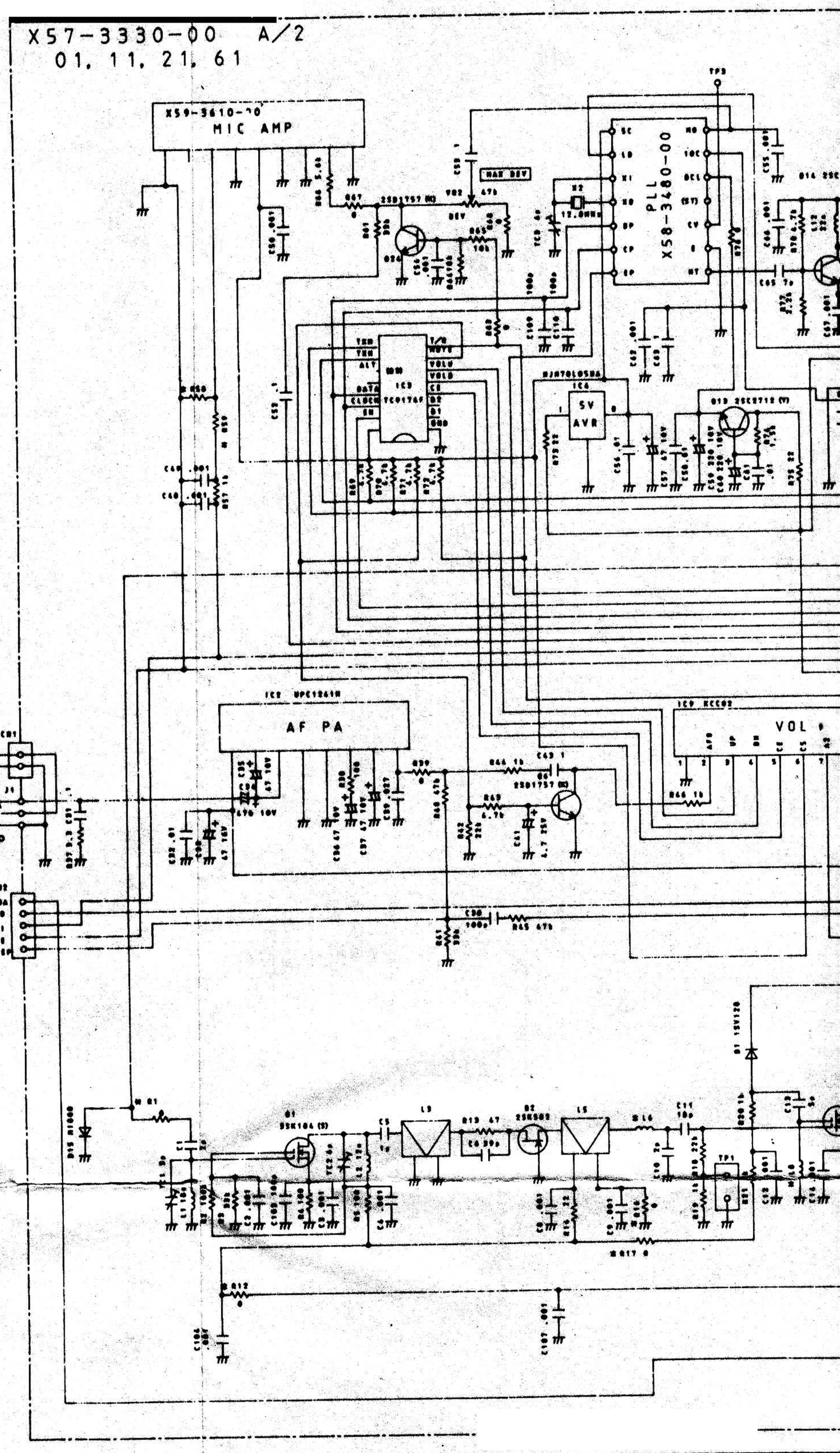
2-1. SPECIFICATIONS

Specifications		Models	TM-231A	TM-231E	TM-431A (U.S.A. version)	TM-431A/431E	TM-531A	TM-531E
General	Frequency range	[MHz]	144 to 148	144 to 146	438 to 450	430 to 440	1240 to 1300	
	Mode		F3E (FM)					
	Antenna impedance		50 Ω					
	Power requirements		13.8 VDC ±15% (11.7 to 15.8)					
	Ground		Negative					
	Frequency stability		Less than ±10 ppm				Less than ±3 ppm	
	Current drain	Transmit mode	Less than 11 A		Less than 9.5 A		Less than 5.5 A	
		Receiver mode with no signal	Less than 0.6 A					
	Operating temperature		−20 °C to +60 °C (−4 °F to +140 °F)					
	Dimensions (W×H×D) (Projection included)	[mm]	140×40×160 (5-1/2″×1-37/64″×6-19/64″) (141×42×171 (5-9/16″×1-21/32″×6-47/64″))					
	Weight	[kg]	1.2 (2.65 lbs)					
Transmitter	Output power*	HI	50 W		35 W		10 W	
		MID	10 W		10 W		—	
		LOW	Approx. 5 W		Approx. 5 W		1 W	
