

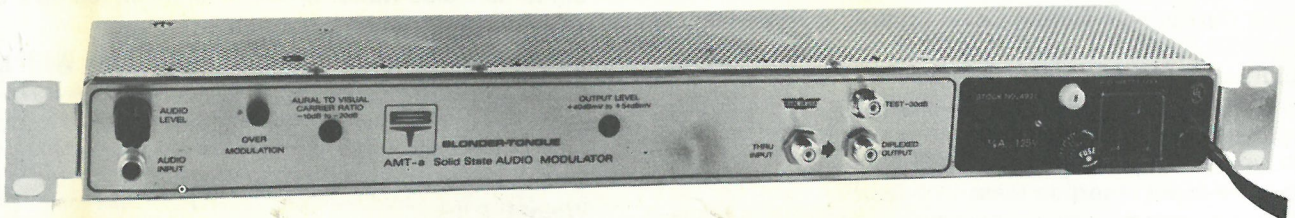
AMT-a

AUDIO MODULATOR

Stock No. 4921



INSTRUCTION MANUAL

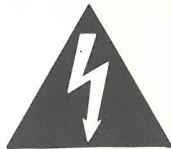


BLONDER-TONGUE LABORATORIES INC. MADE IN USA
ONE JAKE BROWN ROAD, OLD BRIDGE, NEW JERSEY 08857 • (201) 679-4000

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65110650082

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER FROM THIS UNIT. NO USER—SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

DESCRIPTION

The AMT-a is an all solid-state, audio modulator that provides a modulated aural carrier RF output on any single VHF TV channel 2-13. It can be used to put sound and color video on any unused channel of a closed circuit, MATV or CATV system or onto a single TV receiver. The wide range audio input can be directly driven from an AM or FM tuner, tape recorder, or Hi

Impedance dynamic or crystal microphone. The AMT-a may also be used for carrier substitution.

The model number of the AMT-a indicates its channel of operation, e.g. AMT-a-4 is channel 4 unit. All AMT-a's are designed for rack or cabinet mounting.

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

SPECIFICATIONS

Available Frequencies: Sub Ch. B-1 to B-6; VHF Ch. 2 to 13; Mid and FM Band.

Output Visual Carrier Maximum Level: Greater than +54 dbmv (+57 dbmv typical).

Output Aural Carrier Maximum Level: Greater than +44 dbmv (+53 dbmv typical).

Visual Carrier with Output Level Control at Minimum: Less than +40 dbmv.

Aural Carrier with Output Level Control at Minimum: Less than +20 dbmv.

Spurious Output: -60 db.

75 Ohm Output Return Loss on channel: 13 db min. (16 db typical); **Except on and adjacent channels:** 16 db min. (20 db typical).

Thru RF Input Insertion loss: 1 db Max.

Visual Carrier Frequency Stability: $\pm 0.005\%$, crystal.

Aural Carrier Frequency: 4.5 MHz above visual carrier.

Input Impedance: Greater than 50 K Ohm Unbal.

Input Audio for 25 KHz peak deviation: 100 mv RMS (50 mv typical).

Frequency Response: 50 Hz - 15 KHz, ± 1.5 db.

Total harmonic distortion: 1% Maximum at 25 KHz peak deviation; (1.5% typical at 75 KHz peak Deviation).

Signal to Noise Ratio: Greater than 50 db (60 db typical).

Temperature Range: 0°C to 50°C.

Power Requirements: 100 - 130 VAC, 60 Hz, 0.125 AMP.

Level Controls: Combined out visual and Aural Carriers, Aural to Visual Carrier Ratio, Audio Level.

Level Indications: LED for 25 KHz peak Audio Modulation.

Dimensions: L: 19" Rack; H: 1 $\frac{3}{4}$ "; D: 4"

Weight: 5 lbs.

Connectors—Audio: phono; **RF:** F.

NOTE TO CATV SYSTEM INSTALLER:

This reminder is provided to call the CATV System Installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

INSTALLATION AND OPERATION

GENERAL

The AMT-a is supplied with two mounting brackets and the necessary screws for installing the unit in a standard 19-inch rack. These brackets are reversible to provide for surface

mounting. Two F-type BTF-591 connectors are supplied for making input and output connections.

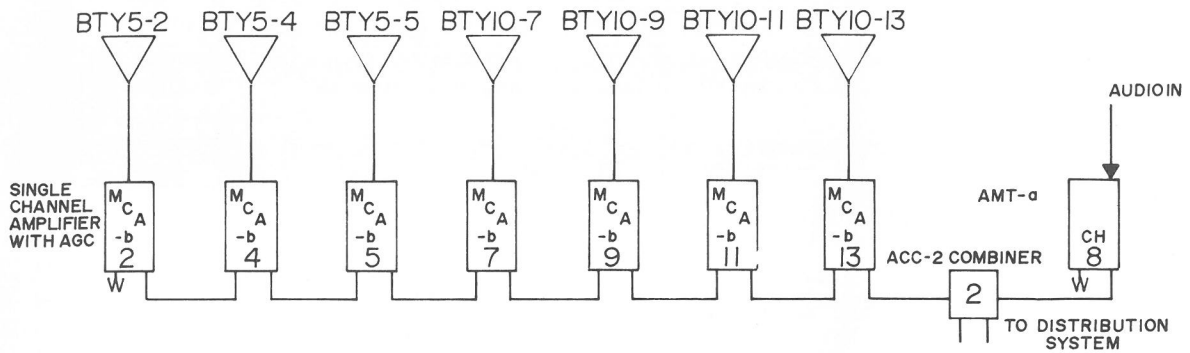


FIGURE 1. TYPICAL ADJACENT CHANNEL SYSTEM

ADJACENT CHANNEL SYSTEMS

A typical adjacent-channel headend installation using an AMT-a is shown in Figure 1.

NON-ADJACENT CHANNEL SYSTEMS

A typical non-adjacent channel headend installation using an AMT-a is shown in Figure 2.

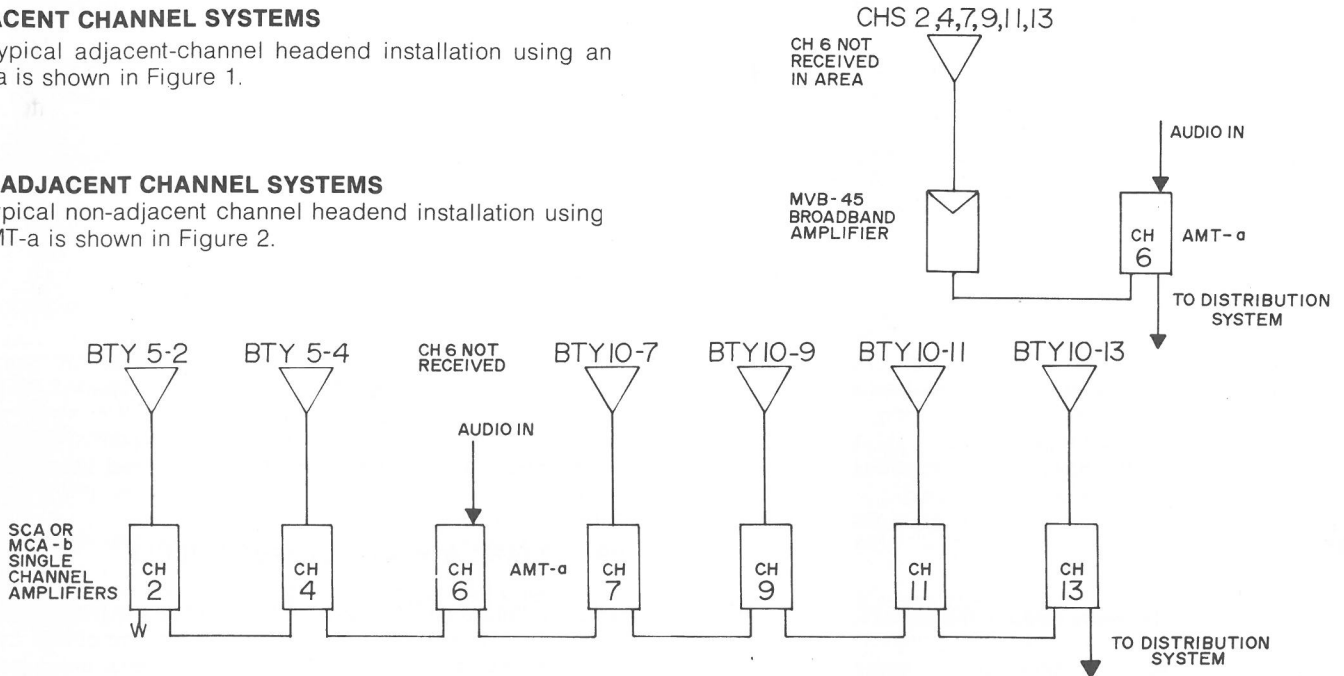


FIGURE 2. TYPICAL NON-ADJACENT CHANNEL SYSTEM

OPERATING CONTROLS

All operating controls and indicators for the AMT-a are located on, or are accessible from the front panel.

OUTPUT LEVEL—Adjusts percentage modulation.

AUDIO INPUT—Sound connection Line or Hi-z microphone.

AURAL OVER-MODULATION LAMP—Lights with >25 KHz peak deviation.

AURAL-TO-VISUAL CARRIER RATIO—Controls amplitude of aural RF carrier relative to visual RF carrier.

