

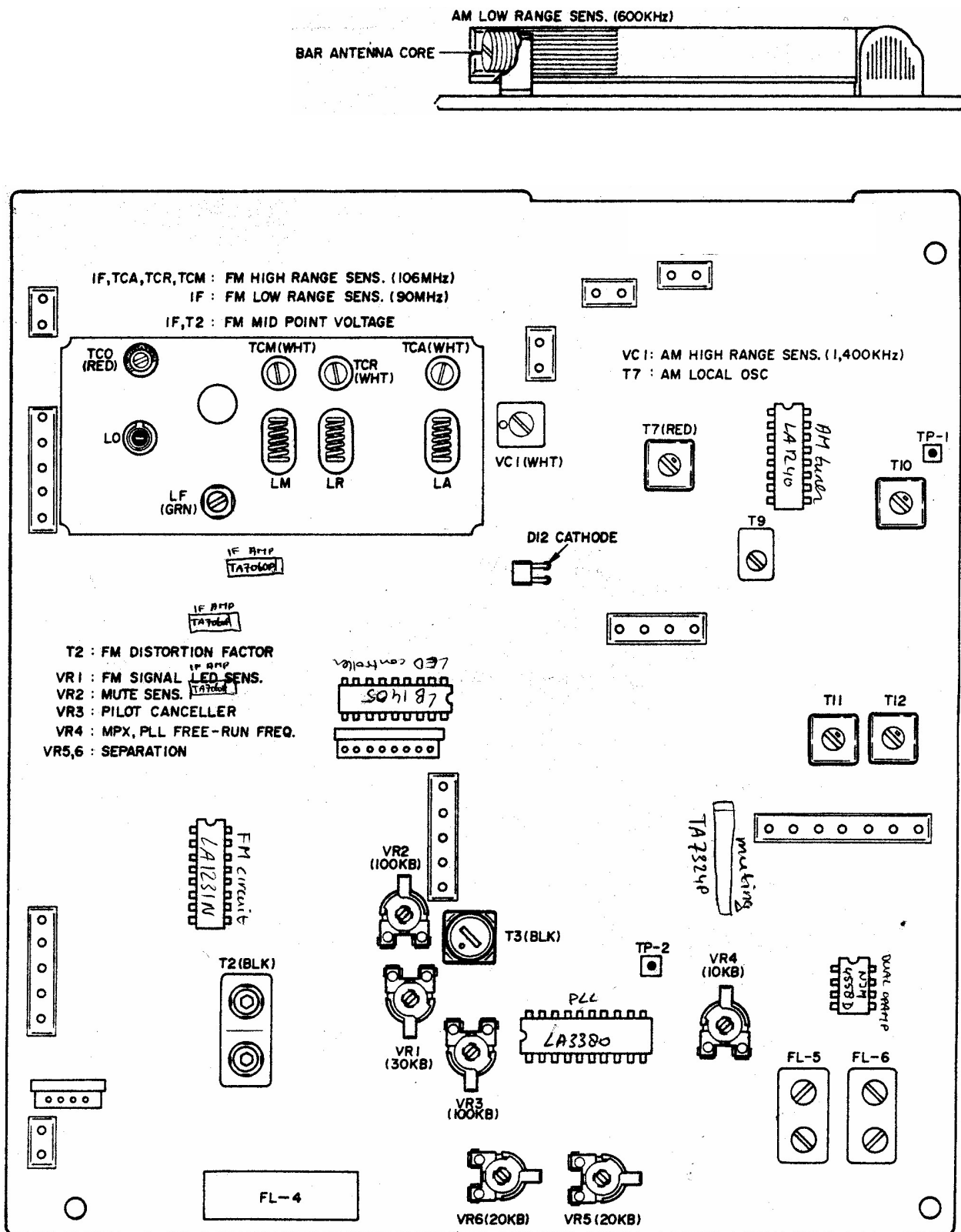
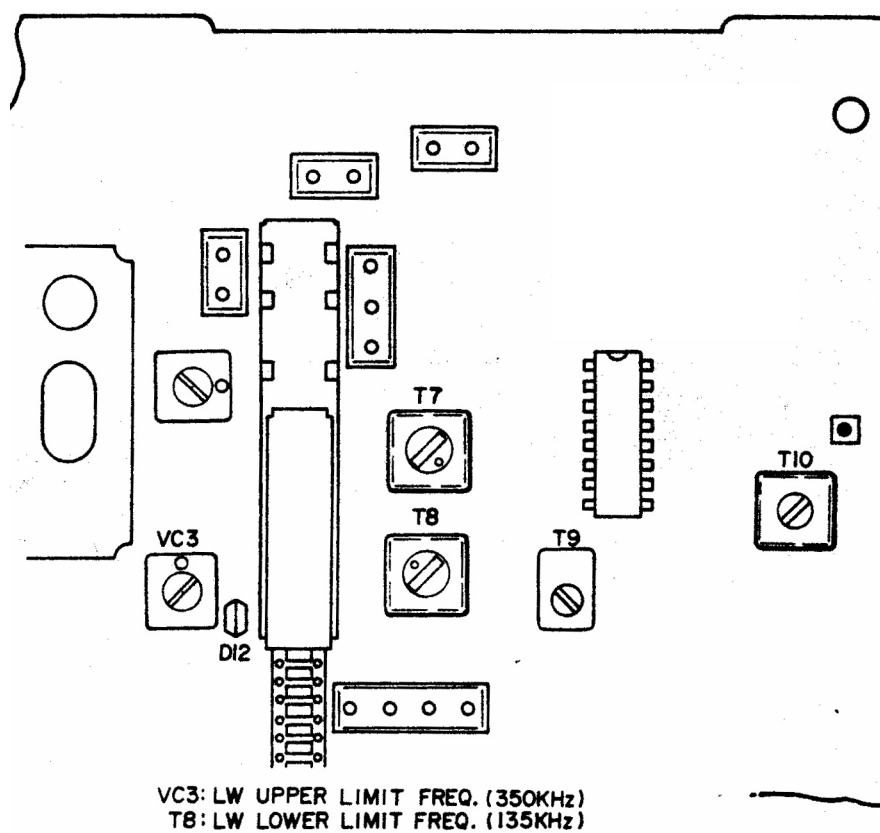