	Modulation		Reactance modulation					
	Spurious radiation		Less than −60 dB				Less than −50 dB	
	Maximum frequency deviation		±5 kHz					
	Audio distortion (at 60% modulation)		Less than 3% (300 to 3000 Hz)					
	Microphone impedance		500 to 600 Ω					
Receiver	Circuitry		Double conversion superheterodyne					
	Intermediate frequency	1st/2nd	10.7 MHz/455 kHz		30.825 MHz/455 kHz		59.7 MHz/455 kHz	
	Sensitivity (12 dB SINAD)		Less than 0.16 μV					
	Selectivity	−6 dB	More than 12 kHz					
		−60 dB	Less than 24 kHz				Less than 36 kHz	
	Squelch sensitivity		Less than 0.1 μV					
	Output (5% distortion)		More than 2 W across 8 Ω loads					
	External speaker impedance		8 Ω					

Notes:

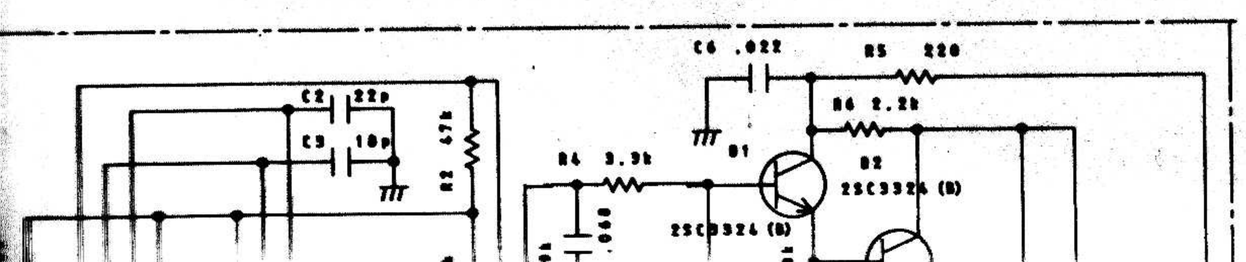
1. Circuit and ratings are subject to change without notice due to advancements in technology.
2. * Recommended duty cycle: 1 minute Transmit, 3 minutes Reception.