OUTPUT LEVEL—Simultaneously adjusts amplitude of aural and visual carriers.

THRU INPUT—RF input from non-adjacent channel

TEST -30 dB—Diplexed output -30 dB.

DIPLEXED OUTPUT—Combined signals of AMT-a and signals fed into the thru input.

PREPARATION FOR USE

After installing the unit, make the following adjustments:

Output Level—To adjust the output level, connect a suitable level meter such as a B-T FSM-2 Field Strength Meter or a Spectrum Analyzer to the DIPLEXED OUTPUT jack or to the TEST -30 dB jack. If a spectrum analyzer is used, terminate the DIPLEXED OUTPUT into 75Ω and add 30 dB to the instrument readings to get actual output level. The THRU INPUT should also be terminated with 75Ω in either case. Switch the unit on, tune the level meter to the visual carrier frequency and adjust the OUTPUT LEVEL control for the desired visual carrier output level.

Carrier Ratio—To adjust the carrier ratio, tune the level meter to the aural carrier frequency then adjust the AURAL-TO-VISUAL CARRIER RATIO for the desired Aural Carrier level.

Audio Level—Connect the audio source to the AMT-a. Connect and tune a TV receiver to the AMT-a DIPLEXED OUTPUT or TEST -30 dB jack. Be sure the TV is not overloaded by excessive signal level.

Adjust the AUDIO LEVEL control so that the AURAL OVER-MODULATION indicator flashes slightly on the loudest peaks of the audio program.

THEORY OF OPERATION AND CIRCUIT DESCRIPTION

A block diagram of the AMT-a is shown in Figure 3.

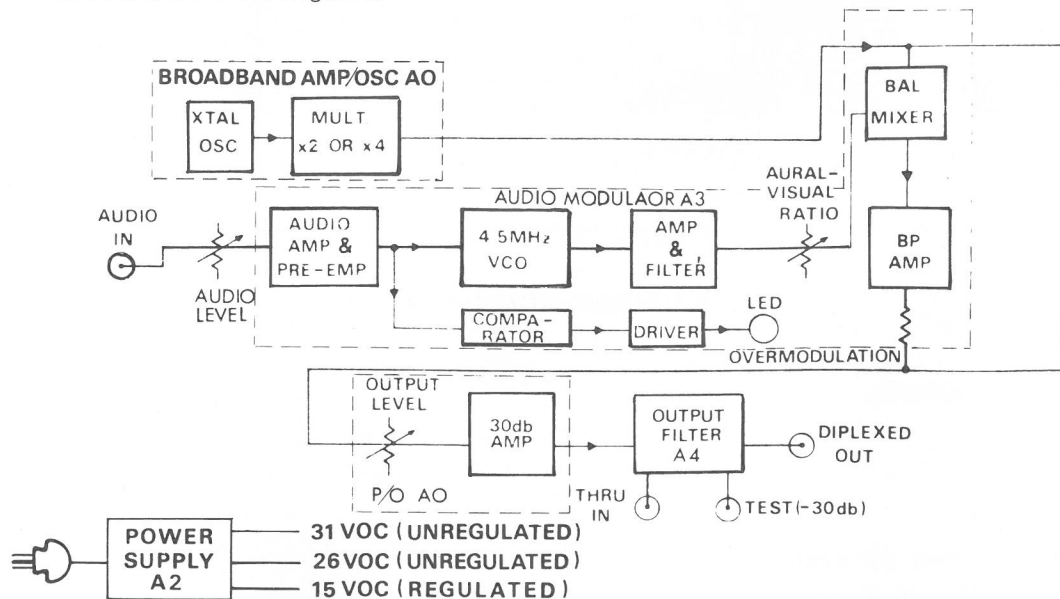


FIGURE 3 AMT-a BLOCK DIAGRAM

OSC MULTIPLIER

The colpitts crystal-controlled oscillator (Q004) supplies a submultiple of the desired visual carrier frequency. The crystal operates in the third overtone series mode. A one-stage transistor multiplier (Q005) for the low-band or a two-stage multiplier Q005, Q006 for the high-band multiplies this frequency by 2 or 4 times respectively to the desired aural carrier frequency. This signal is then used to drive the aural Balanced Mixer.

AUDIO BOARD

The audio input passes through the audio level control to the integrated circuit pre-emphasis amplifier (1/2 U 301). This amplifier which has a voltage gain of about 5 at low frequencies and 50 at 15 KHz, supplies the standard 75 μ s pre-emphasis. The signal is then fed to a voltage variable capacitance diode (D 303) which controls the frequency of the 4.5 MHz oscillator (Q 301). The audio is also fed to the comparator (1/2 U 301). If the audio voltage exceeds the comparator threshold set by R322, then the comparator turns on driver (Q 303) supplying current to the front panel LED (D 101).

The 4.5 MHz frequency modulated signal from the voltage-controlled oscillator is buffered by Q 302. Its harmonics are attenuated by a low pass filter. The clean 4.5 MHz signal then passes through the Aural-Visual Ratio control (R 339) to the

Balanced Mixer (D 304—D 307). This produces two signals: one is spaced 4.5 MHz above and the other is spaced 4.5 MHz below the visual carrier. The trap amplifier (Q 304) which has a filter at both its input and output, selects the desired upper 4.5 MHz sideband and rejects all other undesired inputs. Each filter produces a zero at aural image frequency and a pole at aural carrier frequency.

BROADBAND AMP AND OUTPUT MODULE

The aural carrier is combined with the visual carrier by the resistive combiner. The level of both carriers is then adjusted by the output level control (R 001) and then amplified by the three-stage wideband amplifier. Q 001—Q 003. Input match, output match and gain are all controlled by the use of feedback in each of the stages.

The output of the amplifier is fed to the output module. Here another magnified L Series tuned trap, (L409, C413, C414) again attenuates the lower aural image. Loop through signals are fed through parallel-resonant tank L405 and C407 and C408; to the diplexed output jack. This tank blocks on-channel signals. L408, C410, and C411 short any on-channel signals to help rejection. Signals from the broadband amplifier pass through the bandpass filter to the diplexed output jack. The power supply provides power for all stages.

INFORMATION BELOW IS FOR QUALIFIED SERVICE PERSONNEL ONLY

Voltages may be checked against the schematic diagram. Leakage-current and/or resistance measurements should be made by service technician after repairs are completed to determine that exposed parts are acceptably insulated from the supply circuit.

IN SERVICE TESTING

A test jack (test-30 dB) is provided on the front panel of the AMT-a for monitoring the output without disturbing normal signal connections. The signal levels at the test jack are 30 dB below the actual level of the signals at the diplexed output jack. Take this into account when making level measurements at this test jack.

MAINTENANCE

When making level measurements remember that not only is the channel output of the AMT-a being monitored, but also all signals fed into the thru input jack. When making measurements, be sure the field strength meter is tuned to the frequency of the channel marked on the front of the AMT-a

ALIGNMENT

Alignment during the lifetime of the unit is not normally necessary. However, if a complete alignment is required, proceed as follows:

Test Equipment. The following test equipment or equivalent is required for alignment of the AMT-a.

TEST EQUIPMENT—MODEL

10 dB Pad: Blonder-Tongue Model 3434-10 dB
Trap: Blonder-Tongue MWT-2b or MWT-4b
Coax Switches (two): Blonder-Tongue 4102
Field Strength Meter: Blonder-Tongue 4127 or Spectrum Analyzer (Hewlett-Packard 8554L, 8552B and 141T)
Counter: Systron Donner 6053

Return Loss Bridge: Blonder-Tongue 4720
Sweep Generator: Wavetek 1801
Oscilloscope: Hewlett-Packard 120B
Audio Generator: Hewlett-Packard 207A
Modulation Meter: Radiometer Copenhagen type AFM-2

NOTE

1. Connect the AMT-a to a 117-volt line and allow 5 minutes for warm-up. Using a 75-ohm terminator, terminate the AMT-a THRU INPUT. Connect the AMT-a DIPLEXED OUTPUT as shown in Figure 4 thru a 10 dB pad, to the switching set-up, trap, and field strength meter (FSM) or Spectrum Analyzer (SA).

The "trap" position used in some of the tests filters out the visual carrier and eliminates generation of intermodulation products within the field strength meter or spectrum analyzer. If the test equipment used is capable of handling both the aural and visual carriers together without intermodulation, then the trap may not be necessary.

