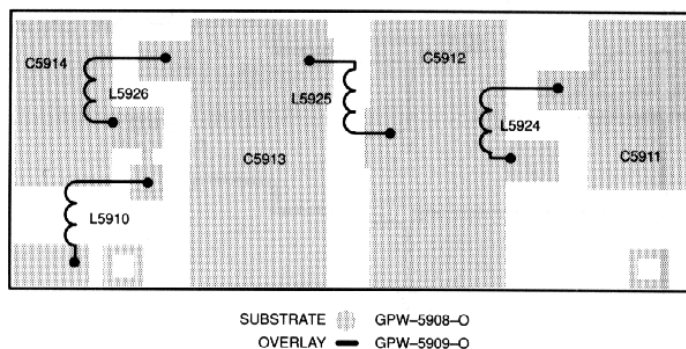
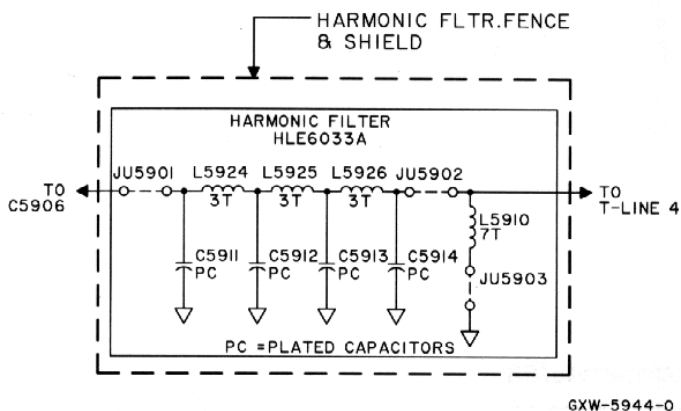


CIRCUIT SCHEMATICS

Pursuant to 47CFR 2.1033(c)10

<u>EXHIBIT</u>	<u>DESCRIPTION</u>
5A	RF POWER AMPLIFIER/HARMONIC FILTER
5B	EXCITER



HARMONIC FILTER BOARD

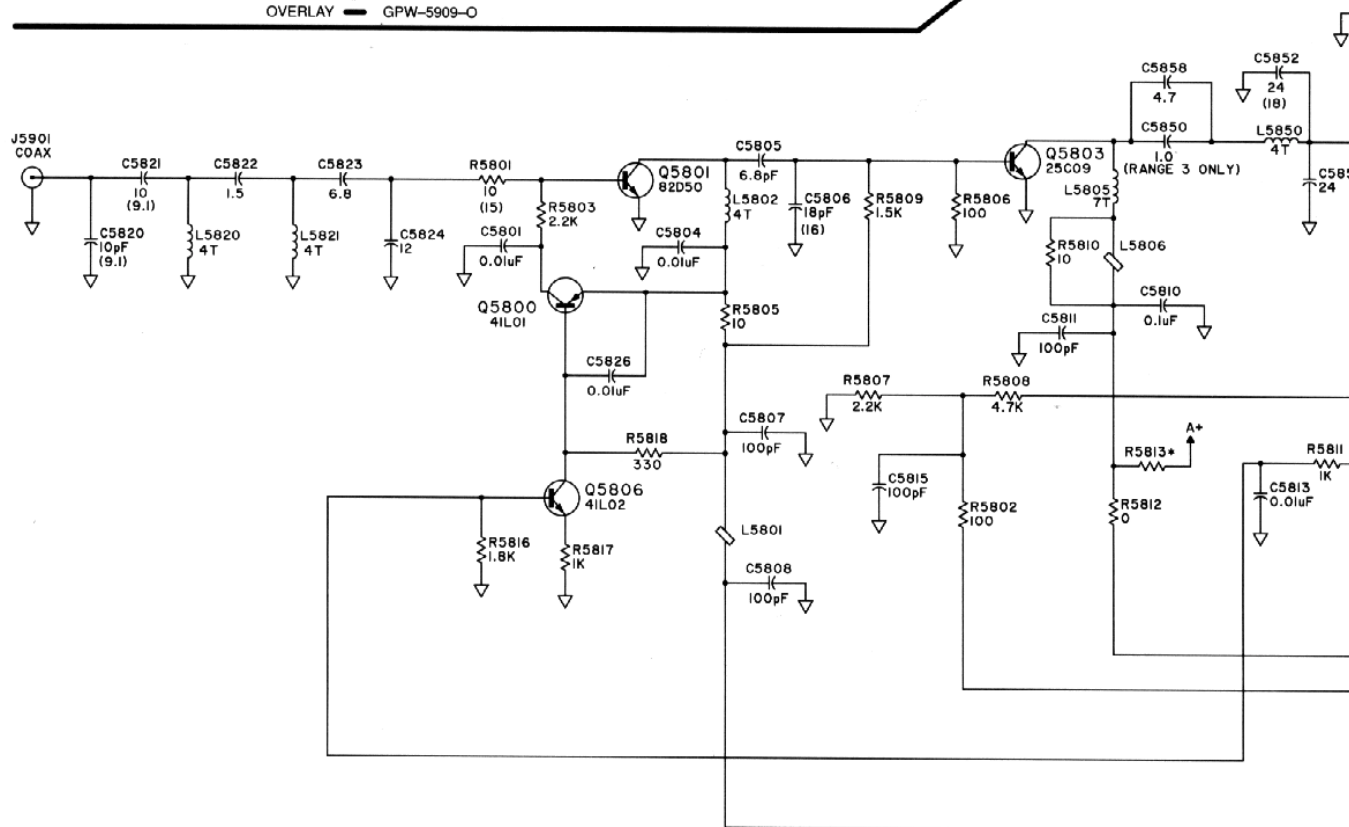
parts list

HLE6033A Harmonic Filter Hybrid UHF Range 3 & Range 4

MXW-5907-

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
connector receptacle		
J5901-J5903	07-80299L01	frame lead, j-strap
coil, RF		
L5910	24-80091G36	7 turns, airwound
L5924	24-80090G03	3 turns, airwound
L5925	24-80090G04	3 turns, airwound
L5926	24-80090G03	3 turns, airwound