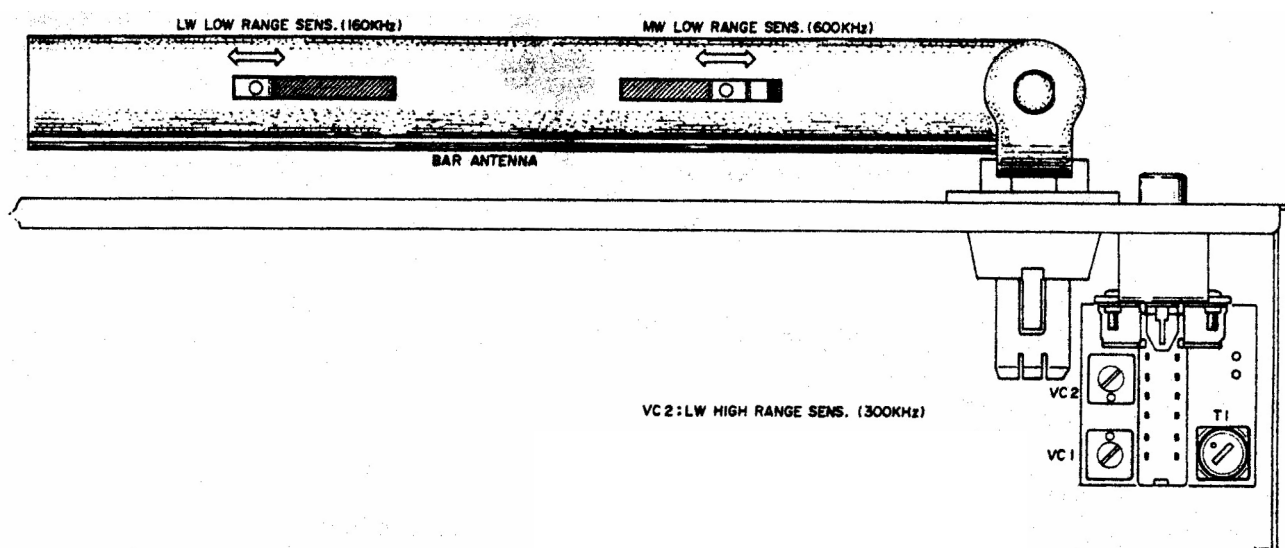