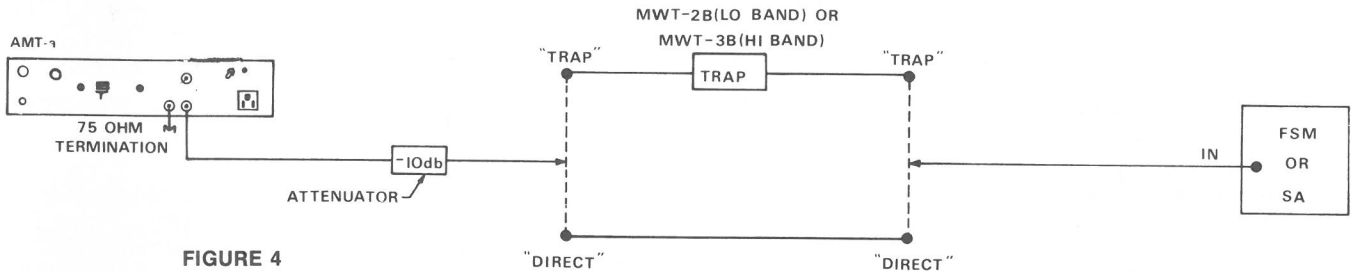


FIGURE 4

NOTE: USE MWT-2b FOR LOW-BAND AND MWT-3b FOR HIGH-BAND

2. Place the switches in the "Direct" position and tune the field strength meter or spectrum analyzer to the Visual Carrier Frequency. See Figure 5 for parts location. Set the OUTPUT LEVEL control and the AURAL-TO-VISUAL CARRIER RATIO Control at maximum. Set R27 (Aural Board) at mid position. Tune L8, L9, and L10 Low-Band or L8, L9, L10, and L13 High-Band (osc mult) for maximum Visual

Carrier Output. Note L9 and L10 or L13 and L10 interact so repeated tuning will be needed. The Visual Carrier Amplitude should be at least +54 dBmV output from the AMT-a. Note that the field strength meter or spectrum analyzer should then read at least 44 dBmV because of the 10 dB pad.

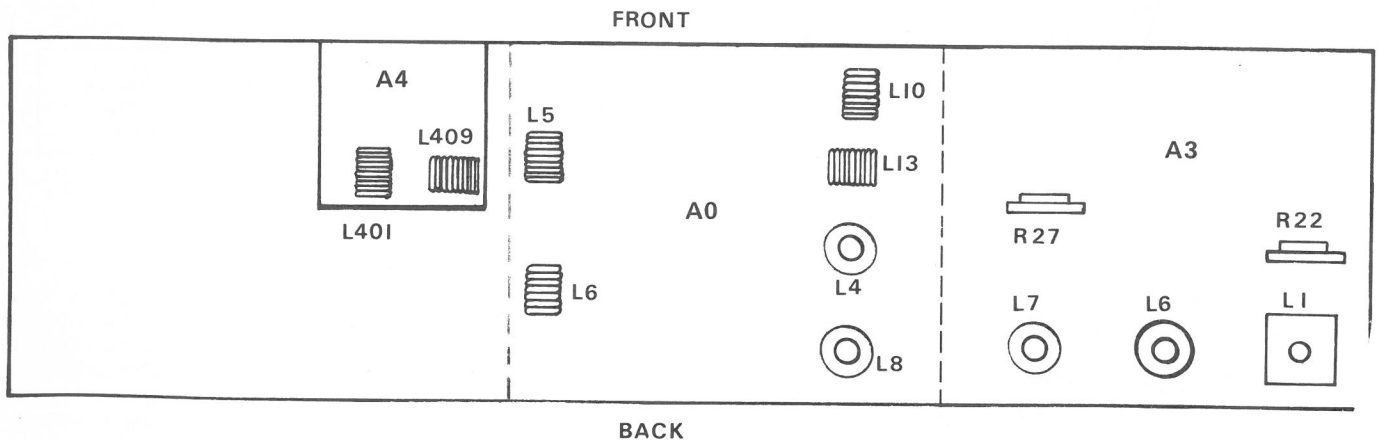


FIGURE 5 PARTS LOCATION DIAGRAM

- Tune the field strength meter or spectrum analyzer to the Aural Carrier Frequency (Visual Carrier +4.5 MHz). Tune L6 and L7 (Aural Board) for maximum Aural Carrier Output. The level at the output of the AMT-a should be at least +44 dBmV.

NOTE: (+34 dBmV at field strength meter or spectrum analyzer).

- Connect the DIPLEXED OUTPUT through a detector to a counter with 100 Hz resolution. See Figure 6. Tune L1 (Aural Board) for a reading of 4500.0 KHz \pm 1 KHz on the counter.

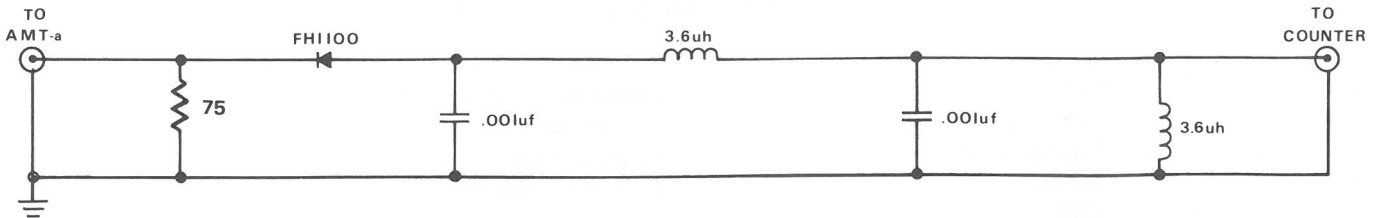


FIGURE 6 DETECTOR

- Reconnect the AMT-a as shown in Figure 4. Set the OUTPUT LEVEL Control for approximately 50 dBmV Visual Carrier Output. Put the switches in the "Trap" position. With the field strength meter or spectrum analyzer tuned to the Visual Carrier, adjust the trap for minimum. The trap should give at least 40 dB attenuation of the Visual Carrier. This is to prevent the generation of intermodulation products within the field strength meter or spectrum analyzer. Now tune the field strength meter or spectrum analyzer to the Visual Carrier +9 MHz. With the AURAL-TO-VISUAL CARRIER RATIO Control at maximum and the switches in the "Trap" position, adjust R27 (Aural Board) for minimum.
- Return the field strength meter or spectrum analyzer to the Aural Image Frequency (visual -4.5 MHz) and without moving the windings, insert a ferrite slug into L409 to temporarily detune it. The Aural Image amplitude should increase. Tune L6 and L7 (Aural Board) for minimum Aural Image without reducing the Aural Carrier Amplitude by more than 3 dB. Repeat L6 and L7 once again because

they may interact somewhat. Remove the ferrite slug.

- Connect a Return Loss Bridge sweep setup to the DIPLEXED OUTPUT. It may be necessary to reduce the Output Level or pull out the crystal to eliminate interference from the AMT's output carriers. Adjust L401 (output module) and L5 and L6 (Broadband Amp.) for minimum return loss. Return loss should be at least 14 dB on channel and 17 dB off channel beyond the adjacent channels.
- Connect an Audio Generator to the Audio input and feed in 70 mv RMS at 400 Hz. Connect either—
 - An FM Modulation meter tuned to the Aural Frequency or
 - An FM Modulation meter tuned to 4.5 MHz through a detector (Figure 6) to the DIPLEXED OUTPUT. Figure 7. Set the AMT-a's AUDIO LEVEL Control so that the modulation meter reads 25 KHz deviation. Now adjust R22 (Aural Board) so that the over-modulation light just comes on.

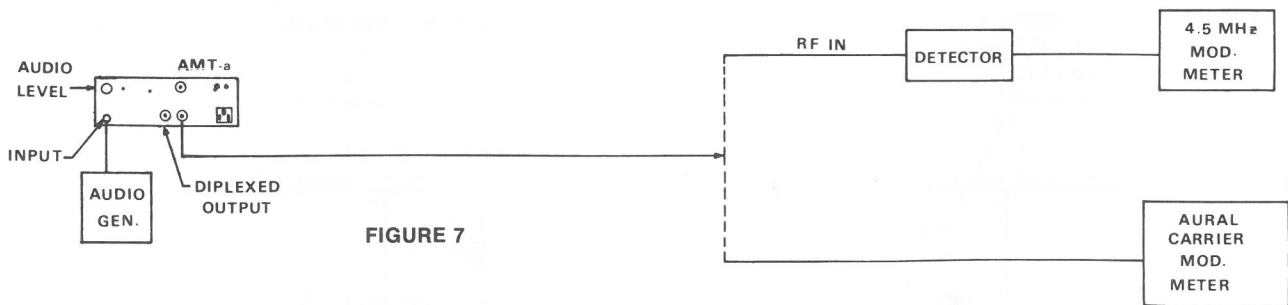


FIGURE 7

- Reconnect the AMT-a as in Figure 4. Put the switches in the "Direct" position and set the Output Level control for +50 dBmV. Visual Carrier output from the AMT-a. Set the AURAL-TO-VISUAL CARRIER RATIO Control for +40 dBmV aural carrier. Don't forget to account for the 10 dB pad when setting signal levels. Now put the switches into the "Trap" position and tune the field strength meter or spectrum analyzer to the Aural image (Visual Carrier Fre-

quency -4.5 MHz). Verify that the aural image as measured in the "Trap" position is at least 50 dB down from the level of the Visual Carrier as measured in the "Direct" position, i.e. the aural image should be 0 dBmV or less from the AMT-a or -dBmV at the field strength meter or spectrum analyzer. See Figure 8. L6 and L7 may be slightly tuned (less than 1/2 turn) to bring the Aural image to a minimum value.