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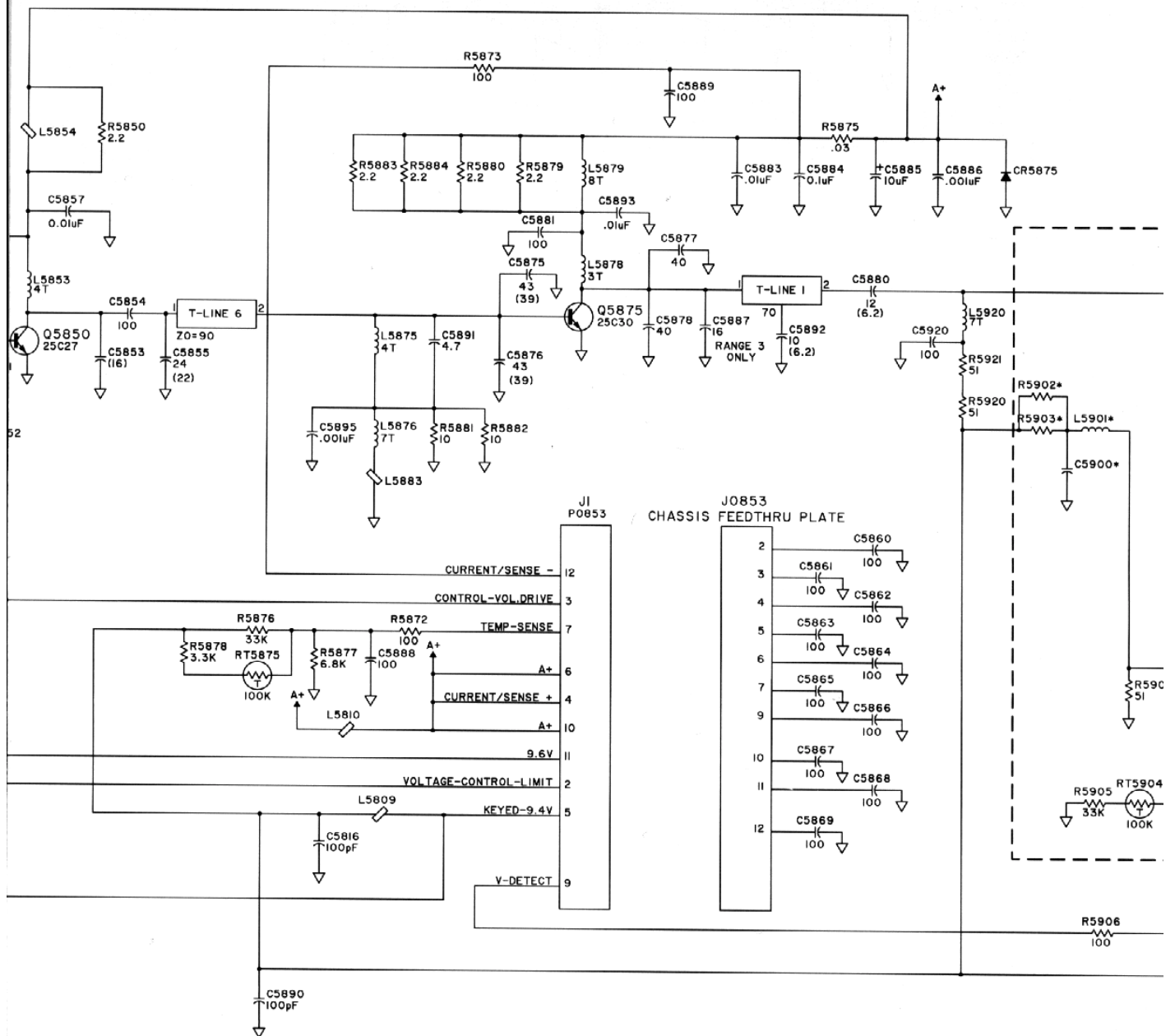
Schematic, Circuit Board Diagrams, and Parts Lists
for HLE6043B (Range 3) and HLE6044B (Range 4)
Spectra 40-Watt Power Amplifier

