GENERAL INSTRUMENT

INSTRUCTION SHEET

435-733-01

MODEL UHPM-*

UHF SINGLE CHANNEL HIGH POWER AMPLIFIER WITH AGC

DESCRIPTION

Model UHPM-* is a solid-state, high-gain, high-output amplifier, factory-tuned to a UHF channel as specified by the customer. The amplifier is designed for use at the head-end of a TV cable distribution system. The amplifier circuitry is characterized by cavity-type input and output filters tuned to one of the UHF channels 14 thru 69, and a 9-stage RF-type broadband amplifier with AGC. The unit delivers an output signal at a typical level up to 4.0 V (72 dBmV). A regulated power supply provides −24 VDC from a 117 V, 60 Hz source for powering the amplifier. A combining network in the output stage permits mixing the output with outputs of other UHPM-* units. An input test terminal, attenuated 20 dB, and an output test terminal attenuated 30 dB, are provided on the front panel. The OUTPUT LEVEL control permits adjustment of the AGC circuit to obtain the desired level within a 9 dB range, while holding output level changes within 1 dB for input level changes over ±15 dB.(1) A 0.4 A Slo-Blo fuse on the front panel gives protection against excessive line voltages.

Each amplifier is shipped with an accessory package containing:

2 Rack Mounting Brackets;
4 #8-32 x 3/16" screws for mounting the brackets;
4 #10-32 x ⅜" screws for rack mounting the amplifier;
3 F-659 Cable Connectors with Ferrules;
1 Expansion Tool;
1 Instruction Sheet for the F-659 Connector.

SPECIFICATIONS

BANDWIDTH		6 MHz any UHF channel 14 to 69
MINIMUM FULL GAIN		60 dB
TYPICAL OPERATING GAIN		50 dB
FLATNESS (p/v)		2 dB maximum
MAXIMUM OUTPUT CAPABILITY†		72 dBmV (4.0 V) for 0.5 dB sync compression, channels 14 to 69
RECOMMENDED COLOR OPERATION		70 dBmV
	920 kHz beat	−50 dB
SKIRT SELECTIVITY		−25 dB, ±30 MHz from channel center
NOISE FIGURE		11 dB
AGC	Range	30 dB
	Stiffness	1 dB out for 30 dB in
OUTPUT LEVEL CONTROL RANGE		9 dB down from full gain
INPUT TO OUTPUT FEED-THRU LOSS LOSS		2 dB at a 6 channel or more spacing
TERMINAL MATCH at 75 Ω		
	Input	12 dB min. return loss on channel
	Output	6 dB min. return loss on channel
	Thru Input and Output	6 dB min. return los, ±30 MHz center frequency
POWER REQUIREMENTS		117 V, 60 Hz, 32 W

†Output may be set to any desired operating level between +63 dBmV and +72 dBmV.

INSTALLATION

1. Install a mounting bracket on each end of the amplifier, using the appropriate screws from the accessory package. For flush-mounting in a relay rack, mount the brackets with the ears to the front. For mounting on a flat surface, mount the brackets with the ears to the rear.
2. For mounting on wood surfaces at least ½ inch thick, use four #10 x ½" type A screws.

(1) Caution: The front-panel, capped tuning slugs are factory-tuned to the channel labeled. Do not adjust without proper UHF sweep testing equipment.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

3. For wall mounting on all other surfaces, including plasterboard, attach a wood panel to the surface as described below and mount the amplifier with four #10 x ½" type A screws.

4. Wood panel to ½ inch thick plywood or equal, at least 8" x 20", attached at a minimum of four points to the surface with either:
   a. #10 x 1¾" wood screws in studs;
   b. ¼" x 3½" butterfly bolts with flat washers in hollow cement blocks;
   c. ¼" x 1½" expansion bolts in other masonry.

5. A minimum of 1 inch free space between the amplifier and the mounting surface is recommended for proper ventilation. Maintain a 1¾ inch vertical space between the amplifier and other units and place other heat-generating equipment above the UHF amplifier(s).

6. Prepare the input and output cables and install the connectors supplied in the accessory package as described in the enclosed instruction sheet. Construct any jumpers that may be needed for mixing the output with outputs of other head-end equipment.

7. Plug the line cord of the amplifier into its associated outlet and let the unit warm up for about 10 minutes to reach proper operating temperature. The front panel pilot lamp should be lit. Any adjacent amplifier can be powered from the convenience outlet at the rear of the unit.