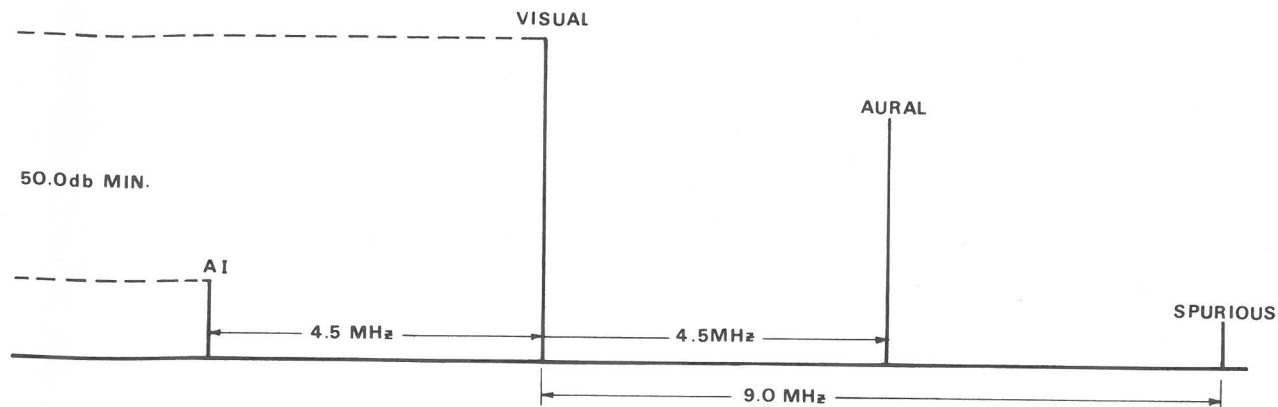


FIGURE 8

10. Set the switches to the "Direct" position and tune the field strength meter or spectrum analyzer to the Visual Carrier. Check that the AMT-a output carrier is at least +54 dBmV with the output level control at maximum. Now set the control to minimum. The output of the AMT-a should be *no more* than +39 dBmV. Return the OUTPUT LEVEL control to maximum and set the AURAL-TO-VISUAL CARRIER RATIO Control to maximum. Now check that the amplitude of the Aural Carrier is no lower than 9 dB below the Visual Carrier.
11. Disconnect all test equipment from the AMT-a. Connect an audio source to the AMT-a audio input. Connect the -30dB test output to a TV receiver's antenna terminals tuned to the AMT-a channel. Set the two carrier level controls of the AMT-a to approximately mid-position. Check the overall operation of the AMT-a by listening to the sound, advancing the audio level control if necessary. There should be no observable defects in the sound.

TROUBLESHOOTING

The solid-state circuitry used in the AMT-a is very reliable. If a problem is encountered in the operation of the unit, all input, output, and power connections as well as associated equipment should be checked before removing the unit from service. This can save you much time and effort. If there is a problem in an AMT-a, first check all the internal connections. The following will help to localize the problem:

Unit Dead—Check:

1. Power line
2. Fuse
3. Switch
4. -31V and -15V lines
5. Crystal Oscillator
6. Broadband amplifier
7. Output Module

Low or No Visual Carrier but Aural OK—Check: the output module.

Visual OK—No or Low Aural Carrier—Check:

1. 4.5 MHz VCO
2. Buffer and low pass filter
3. Balanced mixer
4. Trap amplifier
5. Output module

Both Carriers OK but No Audio Modulation—Check:

1. Audio source
2. Audio input jack
3. Pre-emphasis amplifier
4. 4.5 MHz VCO

BLONDER-TONGUE LIMITED WARRANTY All Blonder-Tongue products are warranted to be free from defective materials and factory workmanship for a period of four (4) months from the date of purchase. If found to be inoperative at the time of installation and not damaged as the result of misuse or misapplication, this product will be replaced. Refer to Blonder-Tongue FORM 651110000B for additional Limited Warranty Information which is packed with each product or a copy can be obtained by writing to Blonder-Tongue Laboratories, Inc., One Jake Brown Road, Old Bridge, N.J. 08857.

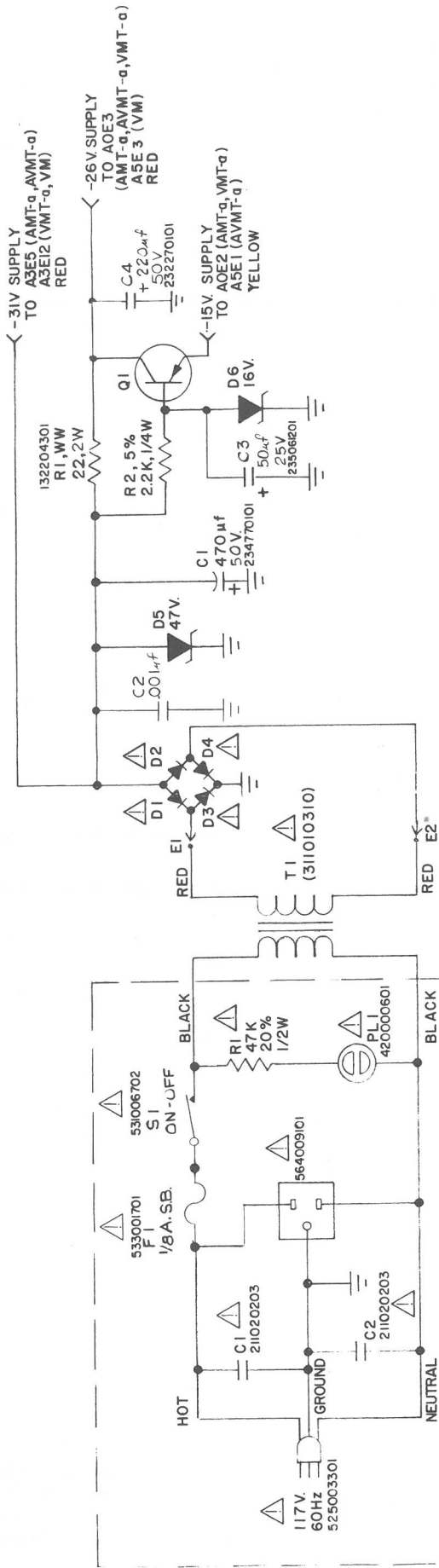


CATHODE

- D1, D2, D3, D4 (440008401)
- D5 (440012000)
- D6 (440012904)

Q1 MJE-370 (450016700)

- NOTES:
1. ALL VOLTAGES MEASURED WITH VTVM AND ARE NEGATIVE WITH RESPECT TO GROUND.
 2. A1R1 AND A2R2 ARE CARBON COMPOSITION.
 3. A1S1 IS USED FOR AVMT-g AND VM ONLY.



MAIN CHASSIS ASSEMBLY NO. A1 SERIES 100

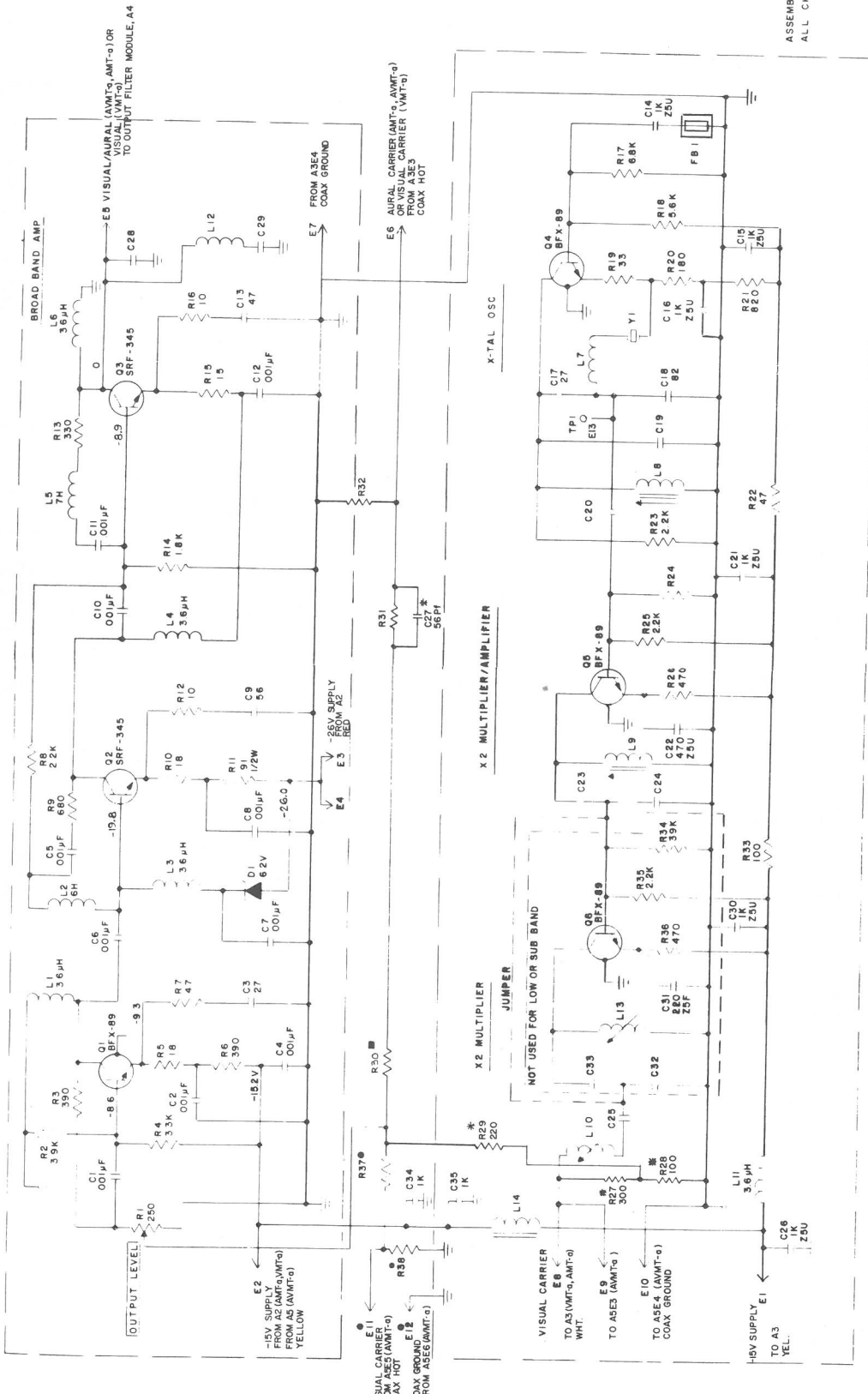
WARNING: FOR CONTINUED PROTECTION AGAINST FIRE AND SHOCK HAZARD, REPLACE SAFETY CRITICAL COMPONENTS (IDENTIFIED BY) ONLY WITH MANUFACTURER RECOMMENDED PARTS