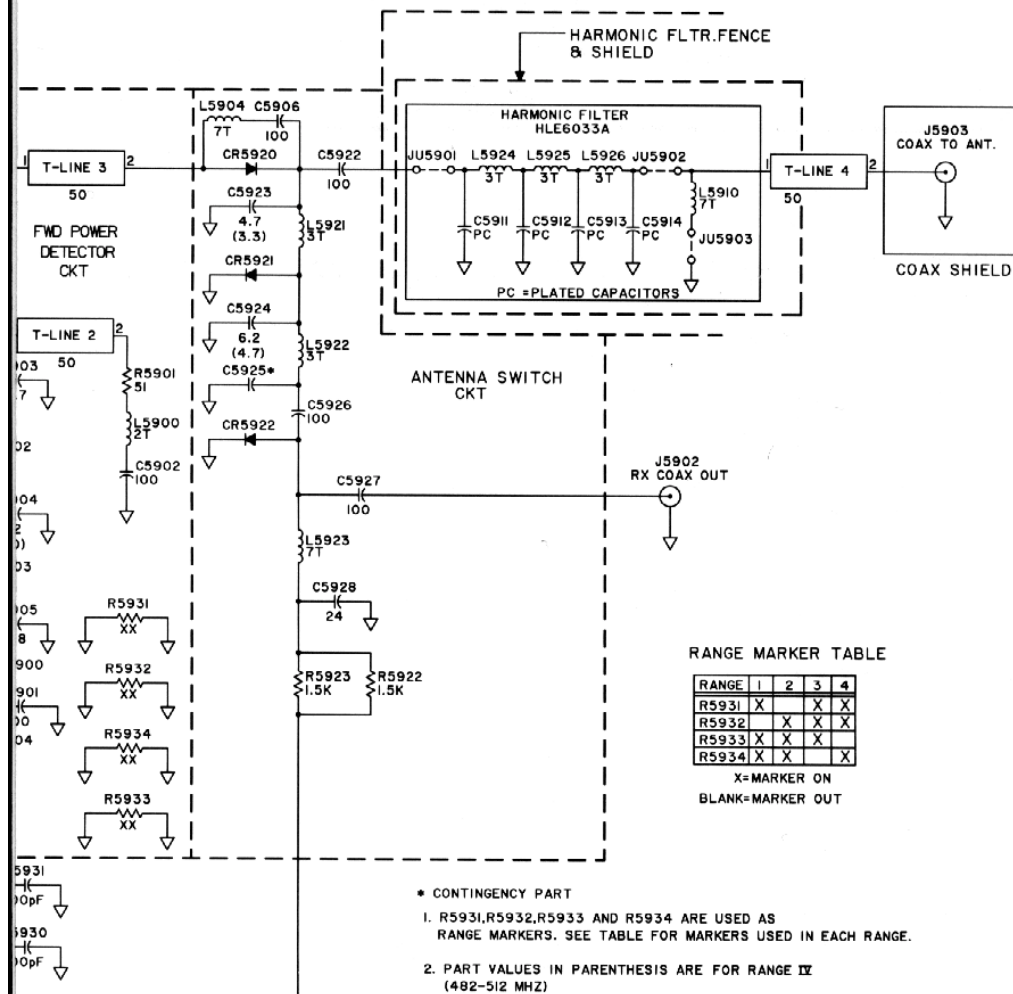
PW-6533-A

(Sheet 1 of 2)

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HLE6043B (RANGE 3) AND HLE6044B (RANGE 4) 40-WATT UHF POWER AMPLIFIER SCHEMATIC