OPERATIONAL SET-UP

1. Measure and record the signal level at the end of the antenna downlead, using a field strength meter such as a Model 727 equipped with a UHF adapter Model UH-727, or a meter Model 747. If the signal level is less than 3 dBmV, install a mast-mounted preamplifier, DSU-105 or TPR-series. If the signal level is higher than 33 dBmV, install an in-line attenuator of the PDA-* series with the needed rating to reduce the input level.

2. Connect the downlead to the amplifier IN terminal and temporarily install a Model TR-75 terminator at the THRU IN terminal of the amplifier. Then measure the output level at the OUT terminal of the amplifier and, if needed, adjust the OUTPUT LEVEL control to obtain the desired output level (63 to 72 dBmV).

3. Remove the meter from the OUT terminal and connect the output cable instead. Where the output of the amplifier is not mixed with outputs of other equipment, the THRU IN terminal should be left terminated.

4. Level tests for maintenance purposes can be made at the TEST IN and TEST OUT terminals without having to disconnect the cables; but the test terminal attenuation must be taken into account. The test terminals need not be terminated.

MAINTENANCE

Maintenance should be carried out only by qualified technicians equipped with proper test equipment. A replacement parts list and schematic diagram are included to aid the technician.

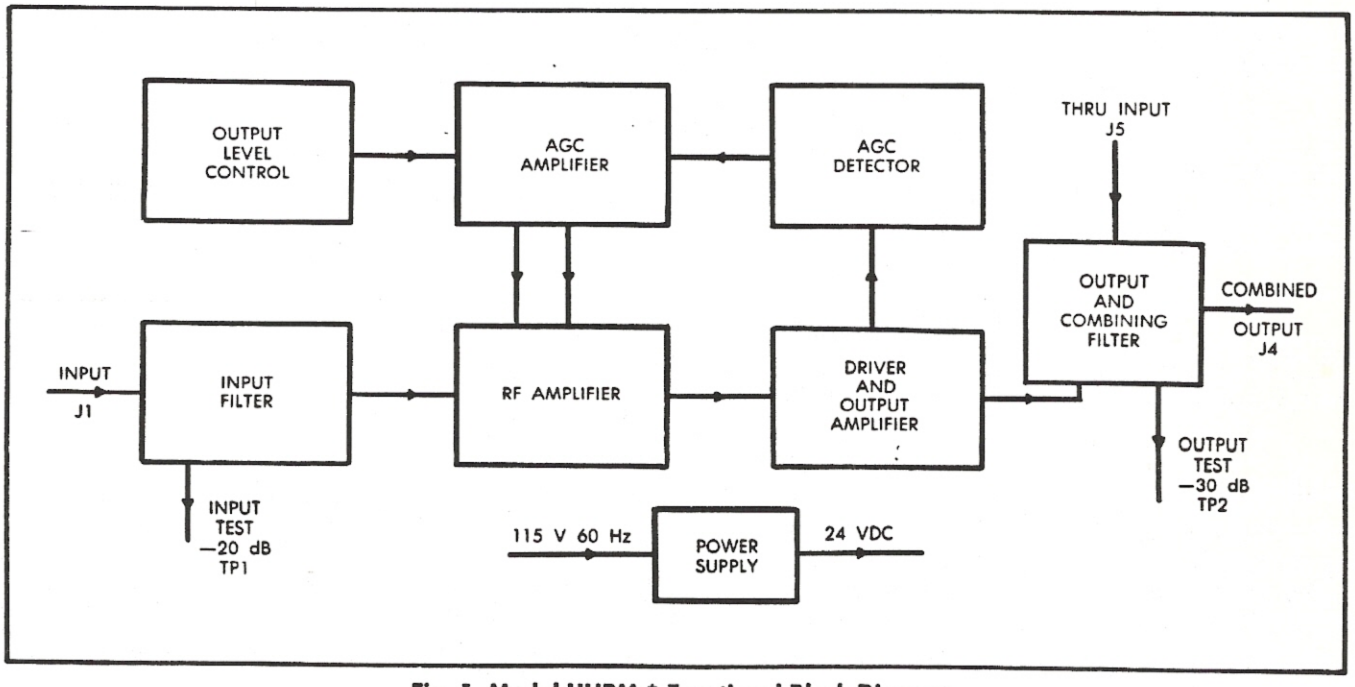

Fig. 1 Model UHPM-* Functional Block Diagram.