ALL CKT. NUMBERS 200 SERIES, UNLESS NOTED.
ASSEMBLY NUMBER: A2

FIGURE 9 SCHEMATIC DIAGRAM POWER SUPPLY

NOTES

1. ALL RESISTORS ARE CARBON COMP. 1/4W, 5%, RATED IN OHMS UNLESS NOTED K=1000
2. ALL CAPACITORS ARE CERAMIC DISC IN PICOFARADS UNLESS NOTED.
3. ALL CAPACITORS ARE CERAMIC DISC IN PICOFARADS UNLESS NOTED.
4. R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, 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5. R37, R38 ARE USED FOR AMT-a ONLY.
6. FOR VMT-a REPLACE R30 WITH A JUMPER.

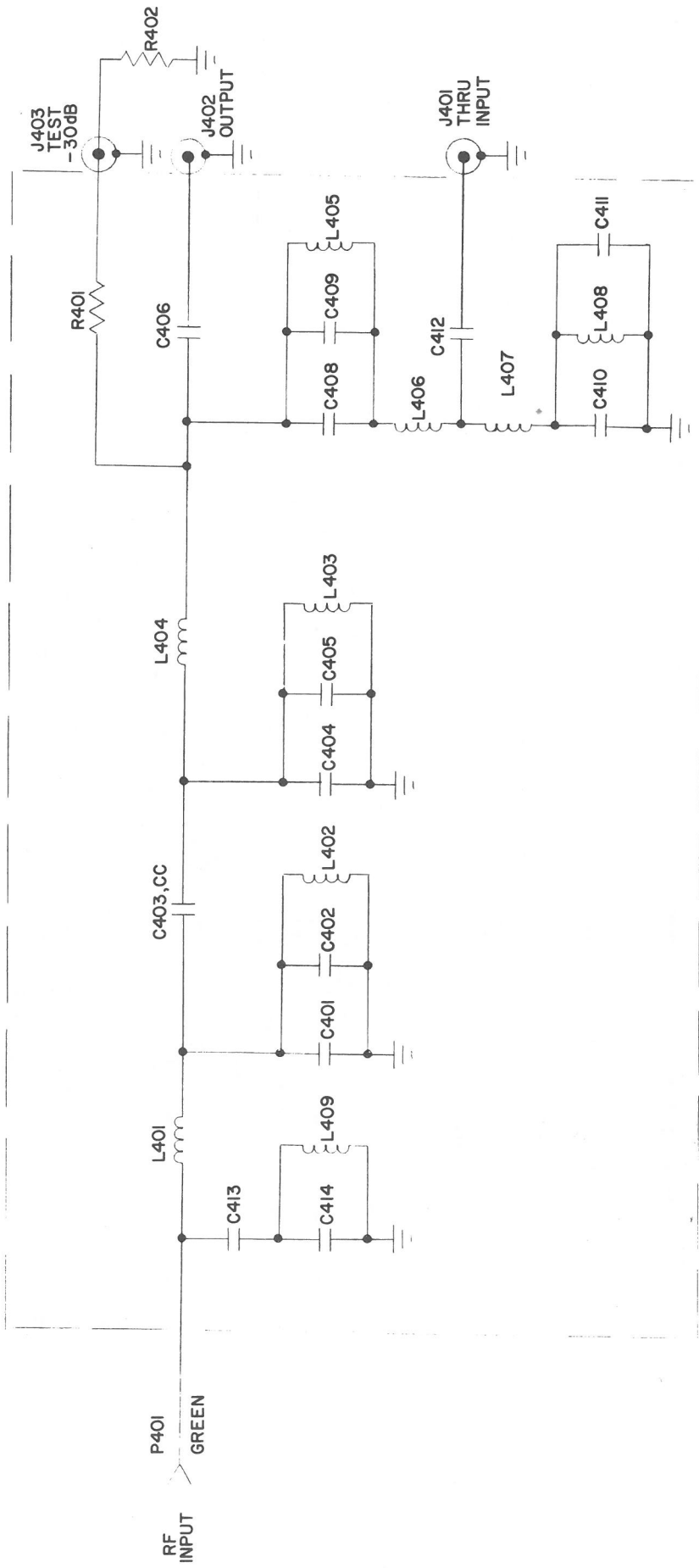


ASSEMBLY NUMBER A0
ALL CKT NUMBERS 0000 SERIES

FIGURE 10 SCHEMATIC, BROADBAND AMP/OSC.

BAND	CHAN.	VISUAL CARRIER FREQUENCY fv MHz	AURAL CARRIER FREQUENCY fa MHz	FORMULA Y1- $\frac{W}{X}$	CRYSTAL FREQUENCY Y1 MHz	FOR ALL AMTg, AMTg, VMtg, VM																	AMTg ONLY			
						C19	C20	C23	C24	C25	C28	C29	C32	C33	L7	L8 PAUL SMITH TURNS	L9 PAUL SMITH TURNS	L10	L12	L13	R24	R30	R31	R32	C27	
SUB BAND	B1	19.25	14.75		19.25	150	22	160	00/uf	68	—	30	—	—	15H	7-1/2	7-1/2	20H	20D	—	3K	180	180	82	56	
	B2	25.25	20.75		25.25	110	18	150	680	56	—	18	—	—	15H	5-1/2	6-1/2	20H	20D	—	3K	180	180	82	56	
	B3	31.25	26.75		31.25	110	12	110	390	27	—	12	—	—	15H	4-1/2	5-1/2	20H	20D	—	3K	180	180	82	56	
	B4	37.25	32.75		37.25	62	12	100	470	18	—	12	—	—	15H	4-1/2	4-1/2	20H	15D	—	3K	180	180	82	56	
	B5	43.25	38.75		43.25	56	7.5	68	220	12	—	8.2	—	—	15H	3-1/2	4-1/2	20H	15D	—	3K	180	180	82	56	
	IF	45.75	41.25		45.75	56	7.5	68	220	12	—	8.2	—	—	15H	3-1/2	4-1/2	20H	15D	—	3K	180	180	82	56	
B6	49.25	44.75		49.25	56	7.5	68	220	12	—	8.2	—	—	15H	3-1/2	4-1/2	20H	15D	—	3K	180	180	82	56		
LOW BAND	48MHz	49.25	—		49.25	56	7.5	68	220	12	—	8.2	—	—	15H	3-1/2	4-1/2	20H	15D	—	3K	—	—	—	—	
	2	55.25	59.75	2	27.625	100	39	75	150	10	22	51	—	—	15H	5-1/2	3-1/2	15H	595	—	27K	100	180	100	—	
	3	61.25	65.75	2	30.625	62	39	47	150	8.2	22	51	—	—	15H	5-1/2	3-1/2	15H	595	—	27K	100	180	100	—	
	4	67.25	71.75	2	33.625	62	39	47	150	8.2	22	51	—	—	15H	5-1/2	3-1/2	15H	595	—	27K	100	180	100	—	
	5	77.25	81.75	2	38.625	39	39	56	100	5.1	3.9	—	—	—	10D	5-1/2	2-1/2	15H	—	—	27K	100	180	100	—	
	6	83.25	87.75	2	41.625	39	39	56	100	5.1	3.9	—	—	—	10D	5-1/2	2-1/2	15H	—	—	27K	100	180	100	—	
MID BAND	A-2	109.25	113.75	4	27.3125	100	33	51	100	7.5	3.9	—	100	56	10D	5-1/2	4-1/2	10D	—	5C	27K	150	150	100	56	
	A-1	115.25	119.75	4	28.8125	100	33	51	100	7.5	3.9	—	100	56	10D	5-1/2	4-1/2	10D	—	5C	27K	150	150	100	56	
	A	121.25	125.75	4	30.3125	68	33	100	160	5.6	3.9	—	82	47	10D	5-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	B	127.25	131.75	4	31.8125	68	33	100	160	5.6	3.9	—	82	47	10D	5-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	C	133.25	137.75	4	33.3125	68	33	100	160	5.6	3.9	—	82	47	10D	5-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	D	139.25	143.75	4	34.8125	100	33	68	150	5.1	3.9	—	68	33	10D	3-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	E	145.25	149.75	4	36.3125	100	33	68	150	5.1	3.9	—	68	33	10D	3-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	F	151.25	155.75	4	37.8125	100	33	68	150	5.1	3.9	—	68	33	10D	3-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	G	157.25	161.75	4	39.3125	75	33	56	100	3.3	3.9	—	56	30	10D	3-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
	H	163.25	167.75	4	40.8125	75	33	56	100	3.3	3.9	—	56	30	10D	3-1/2	2-1/2	10D	—	5C	27K	150	150	100	56	
I	169.25	173.75	4	42.3125	75	33	56	100	3.3	3.9	—	56	30	10D	3-1/2	2-1/2	10D	—	5C	27K	150	150	100	56		
HIGH BAND	7	175.25	179.75	4	43.8125	56	33	39	100	1.8	3.9	—	39	22	10D	3-1/2	2-1/2	10D	—	5C	27K	100	100	100	56	
	8	181.25	185.75	4	45.3125	56	33	39	100	1.8	3.9	—	39	22	10D	3-1/2	2-1/2	10D	—	5C	27K	100	100	100	56	
	9	187.25	191.75	4	46.8125	56	33	39	100	1.8	3.9	—	39	22	10D	3-1/2	2-1/2	10D	—	5C	27K	100	100	100	56	
	10	193.25	197.75	4	48.3125	75	18	33	68	1.8	3.9	—	39	22	10D	2-1/2	2-1/2	10D	—	4C	27K	100	100	100	56	
	11	199.25	203.75	4	49.8125	75	18	33	68	1.8	3.9	—	39	22	10D	2-1/2	2-1/2	10D	—	4C	27K	100	100	100	56	
	12	205.25	209.75	4	51.3125	75	18	33	68	1.8	3.9	—	39	22	10D	2-1/2	2-1/2	10D	—	4C	27K	100	100	100	56	
	13	211.25	215.75	4	52.8125	75	18	33	68	1.8	3.9	—	39	22	10D	2-1/2	2-1/2	10D	—	4C	27K	100	100	100	56	
SPECIAL CHANNELS (NON INVERTED SUB BAND, FM BAND, INVERTED MID & SUPER BAND)																										
	FM1	83.5-89.5	88-94	2	41.75-44.75	62	33	43	100	4.7	7.5	22	—	—	10D	3-1/2	2-1/2	15H	0.595	—	27K	100	100	100	56	
	FM2	89.5-95.5	94-100	2	44.75-47.75	56	33	39	100	4.3	7.5	22	—	—	10D	3-1/2	2-1/2	15H	0.595	—	27K	100	100	100	56	
	FM3	95.5-103.5	100-108	2	47.75-51.75	82	68	33	100	3.3	7.5	22	—	—	10D	2-1/2	2-1/2	15H	0.595	—	27K	100	100	100	56	
	95MHz	96.25	—	2	48.125	82	68	33	100	3.3	7.5	22	—	—	10D	2-1/2	2-1/2	15H	0.595	—	27K	—	—	—	—	
	DI	142.75	138.25	4	35.6875	100	33	68	150	5.1	3.9	—	68	33	10D	3-1/2	2-1/2	10D	—	5C	27K	100	100	100	56	
	J	217.25	221.75	4	54.3125	62	18	27	51	1.2	3.9	—	43	24	10D	2-1/2	2-1/2	10D	—	3C	27K	—	—	—	—	
	K	223.25	227.75	4	55.8125	62	18	27	51	1.2	3.9	—	43	24	10D	2-1/2	2-1/2	10D	—	3C	27K	—	—	—	—	
	L	229.25	231.75	4	57.3125	62	18	27	51	1.2	3.9	—	43	24	10D	2-1/2	2-1/2	10D	—	3C	27K	—	—	—	—	