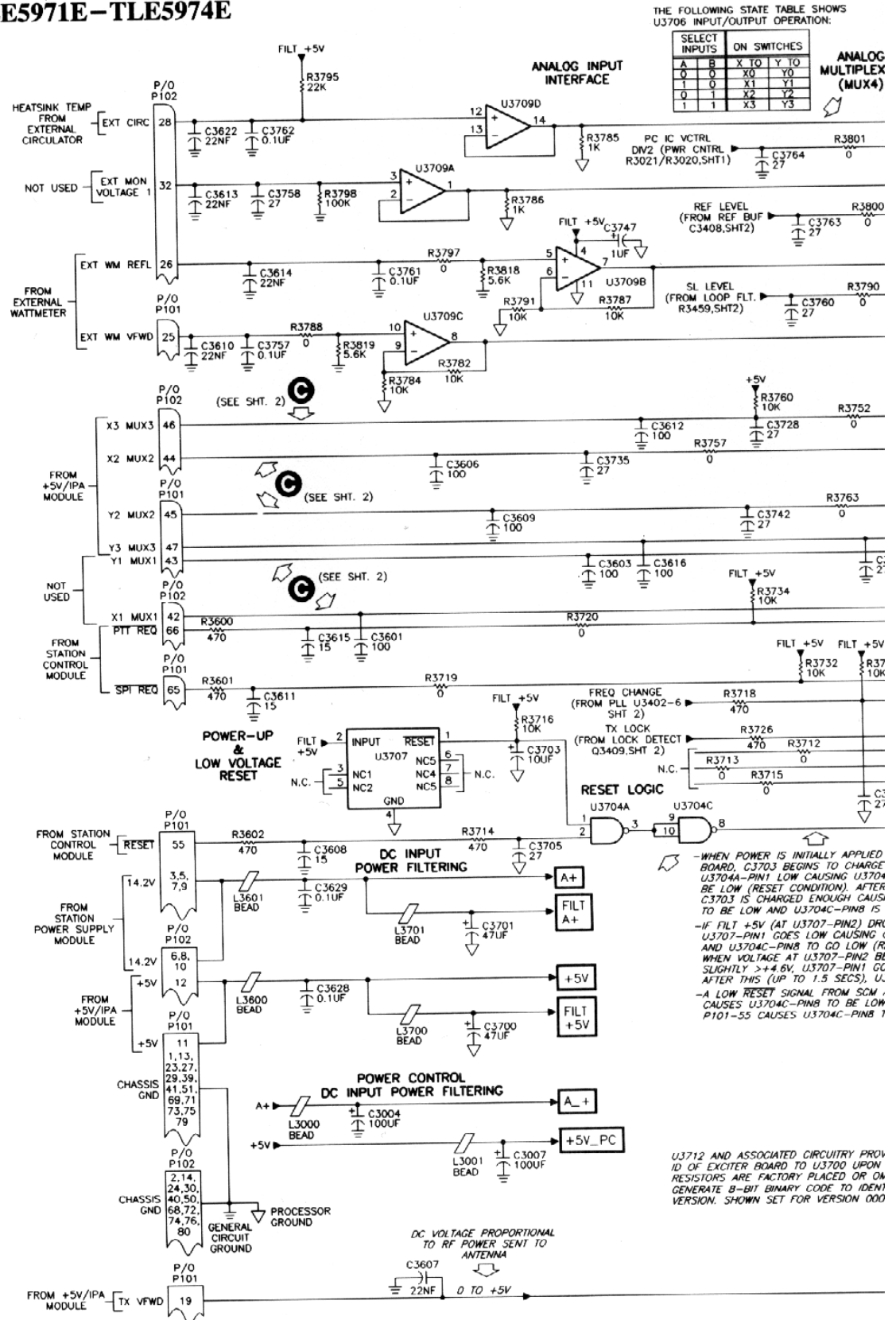




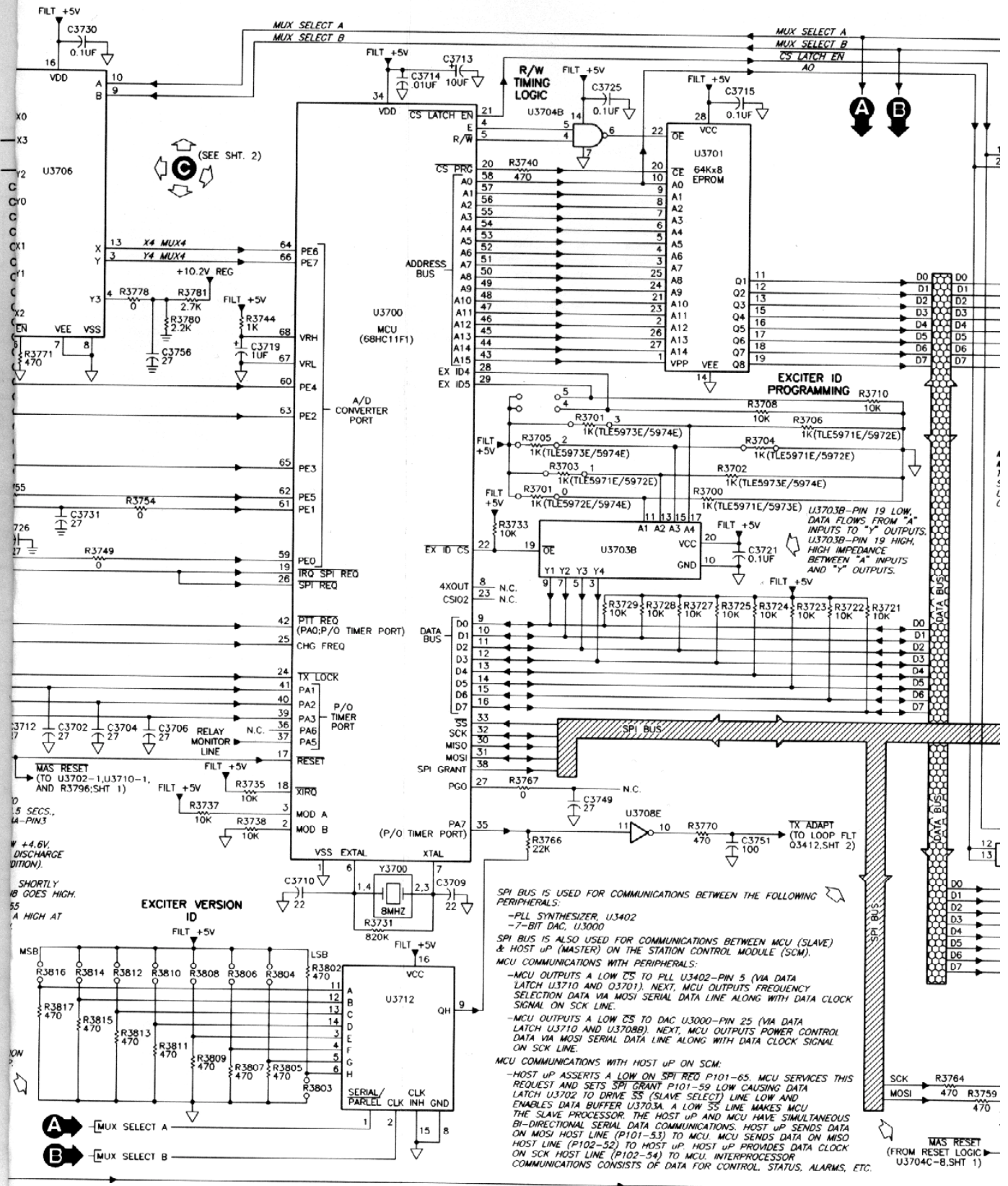
GXW-6534-0

UHF EXCITER BOARD

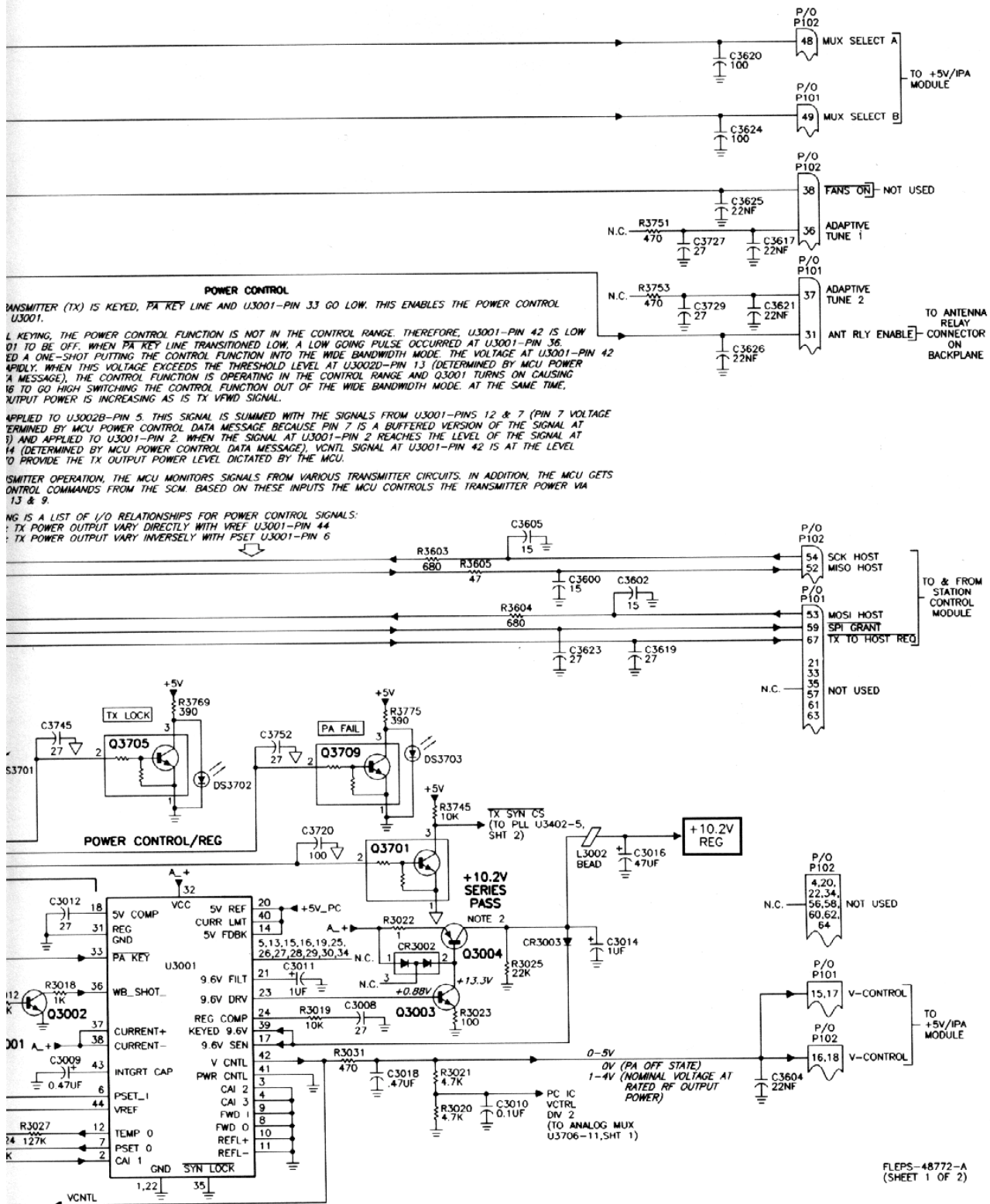
MODELS TLE5971E-TLE5974E

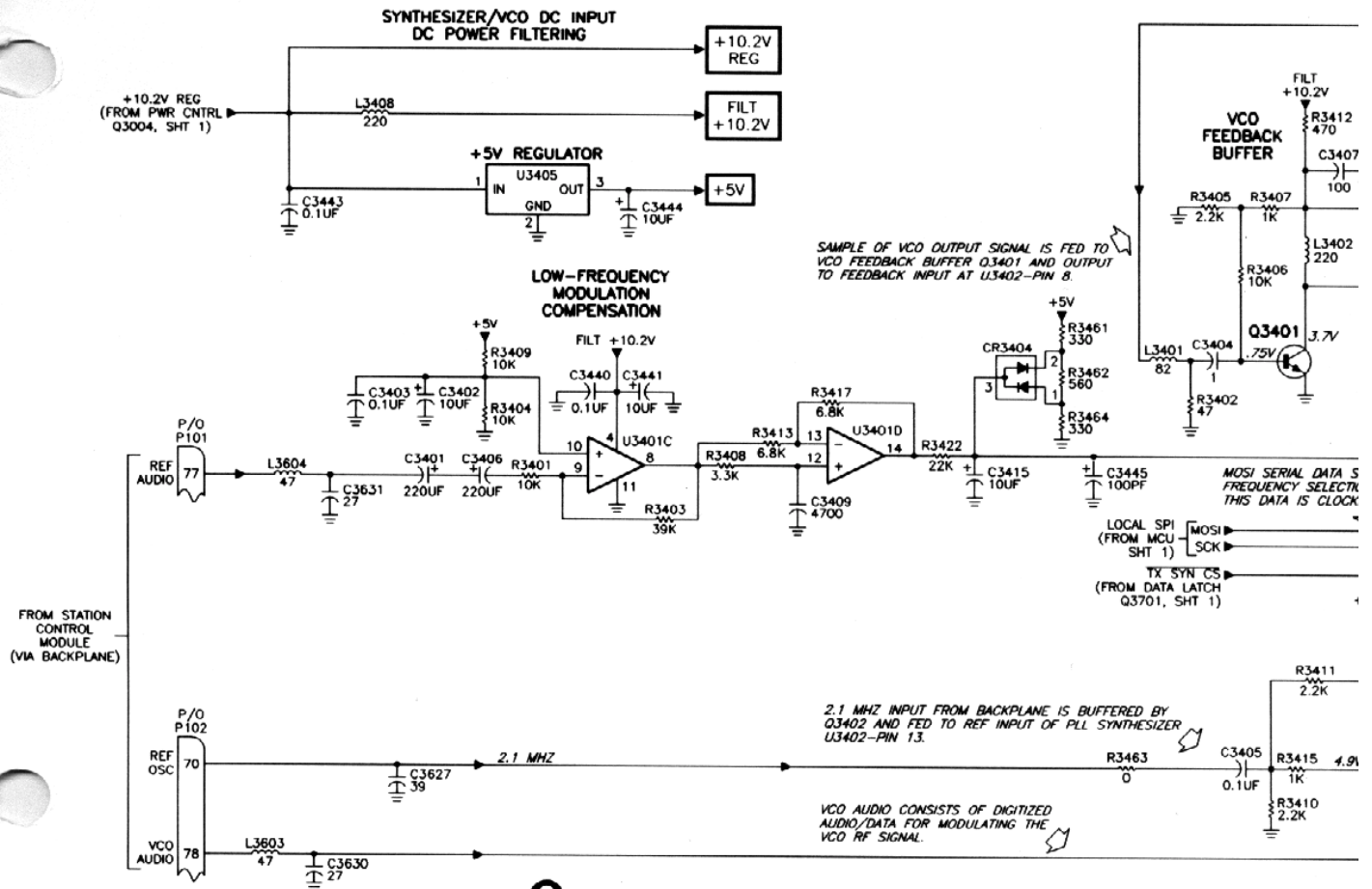


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DURING DIAGNOSTIC ROUTINES, MCU U3700 VIA DATA LATCH U3702 ASSERTS MUX SELECT A & B LINES AND THEN MONITORS THE FOLLOWING MUX OUTPUT LINES:

- X1 MUX1 (P102-42)
- Y1 MUX1 (P101-43)
- X2 MUX2 (P102-44)
- Y2 MUX2 (P101-45)
- X3 MUX3 (P102-46)
- Y3 MUX3 (P101-47)
- X4 MUX4 (U3706 PIN 13)
- Y4 MUX4 (U3706 PIN 3)

MCU U3700 POLLS EACH MUX OUTPUT LINE DURING A 10-20ms LOOP CYCLE.