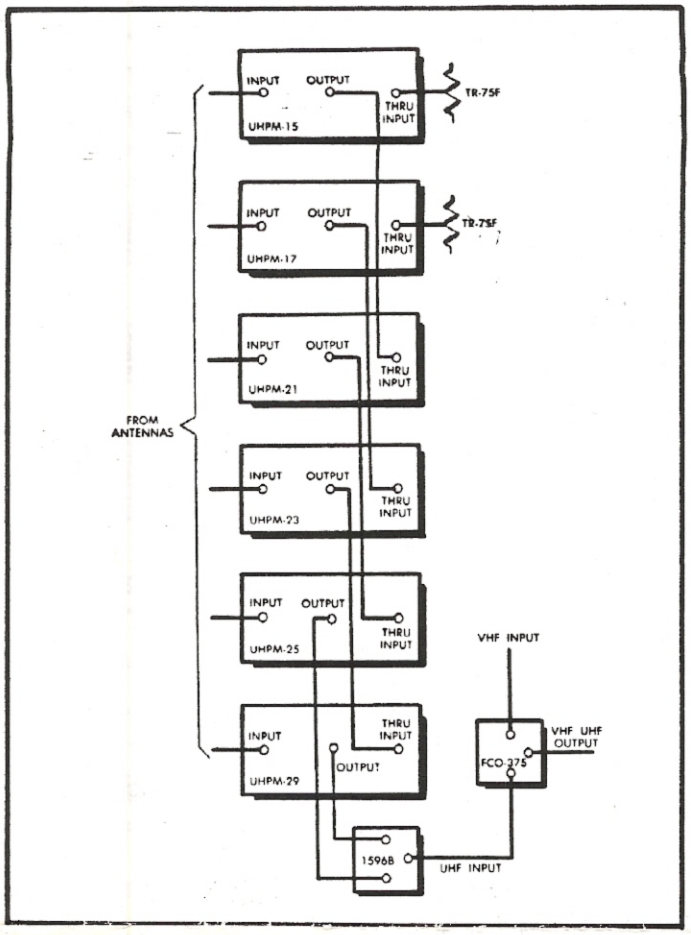

Fig. 2 Typical lash-up for channel spacings of less than six.

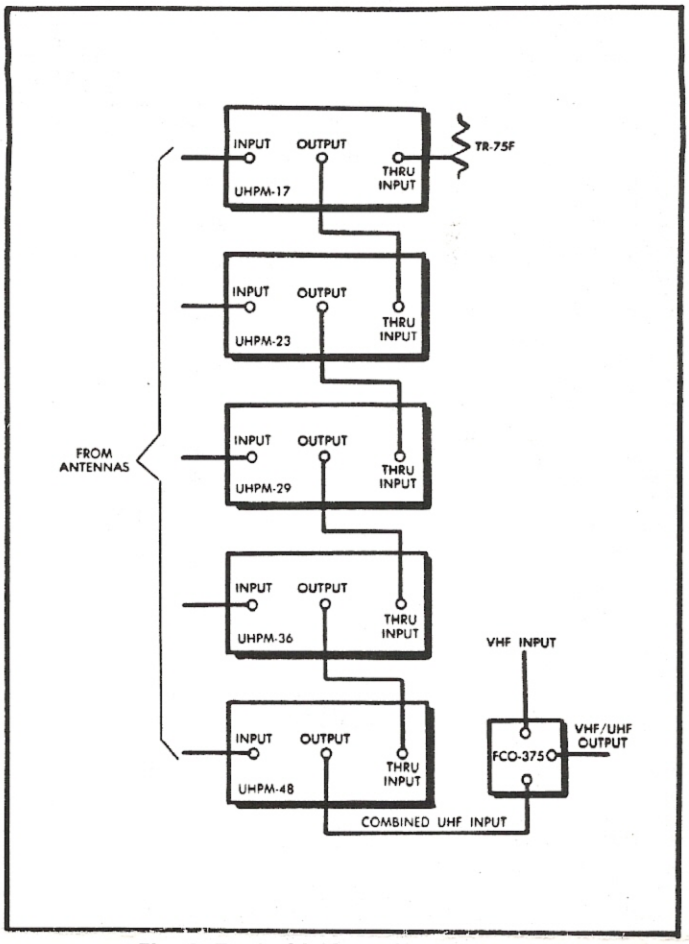

Fig. 3 Typical lash-up for six or more channel spacings.

All data subject to change without notice.

LIMITED WARRANTY

Jerrold equipment is warranted for 90 days against original factory imperfections in material and workmanship.

In the event that service is required during this period, preferably return the defective unit to the Jerrold dealer from whom it was purchased. Alternatively, pack the complete defective unit carefully, enclose a letter stating the reasons the unit is believed to be defective, and return it directly to Jerrold Electronics Corp., Factory Parts and Service Dept., 1322 Atlantic St., North Kansas City, Mo. 64116, prepaying transportation charges. The unit will be repaired or replaced at no charge. Such service or repairs as may be necessary as the result of abuse or accident are not included in the warranty.