Fig. 5 Tuner P.C Board ATV-4001A (AT-V04)



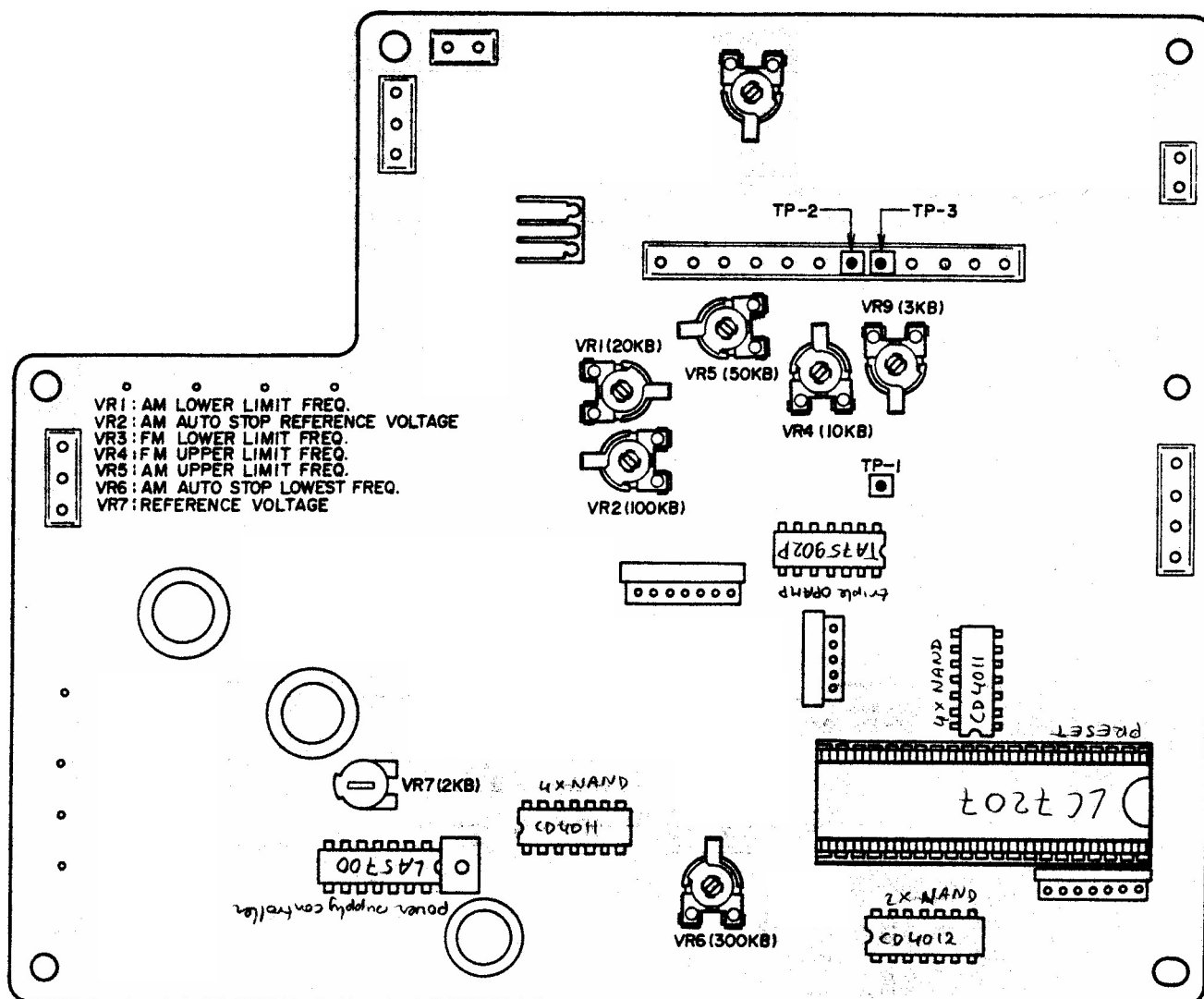


Fig. 7 Synthesizer P.C Board ATV-4002

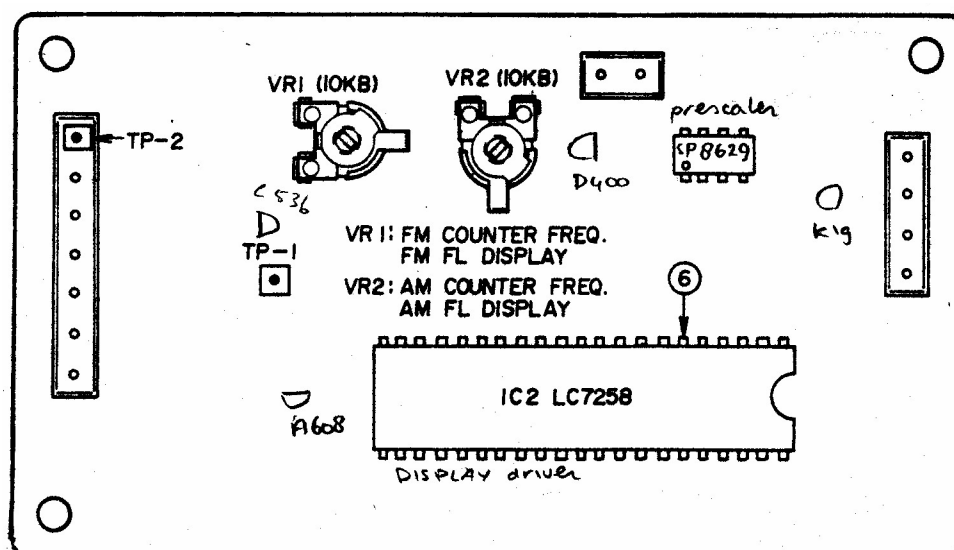


Fig. 8 FLD P.C Board ATV-4008

1. SYNTHESIZER SECTION ADJUSTMENT (Refer to Figs. 5, 7 and 8)

Step	Adjustment Item	Test Point	Adjustment Parts	Results & Remarks
1	Reference Voltage	TP-2 (ATV-4002)	VR7 (2 k Ω) (ATV-4002)	Adjust VR7 (2k Ω) so that the voltage at TP-2 become 8.0 $\pm$ 0.2 V. (VTVM)
2	FM Upper Limit Frequency	⑥ Pin of IC2 (LC7258) (ATV-4008)	VR4 (10 k Ω) (ATV-4002)	1) Set Band Selector Switch to "FM". 2) Turn Tuning knob fully clock-wise. 3) Adjust VR4 (10 k Ω) so that the counter reads 1,189 kHz [108.2 MHz (FL display) + 10.7 MHz] $\div$ 100 = 1,189 kHz. (Freq. Counter)
3	FM Counter Frequency	FL Display	VR1 (10 k Ω) (ATV-4008)	1) Set Band Selector Switch to "FM". 2) Turn Tuning knob fully clock-wise. 3) Adjust VR1 (10k Ω) so that FL Display shows 108.20 MHz.