EACH MUX OUTPUT LINE CONTAINS FOUR 200uS CHANNELS 0 THRU 3. EACH CHANNEL CORRESPONDS TO A MUX INPUT SIGNAL X0 THRU X3 OR Y0 THRU Y3. EACH MUX INPUT SIGNAL RANGES BETWEEN 0 TO +5V (SEE FIG. 1).

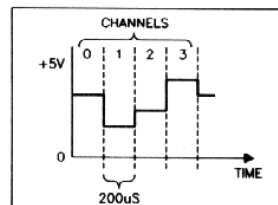
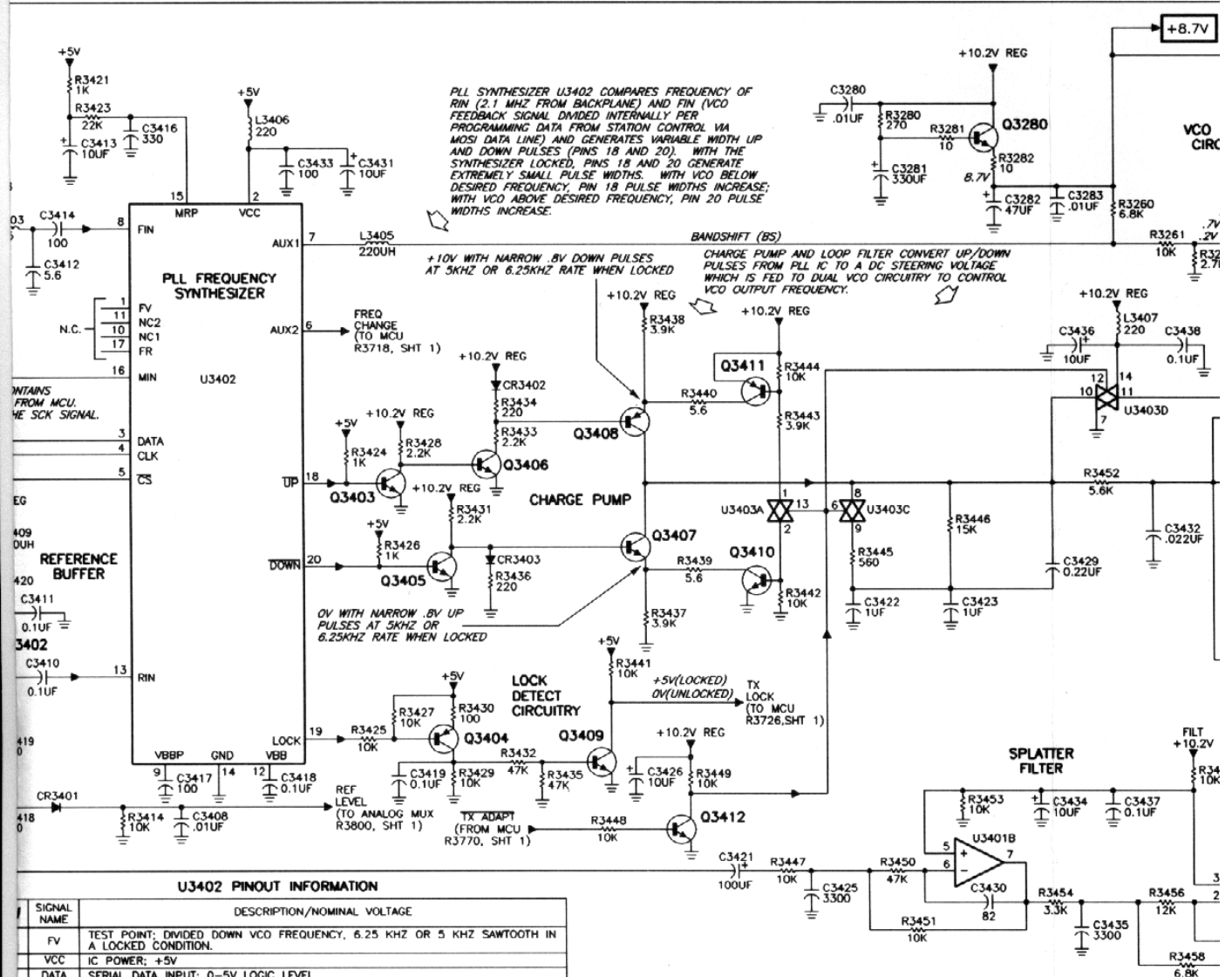


FIG. 1. TYPICAL DATA STREAM ON MUX OUTPUT LINE.