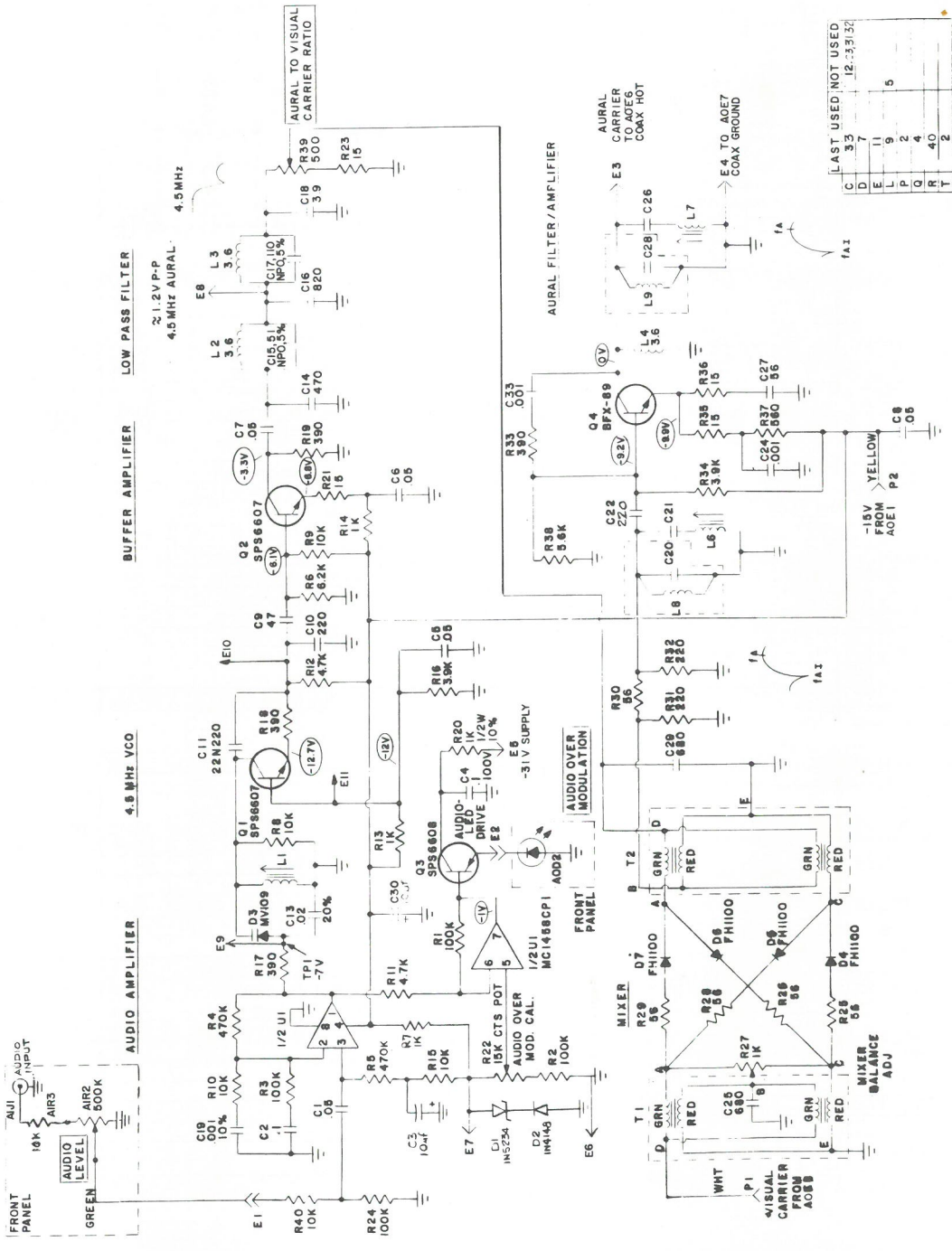
FIGURE 11 TABLE, BROADBAND AMP/OSC.



ALL CKT. NUMBERS 400 SERIES
 ASSEMBLY NUMBER: A 4

FIGURE 12 SCHEMATIC, OUTPUT FILTER MODULE

- NOTES:
1. ALL RESISTORS 1/4W, 5% UNLESS NOTED OTHERWISE.
 2. ALL CAPACITORS CERAMIC DISC, UNLESS NOTED OTHERWISE.
 3. VALUES > 1 ARE UF VALUES < 1 ARE PF VALUES.
 4. MEASUREMENTS MADE WITH RF ISOLATION CHOKE AND HI IMPEDANCE MEASUREMENTS ±10%.
 5.  INDICATES FRONT PANEL CONTROL.
 6. * PAUL SMITH COILS, TURNS

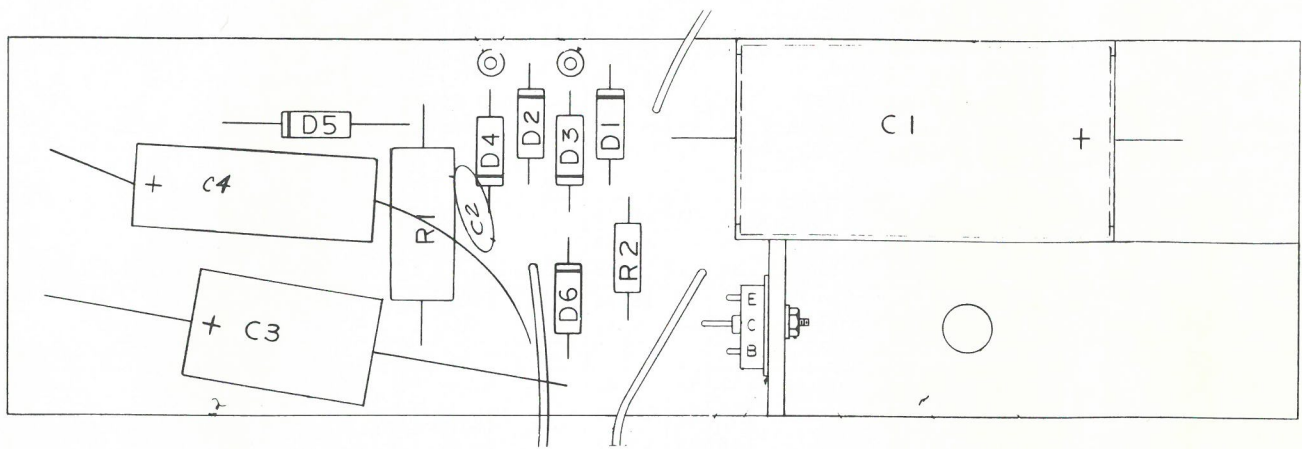


ASSEMBLY NUMBER: A3
 CKT. NUMBERS 300 SERIES
 1A-AURAL CARRIER FREQUENCY
 1A2-AURAL CARRIER PERMISSIBILITY
 -9MHz (AURAL IMAGE)