4	AM Local OSC	⑥ Pin of IC2 (LC7258) (ATV-4008)	T7 (RED) (ATV-4001A)	1) Set Band Selector Switch to "AM" ("MW" AT-K04L). 2) Short cathode side of D12 (ATV-4001A) to ground. 3) Adjust T7 (RED) so that the counter reads 110 $\pm$ 1 kHz. (Freq. Counter)
5	AM Counter Frequency	FL Display	VR2 (10 k Ω) (ATV-4008)	1) Set Band Selector Switch to "AM". 2) Short cathode side of D12 (ATV-4001A) to ground. 3) Adjust VR2 (10 k Ω) so that FL Display shows 240 kHz.
6	AM Upper Limit Frequency	FL Display	VR5 (50 k Ω) (ATV-4002)	1) Set Band Selector Switch to "AM" ("MW" AT-K04L). 2) Turn Tuning knob fully clock-wise. 3) Adjust VR5 (50 k Ω) so that FL Display shows 1.620 kHz.
7	AM Lower Limit Frequency	FL Display	VR1 (10 k Ω) (ATV-4008)	1) Set Band Selector Switch to "AM" ("MW" AT-K04L). 2) Turn Tuning knob counter- clock-wise cws. 3) Adjust VR1 (10 k Ω) so that FL Display shows 515 kHz.
8	FM Lower Limit Frequency	FL Display	VR9 (3 k Ω) (ATV-4002)	1) Set Band Selector Switch to "FM". 2) Turn Tuning knob counter- clock-wise cws. 3) Adjust VR9 (3 k Ω) so that FL Display shows 87.40 MHz.