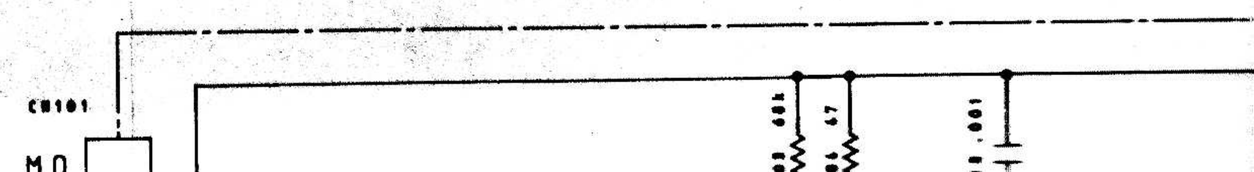
TM-431A/431E SCHEMATIC DIAGRAM

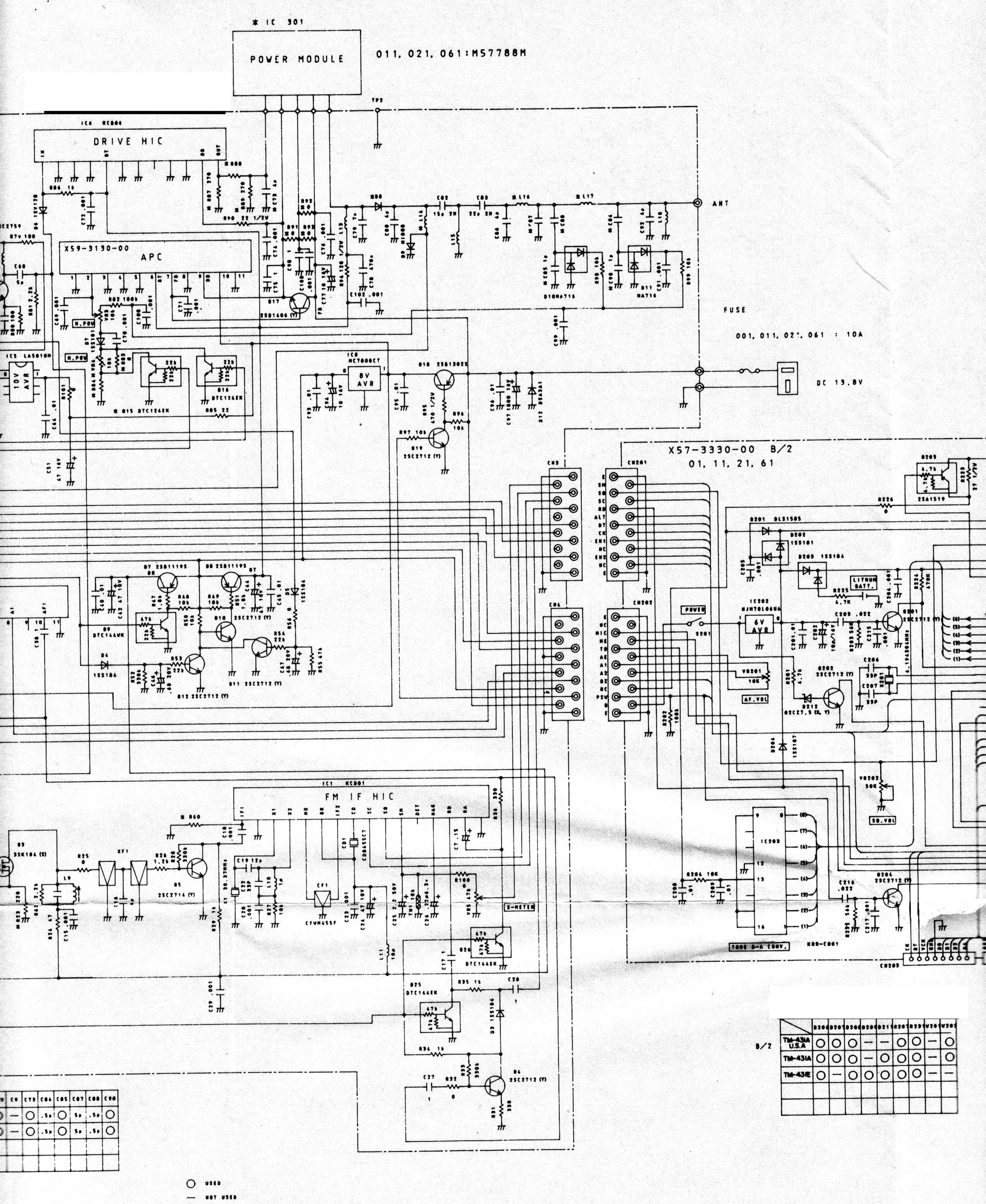


A/2

	30A	30	IC10	IC11	D2	D0	D13	D14	D15	D29	L6	L8	VR4	R1	R12	R13	R16	R17	R22	R23	R50	R59	R60	R63	R64	R67	R68	R69	R91	R92	R99
TM-431A	—	—	—	—	—	R1607	—	—	○	—	15n	39n	○	○	○	—	○	○	—	○	5.6k	2.2k	270k	—	2.2k	—	0	—	—	○	○
TM-431E	—	—	—	—	—	R1607	—	—	○	—	15n	39n	○	○	○	—	○	○	—	○	5.6k	0	270k	—	2.2k	—	0	—	—	○	○