FIGURE 13 SCHEMATIC, AMT-a AUDIO MODULATOR

BAND	CHAN.	VISUAL CARRIER FREQUENCY f _v MHz	AURAL CARRIER FREQUENCY f _a MHz	C20	C21	C26	C28			L4 μh	L6 *	L7 *	L8 μh	L9 μh
SUB BAND	B1	19.25	14.75	—	110	110	—			1	7 1/2	7 1/2	595	—
	B2	25.25	20.75	—	82	82	—			1	6 1/2	6 1/2	.372	—
	B3	31.25	26.75	—	75	75	—			595	5 1/2	5 1/2	.27	—
	B4	37.25	32.75	—	51	51	—			.27	5 1/2	5 1/2	.27	—
	B5	43.25	38.75	—	33	33	—			.27	5 1/2	5 1/2	5H	—
	IF	45.75	41.25	—	33	33	—			.27	5 1/2	5 1/2	5H	—
	B6	49.25	44.75	—	33	33	—			.27	5 1/2	5 1/2	5H	—
LOW BAND	2	55.25	59.75	68	33	33	68			3.6	5 1/2	5 1/2	—	—
	3	61.25	65.75	68	24	24	68			3.6	5 1/2	5 1/2	—	—
	4	67.25	71.75	68	24	24	68			3.6	5 1/2	5 1/2	—	—
	5	77.25	81.75	56	16	16	56			3.6	5 1/2	5 1/2	—	—
	6	83.25	87.75	56	16	16	56			3.6	5 1/2	5 1/2	—	—
	MID BAND	A-2	109.25	113.75	47	9.1	9.1	68			3.6	4 1/2	4 1/2	—
A-1		115.25	119.75	47	9.1	9.1	68			3.6	4 1/2	4 1/2	—	—
A		121.25	125.75	39	6.8	6.8	68			3.6	4 1/2	4 1/2	—	—
B		127.25	131.75	39	6.8	6.8	68			3.6	4 1/2	4 1/2	—	—
C		133.25	137.75	39	6.8	6.8	68			3.6	4 1/2	4 1/2	—	—
D		139.25	143.75	33	4.7	4.7	56			3.6	4 1/2	4 1/2	—	—
E		145.25	149.75	33	4.7	4.7	56			3.6	4 1/2	4 1/2	—	—
F		151.25	155.75	33	4.7	4.7	56			3.6	4 1/2	4 1/2	—	—
G		157.25	161.75	33	3.3	3.3	39			3.6	4 1/2	4 1/2	—	—
H		163.25	167.75	33	3.3	3.3	39			3.6	4 1/2	4 1/2	—	—
I	169.25	173.75	33	3.3	3.3	39			3.6	4 1/2	4 1/2	—	—	
HIGH BAND	7	175.25	179.75	27	2.7	2.7	33			3.6	4 1/2	4 1/2	—	—
	8	181.25	185.75	27	2.7	2.7	33			3.6	4 1/2	4 1/2	—	—
	9	187.25	191.75	27	2.7	2.7	33			3.6	4 1/2	4 1/2	—	—
	10	193.25	197.75	24	1.8	1.8	24			3.6	4 1/2	4 1/2	—	—
	11	199.25	203.75	24	1.8	1.8	24			3.6	4 1/2	4 1/2	—	—
	12	205.25	209.75	24	1.8	1.8	24			3.6	4 1/2	4 1/2	—	—
	13	211.25	215.75	24	1.8	1.8	24			3.6	4 1/2	4 1/2	—	—
SPECIAL CHANNELS (NON INVERTED SUB-BAND, FM BAND, INVERTED MID & SUPER BAND)	FM BAND													
	FM1	83.5-89.5	88-94	75	15	15	75			3.6	5 1/2	5 1/2	—	—
	FM2	89.5-95.5	94-100	51	12	12	51			3.6	5 1/2	5 1/2	—	—
	FM3	95.5-103.5	100-108	47	10	10	47			3.6	5 1/2	5 1/2	—	—
	DI	142.75	138.25	—	4.3	4.3	—			—	4 1/2	4 1/2	9C	9C
	J	217.25	221.75											
	K	223.25	227.75											
L	229.25	231.75												