Step	Adjustment Item	Test Point	Adjustment Parts	Results & Remarks
9	AM Auto Stop Lowest Frequency	FL Display	VR6 (300 kΩ) (ATV-4002)	1) Set Band Selector Switch to "AM" ("MW" AT-K04L). 2) Short TP-3 (ATV-4002) to ground. 3) FL Display will show approx. 400 kHz. 4) Memorise this display to a certain "PRESET SECTION". 5) Disconnect Step 3). 6) Adjust VR6 (300 kΩ) so that the FL Display which recalled from memory becomes 515 kHz.
10	AM Auto Stop Reference Voltage	TP-2 (ATV-4002)	VR2 (100 kΩ) (ATV-4002)	1) Set to Band Selector Switch to "AM" ("MW" AT-K04L). 2) No signal input. 3) Adjust VR2 (100 kΩ) so that voltage at TP-2 is 4.75 ± 0.5 V. (VTVM)

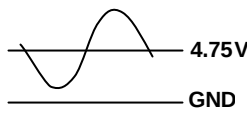
2. AM (MW AT-K04L) SECTION ADJUSTMENT (Refer to Figs. 5, 7 and 8)

Step	Adjustment Item	Test Point	Adjustment Parts	Results & Remarks
1	Low Range Sensitivity (600 kHz)	Output	Bar Antenna Core	1) Set FL Display to 600 kHz. 2) Feed a signal of 600 kHz, 30% modulation, 20 dB from SSG to Ant Input. 3) Increase the ATT of SSG and adjust the core so that the sensitivity at 10 % distortion factor obtains 45 dBm or less. (Distortion meter, SSG)
2	High Range Sensitivity (1,400 kHz)	Output	VC1 (WHT) (ATV-4001A)	Adjust the sensitivity at 1,400 kHz by the same as step 1.
3	Mid Range Sensitivity (1,000 kHz)	Output	Confirm	Check the sensitivity at 1,000 kHz by the same as step 1.
4	Auto Stop Sensitivity	FL Display SSG's ATT	Confirm	1) Feed a 1,000 kHz, 65 dB from SSG to Ant Input. 2) Operate the Auto Scan and check auto stop position by the FL Display indicates 1,000 kHz. (SSG)
5	Output Level	Output	Confirm	1) Feed a 1,000 kHz, 64 dB from SSG to Ant Input. 2) Check the output level is within $6.5 \text{ dBm} \pm 2 \text{ dB}$. (SSG, VTVM)
6	FL Display Frequency	FL Display	VR2 (10 kΩ) (ATV-4008)	1) Feed a 1 kHz to Ant Input and receive this signal. 2) Short TP-1, TP-2 (on ATV-4008) to ground. 3) Adjust VR2 (10 kΩ) until 4th numeral display become stable.

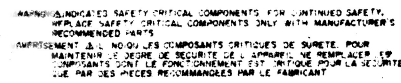
3. LW SECTION ADJUSTMENT (AT-V04L only)

Step	Adjustment Item	Test Point	Adjustment Parts	Results & Remarks
1	Upper Limit Freq.	FL Display	VC3 (ATK-4001A)	1) Turn Tuning Knob fully clockwise. 2) Adjust VC3 so that FL Display shows 350 kHz.
2	Lower Limit Freq.	FL Display	T8 (RED) (ATK-4001A)	1) Turn Tuning Knob fully counter-clockwise. 2) Adjust T8 so that FL Display shows 135 kHz.
3	Low Range Sensitivity (160 kHz)	Output	Bar Antenna Core	1) Set FL Display to 160 kHz 2) Feed a signal of 160 kHz, 30 % modulation, 20 dB from SSG to Ant Input. 3) Increase the ATT of SSG and adjust the core so that the sensitivity at 10 % distortion factor obtains 50 dBm or less. (Distortion meter, SSG)
4	High Range Sensitivity (300 kHz)	Output	VC2 (ATK-2063)	Adjust the Sensitivity at 300 kHz by the same as step 3.
5	Mid range Sensitivity (200 kHz)	Output	Confirm	Check the Sensitivity at 200 kHz by the same as step 3.
6	Auto Stop Level (INT Ant.)	FL Display	Confirm	1) Set the LW ANT Switch to "INT". 2) Feed a 200 kHz, 65 dB from SSG to Ant Input. 3) Operate the Auto Scan and check auto stop position by the FL Display indicates 200 kHz. (SSG)
7	Auto Stop Level (EXT Ant.)	FL Display	Confirm	1) Set the LW ANT Switch to "EXT" 2) Feed a 200 kHz, 45 dB from SSG to Ant Input. 3) Operate the Auto Scan and check auto stop position by the FL Display indicates 200 kHz. (SSG)