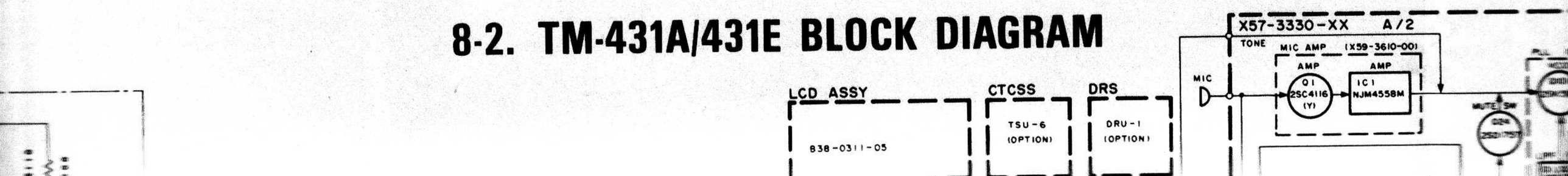
	C9	C73	C84	C85	C87	C88	C90
	—	○	.5p	○	5p	.5p	○
	—	○	.5p	○	5p	.5p	○

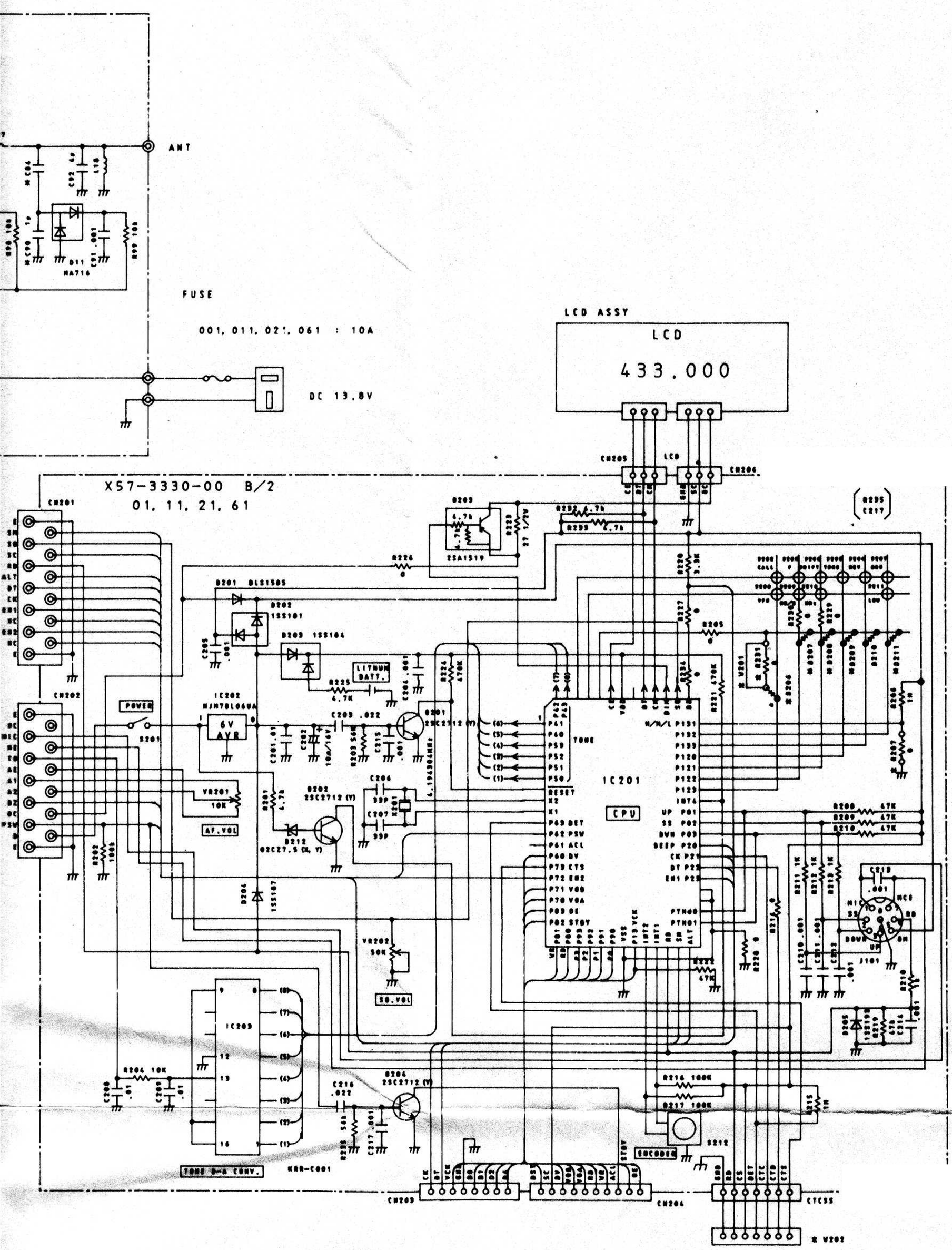
○ USED
— NOT USED

B/2

	D206	D207	D208	D209	D211	R207	R231	VR201	VR202
TM-431A U.S.A	○	○	○	—	—	○	○	—	○
TM-431A	○	○	○	—	○	○	○	—	○
TM-431E	○	—	○	○	○	○	○	—	—

8-2. TM-431A/431E BLOCK DIAGRAM





	D206	D207	D208	D209	D211	R207	R223	V201	V202
B/2 TM-431A U.S.A	○	○	○	—	—	○	○	—	○
TM-431A	○	○	○	—	○	○	○	—	○
TM-431E	○	—	○	○	○	○	○	—	—