FIGURE 14 TABLE, AUDIO MODULATOR



ALL CKT NUMBERS 200 SERIES, UNLESS NOTED.
ASSEMBLY NUMBER: A2

FIGURE 15 PC BOARD ASSEMBLY, POWER SUPPLY

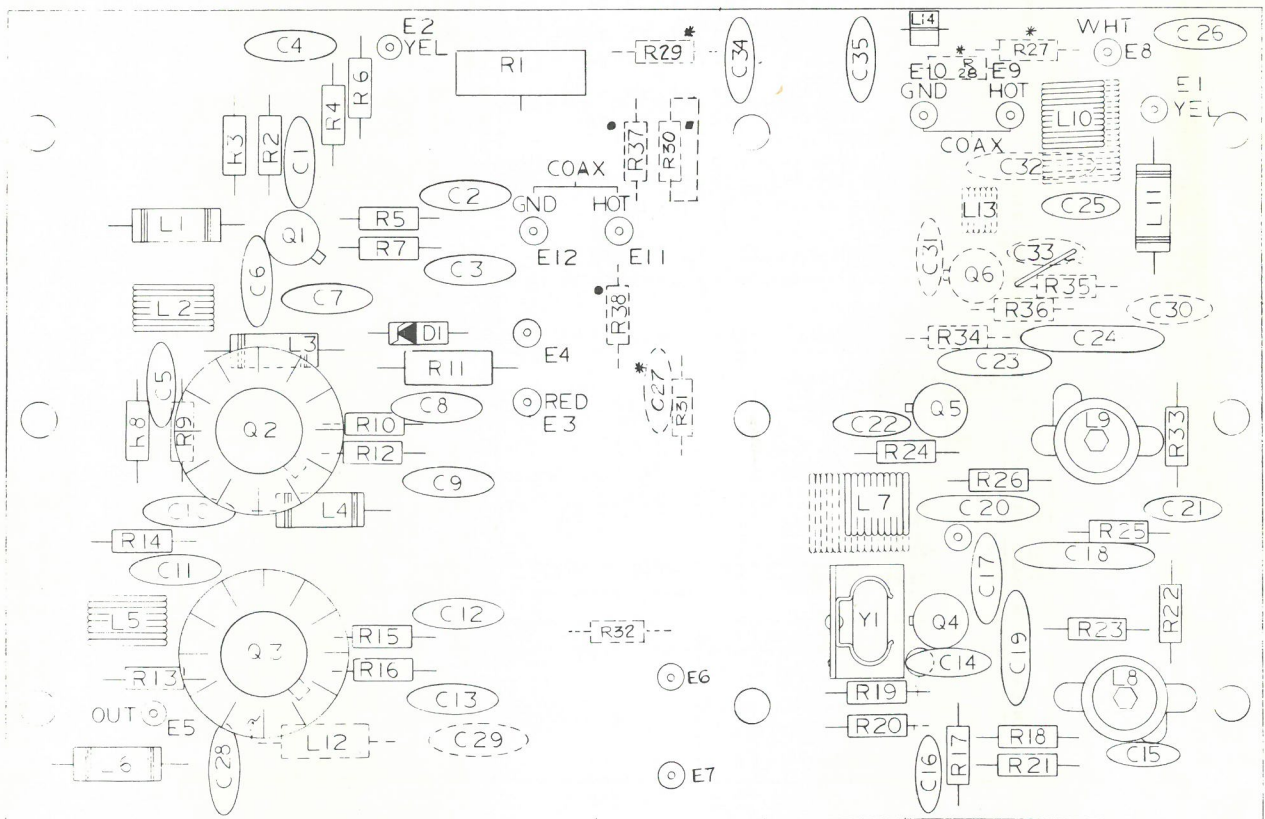
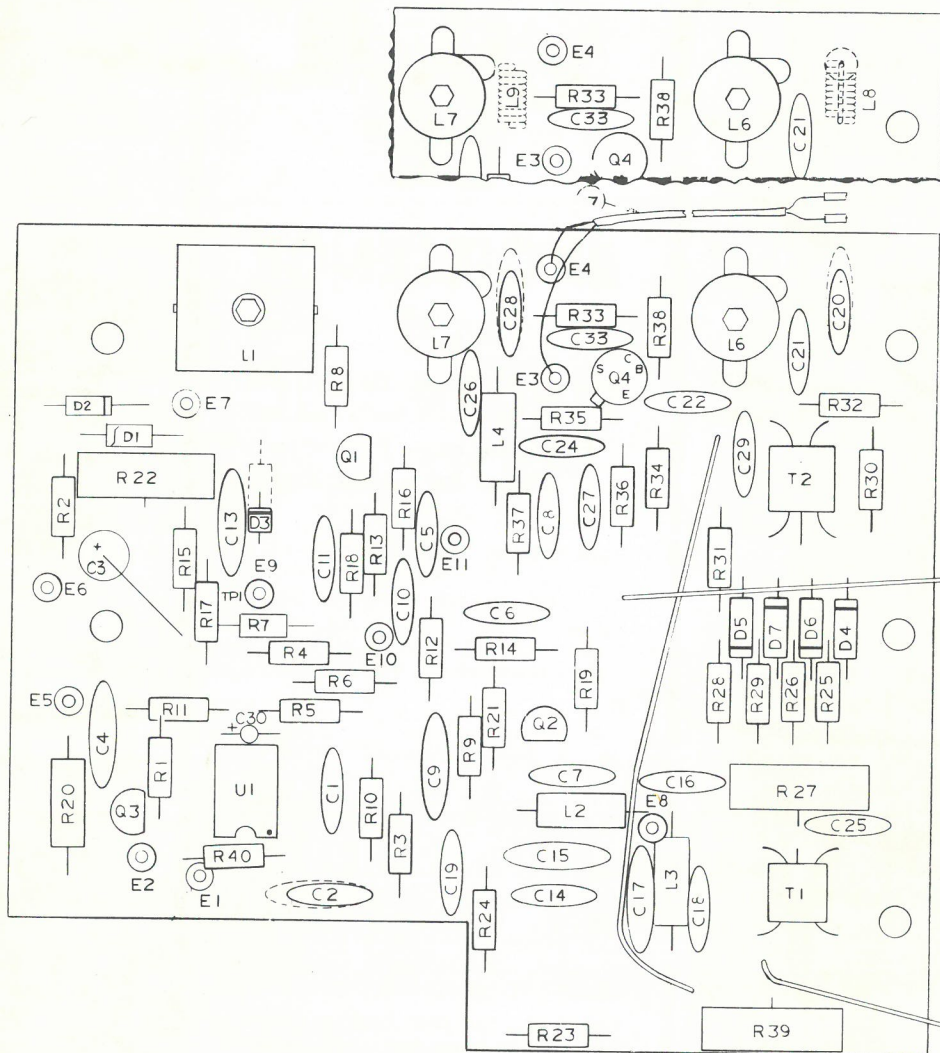
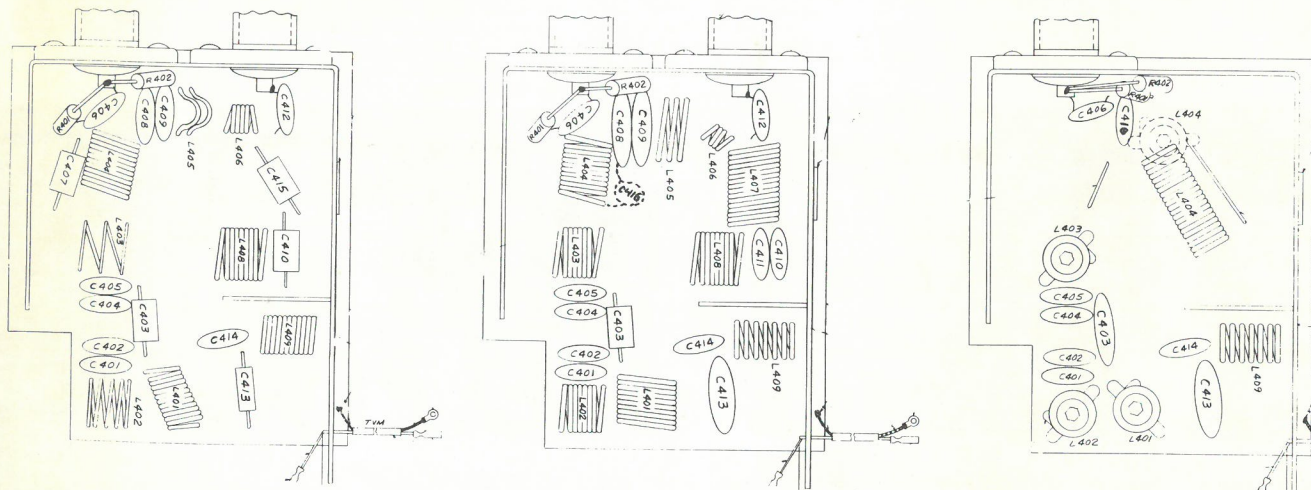


FIGURE 16 PC BOARD ASSEMBLY, BROADBAND AMP/OSC.



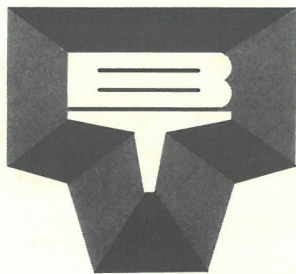
ASSEMBLY NO. A3
CIRCUIT NO. 300 SERIES

FIGURE 17 PC BOARD ASSEMBLY, AUDIO MODULATOR



ASSEMBLY NO. A4
CIRCUIT NO. 400 SERIES

FIGURE 18 PC BOARD ASSEMBLY, OUTPUT FILTER MODULE



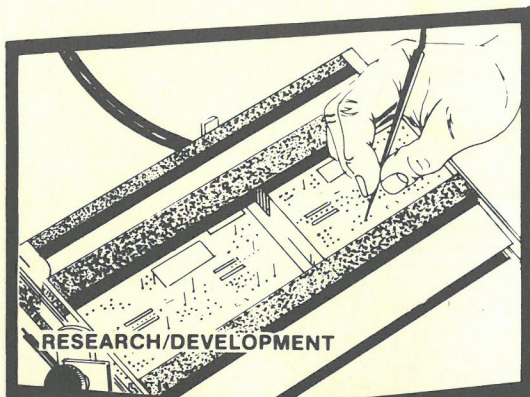
EXCELLENCE IN ELECTRONIC PRODUCTS

Backed by more than thirty years of technical and manufacturing experience and leadership in the field of TV signal distribution, Blonder-Tongue sets the "standard of excellence" for total performance in the industry.

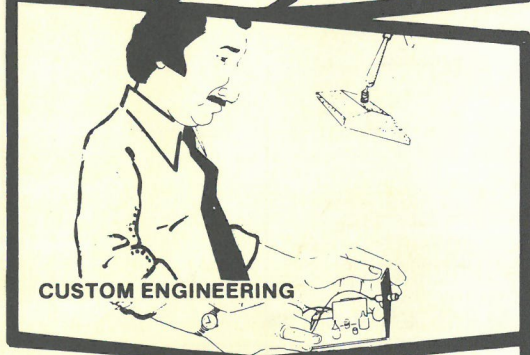
Blonder-Tongue manufactures the most comprehensive line of American made products designed to meet the most critical of requirements for MATV, CATV and Home TV systems, and as a pioneer in the Subscription Television (STV) field, Blonder-Tongue leads the way in this form of home entertainment with its patented BTVision encoding/decoding system. All production of STV products is done at our newest manufacturing facility located in nearby Lakewood, New Jersey.

Our production skills combined with a full range of capabilities in the areas of research and development, product engineering, quality assurance, custom system design, and distribution services enable Blonder-Tongue to provide its customers with the very best in products and services. Every product that bears our symbol carries our full commitment to excellence in electronic products.

We extend a welcome to you to visit our 130,000 square foot manufacturing and home office facility in Old Bridge, New Jersey at your convenience.



RESEARCH/DEVELOPMENT



CUSTOM ENGINEERING



MANUFACTURING-LAKWOOD



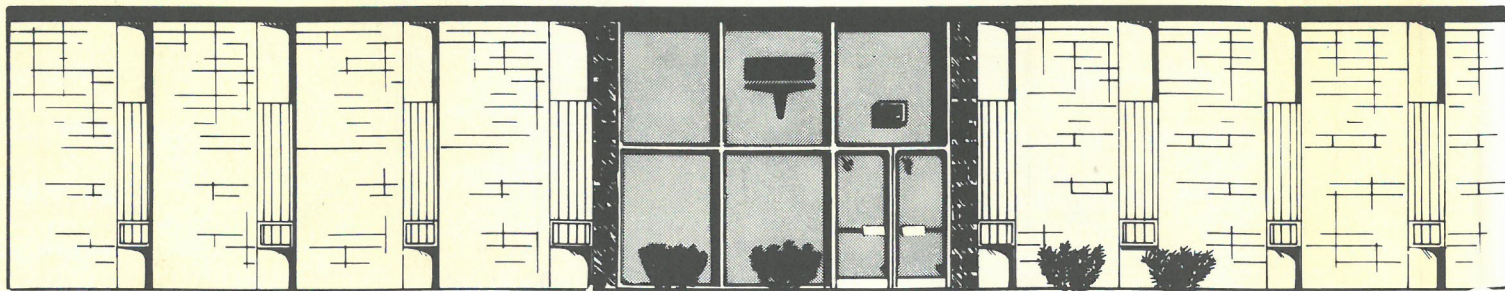
PRODUCT DESIGN



PRODUCTION



QUALITY CONTROL



 *the standard of excellence*

BLONDER-TONGUE LABORATORIES INC.

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