In the event that service is required after the warranty period, the unit may be returned to Jerrold at the above address where it will be repaired or replaced at the established service charge.

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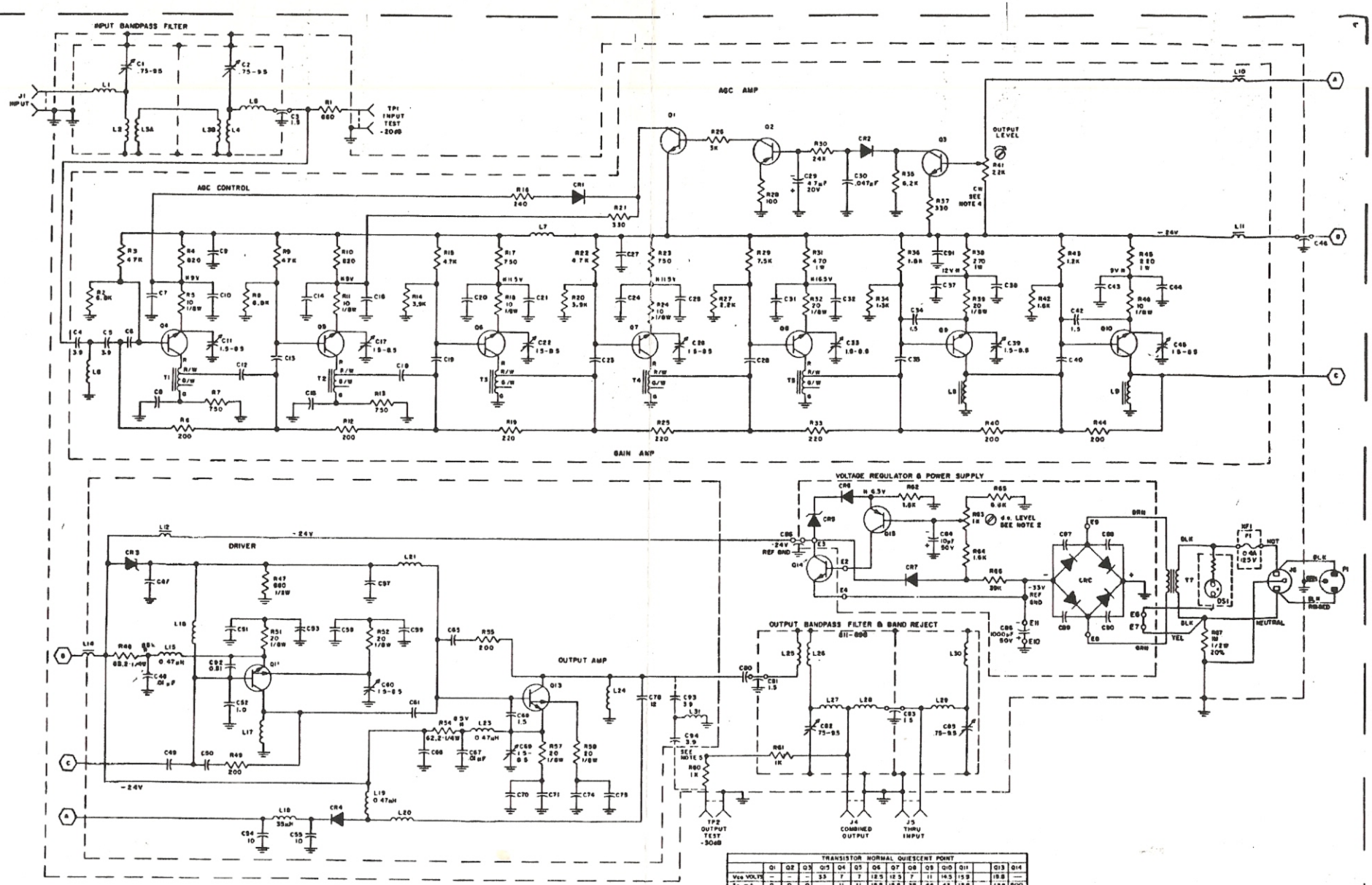
MODEL No. UHPM-*	
ASSEMBLY No. 822-582-01, 583-01	
DRAWING No. 863-610	
SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS	JERROLD PART No.
CAPACITORS	
C4, C5	124-086
C6-C10, C12-C16, C18-C21, C-23-25, C27, C28, C31, C32, C35, C37, C38, C40, C43, C44, C47, C49, C50, C51, C53, C57-C59, C61, C65, C66, C70, C71, C74, C75, C91	124-077
C11, C17, C22, C26, C33, C45, C60, C69	128-572
C29	127-079
C30	125-327
C33	128-574
C34, C42, C68	122-056
C48, C67	124-076
C52	122-055
C54, C55	124-137
C78	124-135
C92	122-090
C93, C94	124-086
DIODES	
CR1	137-824
CR2, CR4	S137-832
CR3	137-830
RESISTORS	
R2, R8	111-005
R3, R9, R15, R22	111-001
R4, R10	112-976
R5, R11, R18, R24, R46	111-076
R6, R12, R40, R44, R49, R55	112-984
R7, R13, R17, R23	112-917
R14, R20	112-979
R16	112-975
R19, R25, R33	112-095
R21, R37	112-097
R26	112-934
R27	112-932
R28	112-950
R29	112-986