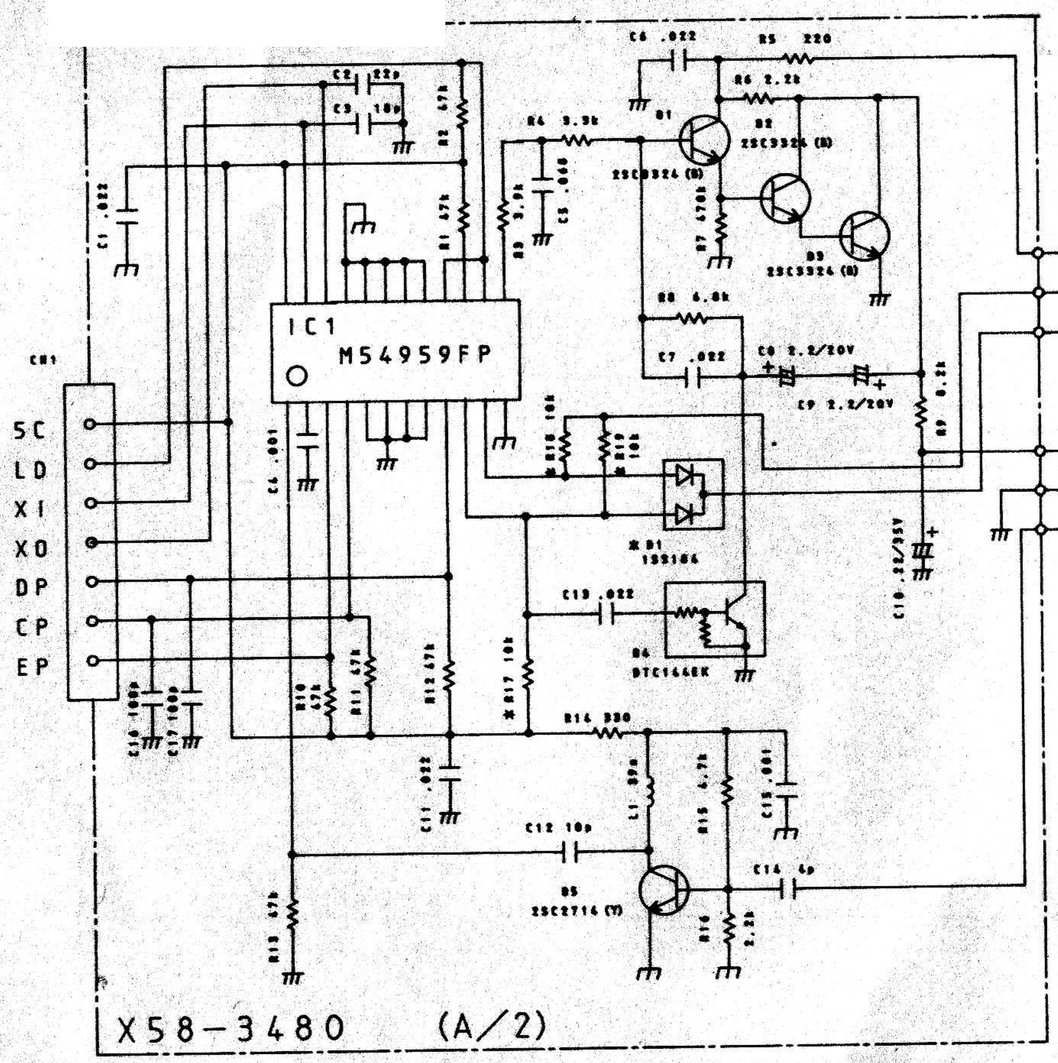
○ USED
— NOT USED

DIAGRAM

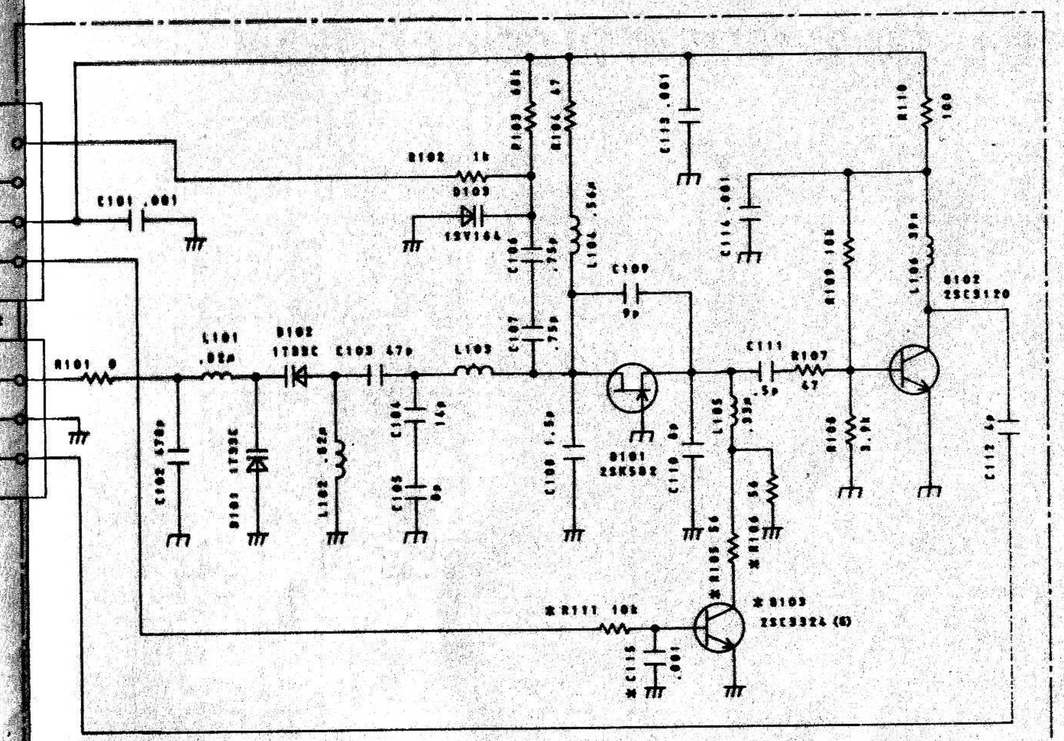
A/2

	Q6	J2	IC1	IC1	Q5	D6	D13	D14	D15	D22	L4	L5	V94	D1	R13	R15	R16	D17	D22	D23	D30	D31	D40	D53	D54	D57	D58	D59	D91	D92	D99	C9	C73	C84	C85	C87	C88	C90
TH-45HA	—	—	—	—	—	R1407	—	—	○	—	15k	33k	○	○	○	—	○	○	—	○	3.9k	2.2k	2700k	—	2.2k	—	*	—	—	○	○	—	○	.5p	○	5p	.5p	○
TH-45HC	—	—	—	—	—	R1407	—	—	○	—	15k	33k	○	○	○	—	○	○	—	○	5.6k	*	2700k	—	2.2k	—	*	—	—	○	○	—	○	.5p	○	5p	.5p	○

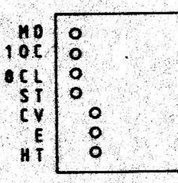
○ USED
— NOT



X58-3480 (A/2)