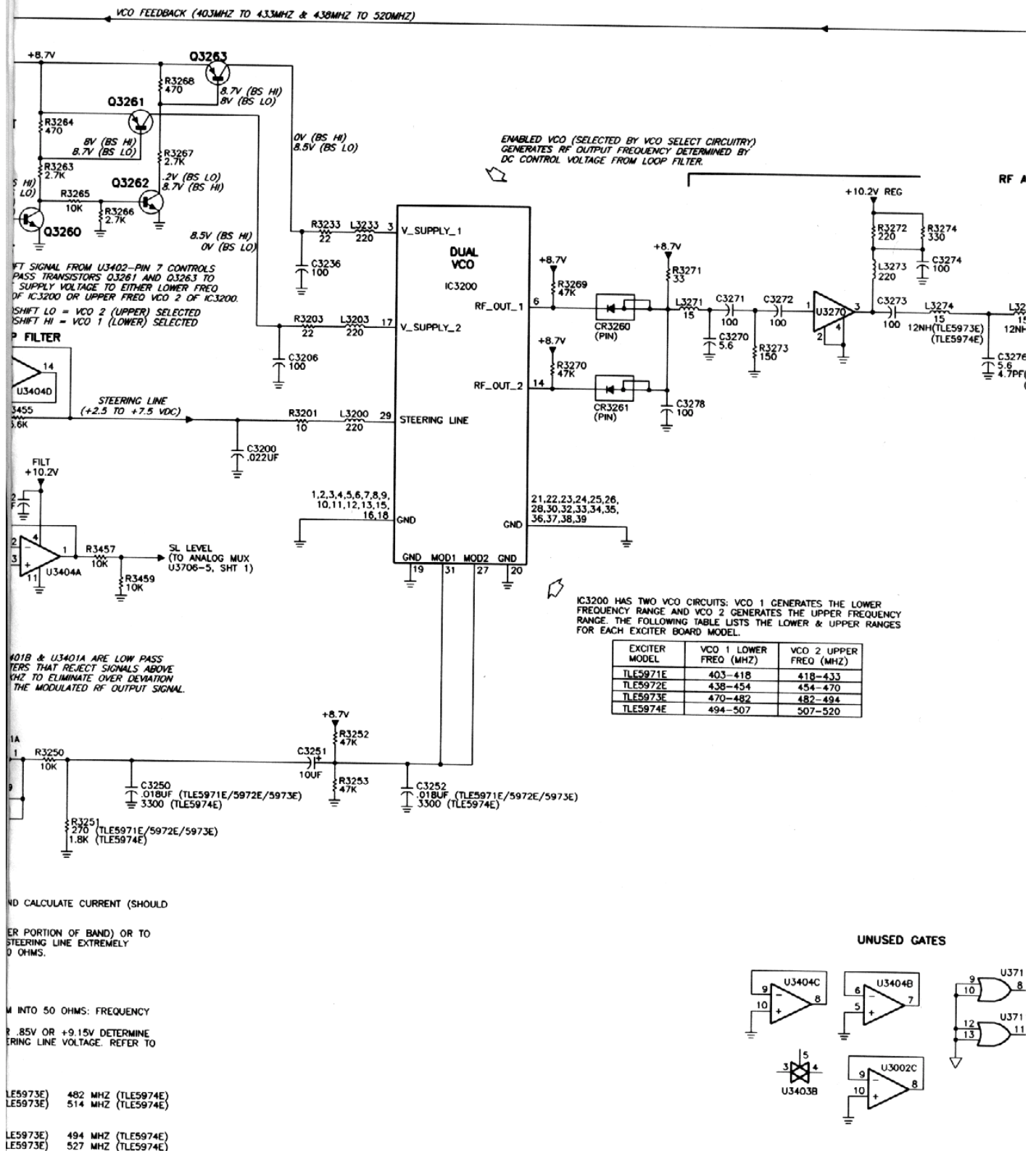
FOR THIS CIRCUIT BOARD APPLICATION, THERE ARE NO MUX1 SIGNAL INPUTS. U3706 MUX4 SIGNAL INPUTS CAN BE DETERMINED FROM THIS SCHEMATIC DIAGRAM. TO DETERMINE MUX2 & MUX3 SIGNAL INPUTS, SEE THE FOLLOWING TABLE.

OUTPUT LINE	SIGNAL INPUTS	OUTPUT LINE	SIGNAL INPUTS
X2MUX2 (P102-44)	X0 AC_FAIL	X3MUX3 (P102-46)	X0 N.C.
	X1 OVERVOLTAGE		X1 N.C.
	X2 VOMNI_REF		X2 IPA_IDA
	X3 FPA_TEMP		X3 IPA_IDB
Y2MUX2 (P101-45)	Y0 CIRCULATOR TEMP	Y3MUX3 (P101-47)	Y0 DPA_VFWD (HIGH POWER ONLY)
	Y1 N.C.		Y1 N.C.
	Y2 N.C.		Y2 FPA_VREFL
	Y3 N.C.		Y3 FPA_VFWD



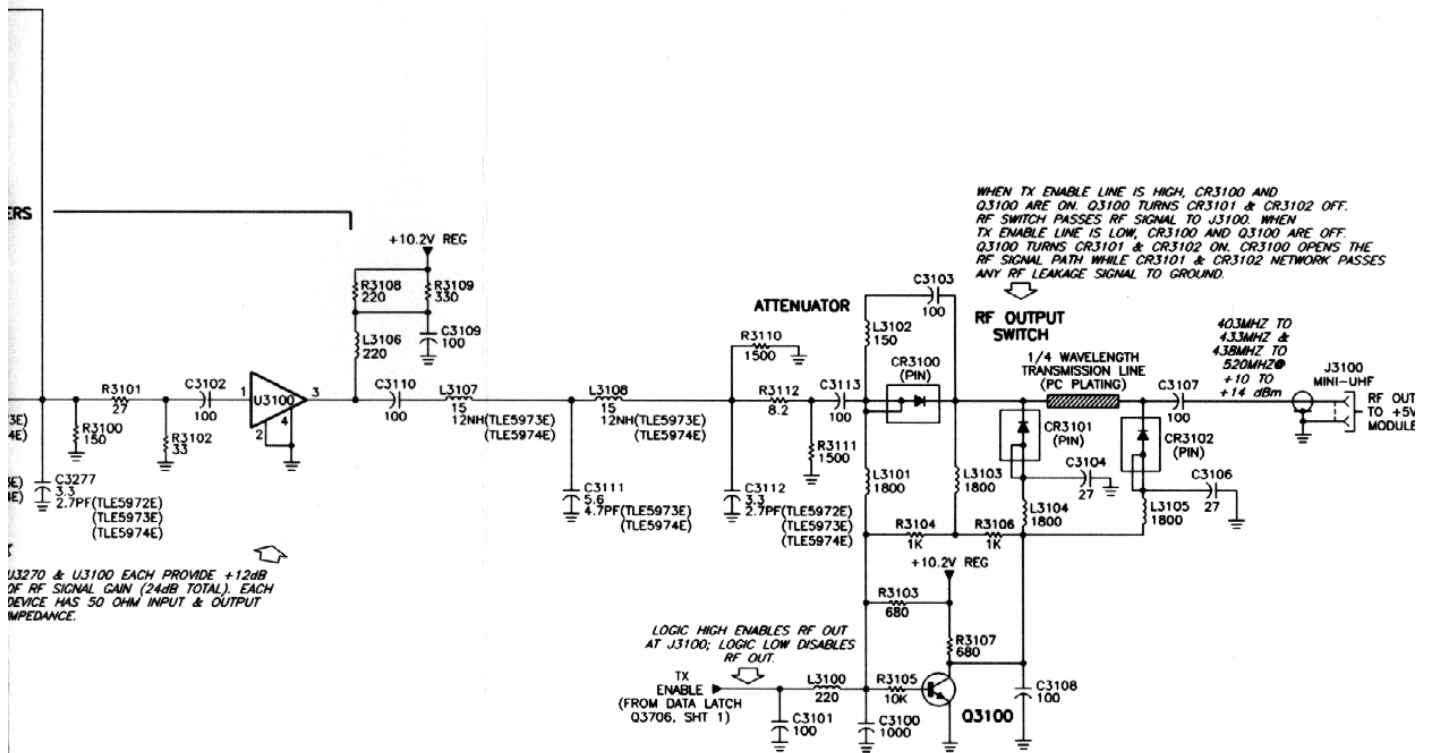
- Q3280 AND ASSOCIATED CIRCUITRY COMPRISE +8.7V SUPERFILTER. MEASURE VOLTAGE DROP ACROSS BE APPROXIMATELY 60 MA.
- Q3260 THRU Q3263 COMPRISE BANDSHIFT CIRCUITRY WHICH SWITCHES DC POWER TO VCO 1 OF IC3; VCO 2 OF IC3200 (UPPER PORTION OF BAND). STEERING LINE SENSITIVITY IS APPROXIMATELY 3 Mhz SENSITIVE; DO NOT PROBE. POWER AT CR3260/CR3261 OUTPUT SHOULD BE APPROXIMATELY +100B
- IF BOARD IS NOT LOCKED, PERFORM FOLLOWING PROCEDURE TO DETERMINE IF VCO CIRCUITRY IS AT
 - VERIFY DC VOLTAGES AS SHOWN ON SCHEMATIC
 - MEASURE POWER AND FREQUENCY AT OUTPUT OF CR3260/CR3261; SHOULD BE APPROXIMATELY .85V STEERING LINE VOLTAGE .85V
 - MEASURE STEERING LINE VOLTAGE AT U3404A-PIN 1. IF BOARD IS NOT LOCKED, VOLTAGE WILL WHICH VCO IS ENABLED (U3402-PIN 7) AND VERIFY VCO OUTPUT FREQUENCY BASED ON MEAS DATA BELOW.