MODEL No. UHPM-*	
ASSEMBLY No. 822-582-01, 583-01	
DRAWING No. 863-610	
SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS	JERROLD PART No.
RESISTORS	
R30	112-963
R31	112-318
R32, R39, R57, R58, R52	111-071
R34	112-064
R35	112-981
R36	112-972
R38	112-288
R41	S118-411-01
R42	111-012
R43	112-921
R45	112-276
R47	112-338
R48, R54	113-227-00
TRANSFORMERS	
T1, T2, T3, T4, T5	B144-330
L8, L9	B144-198-01
TRANSISTORS	
Q1, Q3	130-226
Q2	130-227
Q4, Q5	130-614
Q6, Q7	130-251
Q8	130-284
Q9, Q1	130-604
Q11, Q13	S130-293

MODEL No. UHPM-*	
ASSEMBLY No. 822-838	
DRAWING No. 863-610	
SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS	JERROLD PART No.
CAPACITORS	
C84	127-064
C86	S127-171-15
C87, C88, C89, C90	S123-115
DIODES	
CR5	S137-789
CR6, CR7	137-824
CR8	137-505
RESISTORS	
R62, R64	111-012
R63	S118-255-00
R65	111-005
R66	111-016
TRANSISTOR	
Q15	130-227

MODEL No. UHPM-*	
ASSEMBLY No. 823-599	
DRAWING No. 863-610	
SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS	JERROLD PART No.
CAPACITORS	
C46, C80	129-205
FUSE	
F1	101-333
PILOT LAMP	
DS1	102-514
RESISTORS	
R1	112-105
R60	112-977
R67	112-743
R68	112-548
TRANSFORMER	
T7	C141-305
TRANSISTOR	
Q14	S130-270-00



TRANSISTOR NORMAL QUIESCENT POINT													
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q13	Q14
V_{CE} VOLTS	–	–	–	3.5	7	7	12.5	12.5	7	11	14.5	15.9	19.8	—
I_C mA	0	0	0	—	11	11	15.5	15.5	35	44	43	128	—	500
P_d mW	0	0	0	—	77	77	184	184	245	484	824	1884	—	1984
BASING (TOP VIEW)	E B C	E B C	E B C	E B C	B E C	B E C	B E C	E B C	E B C	B E C	B E C	B E C		

NOTES
1 UNLESS OTHERWISE SPECIFIED
A ALL RESISTANCE VALUES ARE IN OHMS, 5%, 1/4 W
B ALL CAPACITANCE VALUES ARE IN μF
C ALL UNMARKED CAPACITORS ARE 1000pF
2 FACTORY SET CONTROL
3 VOLTAGES MARKED WITH AN ASTERISK ARE MEASURED WITH REFERENCE TO THE NEGATIVE BUS, OTHER VOLTAGES ARE REFERRED TO GROUND ALL ARE MEASURED WITH A 20KΩ/VOLT METER – NO SIGNAL CONDITIONS
4 CW DENOTES POTENTIOMETER WIPER POSITION AT EXTREME CLOCKWISE ROTATION.
5 TEST CIRCUIT CONTAINING C93, C94 & L31 IS FOR FACTORY ALIGNMENT ONLY
AT ALIGNMENT DISCONNECT AS FOLLOWS
C80 FROM C79, R60 FROM TP2, R1 FROM TP1
AND THEN MAKE THE FOLLOWING CONNECTIONS:
C4 TO TP1, C93 TO C79, C94 TO TP2
AFTER ALIGNMENT DISCONNECT AS FOLLOWS
C3 FROM TP1, L23 FROM C78 C84 FROM TP2
AND THEN MAKE CONNECTIONS AS SHOWN ON SCHEMATIC

SCHEMATIC
UHF AMPLIFIER
MODEL UHPM-*

E 863-610 REV B