X58-3480 (B/2)



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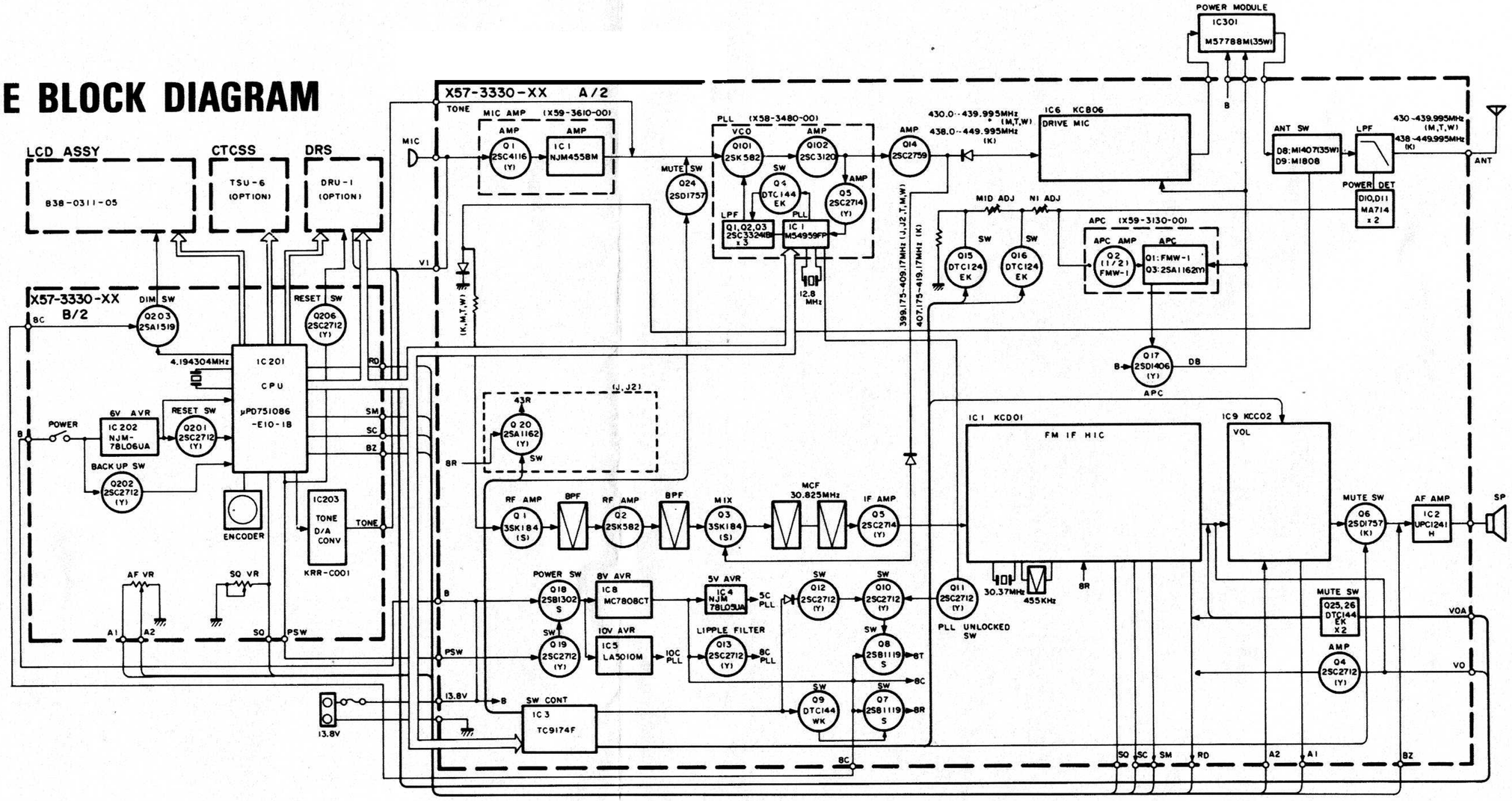
0-00	—	—	○	—	—	—	○	—	—	—
	D1	D103	R17	R18	R19	R105	R106	R111	C115	R13

8-2. TM-431A/431E BLOCK DIAGRAM



Note:

Circuit is subject to change without notice due to advancements in technology.