VCO 1 OF IC3200 ENABLED	APPROX. 390 MHZ (TLE5971E)	426 MHZ (TLE5972E)	45
STEERING LINE VOLTAGE .85V	APPROX. 425 MHZ (TLE5971E)	461 MHZ (TLE5972E)	48
VCO 2 OF IC3200 ENABLED	APPROX. 406 MHZ (TLE5971E)	442 MHZ (TLE5972E)	46
STEERING LINE VOLTAGE .85V	APPROX. 440 MHZ (TLE5971E)	477 MHZ (TLE5972E)	50



UHF EXCITER BOARD

MODELS TLE5971E-TLE5974E



NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTOR VALUES ARE IN OHMS, CAPACITOR VALUES ARE IN PICOFARADS, AND INDUCTOR VALUES ARE IN NANOHENRIES.
2. THE +10.2V SERIES PASS TRANSISTOR Q3004 IS HEATSINK MOUNTED. THE COLLECTOR IS INTERNALLY CONNECTED TO THE BODY WHICH CONTACTS THE HEATSINK.
3. EDGE CONNECTORS P101 AND P102 ARE PART OF THE PRINTED CIRCUIT BOARD AND MATE WITH BACKPLANE CONNECTOR.

INTEGRATED CIRCUIT POWER AND GROUND CONNECTIONS

REF DESIG	TYPE	DESCRIPTION	SUPPLY PIN	GROUND PIN
U3000	CUSTOM	D/A CONVERTER	1,11	2,16
U3001	CUSTOM	REGULATOR/POWER CONTROL	32	1,31
U3002	MC3303DR2	QUAD DIFFERENTIAL-INPUT OPERATIONAL AMPLIFIER	4	11
U3100 & U3270	MMA0311T1	MICROWAVE AMPLIFIER, 50-OHM INPUT & OUTPUT IMPEDANCE (MMIC)	3	4
U3401	MC33074D	QUAD DIFFERENTIAL-INPUT OPERATIONAL AMPLIFIER	4	11
U3402	CUSTOM	PHASE LOCKED LOOP SYNTHESIZER	2	14
U3403	MC74HC4066	QUAD ANALOG MULTIPLEXER/DEMULTIPLEXER	14	7
U3404	MC33184	LOW POWER QUAD OPERATIONAL AMPLIFIER	4	11
U3405	MC7805	+5V VOLTAGE REGULATOR	1	2
U3700	M68HC11F1	MICROCONTROLLER (MCU) W/SCL, SPI (NON-MULTIPLEXED ADDRESS/DATA BUS)	34	1
U3701	27C512	64K X 8-BIT EPROM, PROGRAMMED	28	14
U3702	MC74AC273	OCTAL D-TYPE FLIP-FLOP	20	10
U3703	MC74AC244	OCTAL BUFFER/LINE DRIVER, WITH 3-STATE OUTPUTS	20	10
U3704	MC74AC00	QUAD 2-INPUT NAND GATE	14	7
U3706	74HC4052	ANALOG MULTIPLEXER/DEMULTIPLEXER	16	7,8
U3707	MC33064	UNDERVOLTAGE SENSING CIRCUIT	2	4
U3708	MC74AC04	HEX INVERTER	14	7
U3709	MC3303DR2	QUAD DIFFERENTIAL-INPUT OPERATIONAL AMPLIFIER	4	11
U3710	MC74AC273	OCTAL D-TYPE FLIP-FLOP	20	10
U3711	MC74AC32	QUAD 2-INPUT OR GATE	14	7
U3712	74HC165	8 BIT S/P-IN S-OUT SHIFT REGISTER	16	8

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