4. FM SECTION ADJUSTMENT (Refer to Figs. 5, 7 and 8)

Step	Adjustment Item	Test Point	Adjustment Parts	Results & Remarks
1	Mid Point Voltage	TP-1 (ATV-4002)	IF (GRN) (Front End) T2 (BLK) (ATV-4001A)	1) Feed 90 MHz, 60 dB from SSG to Ant Input. 2) Obtain 2 maximum output by adjusting IF core. 3) Adjust T2 (BLK) until the voltage at TP-1 is 4.75 V when "S" curve waveform is symmetry. (SSG, VTVM, Oscilloscope) 
2	Distortion Factor	Output	T2 (BLK) (ATV-4001A)	Minimize the distortion factor (less than 0.1 %) under the condition is step 1.
3				Readjust in steps 1 and 2.
4	High Range Sensitivity (106 MHz)	Output	IF (GRN) TCA (WHT) TCR (WHT) TCM (WHT) (Front End)	1) Input the 106 MHz Signal from the SSG into Ant Input. 2) At the point where distortion factor is 3 %, adjust so that ATT of SSG is less than 6 dB. (SSG, Distortion meter)
5	Low Range Sensitivity (90 MHz)	Output	IF (GRN) (Front End)	Input the 90 MHz Signal from the SSG into Ant Input, and adjust by the same as step 4-2).
6	Mid Range Sensitivity (98 MHz)	Output	Confirm	Check the sensitivity at 98 MHz by the same as step 4, and re-adjust in steps 4 to 6.
7	Mute Sensitivity (FM MUTE 1)	Output	VR2 (100 k Ω) (ATV-4001A)	1) Set FM MUTE Switch to "1". 2) Input the 98 MHz Signal from SSG to Ant Input. 3) Adjust VR2 (100 k Ω) to the point where the Output Signal disappears at SSG's ATT 30 $\pm$ 3 dB. (SSG, VTVM)
8	Mute Sensitivity (FM MUTE 2)	Output	VR1 (20 k Ω) (ATV-4006, Rear Panel)	1) Set FM MUTE Switch to "2" . 2) Adjust by the same as step 7, that input level is approx. 15 to 30 dB in VR1 (20 k Ω) min to max. (SSG, VTVM)
9	Signal LED Sensitivity	Signal LED	VR1 (30 k Ω) (ATV 4001A)	1) Feed 98 MHz, 45 $\pm$ 5 dB from SSG to Ant Input. 2) Adjust VR1 (30 k Ω) until the 5th LED is lighted. (SSG)
10	MPX, PLL Free-run Frequency	TP-2 (ATV-4001A)	VR4 (10 k Ω) (ATV 4001A)	1) No Signal input. 2) Set MODE Switch to "STEREO". 3) Adjust VR4 (10 k Ω) so that the counter reads 76 kHz $\pm$ 50 Hz. (Freq. Counter)

Step	Adjustment Item	Test Point	Adjustment Parts	Results & Remarks
11	Pilot Cancellor	Output	VR3 (100 k Ω) T3 (BLK) (ATV-4001A)	1) Feed a pilot signal (19 kHz, 10%) from SSG to Ant Input. 2) Adjust VR3 (100 kΩ) first so that output is minimum. 3) Adjust T3 (BLK) so that the output level of L-ch and R-ch are balanced. 4) Repeat steps 2) and 3) until output levels become 64 dB or less. (SSG, Distortion meter, VTVM)
12	Separation	Output	VR5 (20 k Ω) VR6 (20 k Ω) (ATV-4001A)	1) Connect 98 MHz, 60 dB stereo R-ch signal from SSG to Ant Input. 2) Adjust VR5 (20 kΩ) until R-ch output is maximum and L-ch output is minimum. 3) Similarly, proceed for L-ch using VR6 (20 kΩ) as steps 1) and 2). (SSG, VTVM)
13	Output Level	Output	VR2 (20 k Ω x2) (ATV-4006, Rear Panel)	1) Feed a 98 MHz, 60 dB from SSG to Ant Input, and VR2 (20 kΩ x2, ATV-4006 to maximum position. 2) Check the output level is 5.5 dBm $\pm$ 2 dB.
14	FL Display Frequency	FL Display	VR1 (10 k Ω) (ATV-4008)	1) Feed a 98 MHz to Ant Input and receive this signal. 2) Short TP-2 (ATV-4008) to ground. 3) Adjust VR1 (10 kΩ) until 3rd numeral display become stable.



AT-V04/L
SCHEMATIC DIAGRAM
NO. 2-1 1601218A

