

ACCESSORY CIRCUITS ALIGNMENT

1. **NOISE BLANKER Adjustment**

1-1. **Test Equipment Required**

(1) DC Voltage Meter

1-2. **Adjustment Procedures.**

(1) Set MODE SWITCH to USB, and receive 14.200 Mhz.

(2) Activate MARKER OSCILLATOR by pulling out RF ATT knob.

(3) Set NOISE BLANKER SWITCH to OFF.

(4) Tune the main dial to generate about 1,000 Hz beat from a speaker.

(5) Put the meter to the COLLECTOR of Q119.

(6) Adjust L139 and L140 to obtain minimum meter readings.

2. **MARKER OSCILLATOR ADJUSTMENT**

2-1. **Test Equipment Required**

(1) Frequency Counter.

2-2. **Adjustment Procedures**

(1) Connect Frequency Counter to the Pin 1 (Marker output) of J751 on the operation unit.

(2) Activate MARKER OSCILLATOR by pulling out RF ATT knob.

(3) Tune trimmer capacitor C753, so that the counter indicates 25.000 KHz ± 2 Hz..

2-3 **Adjustment by Standard Radio Signals**

(1) Connect antenna-to-antenna jack.

(2) Set BAND SWITCH to 15.0 SEGMENT SWITCH at 0/500, and receive 15 MHz Standard Signal (JJY, WWV, etc.)

(3) Pull out RF ATT knob to activate MARKER OSCILLATOR.

(4) Set MODE SWITCH to AM.

(5) Adjust trimmer C753 to make zero beat of calibration signal. It is easily adjustable Standard Radio Signal (A2), because double beat is generated.

(6) Adjust attenuator control to make the calibration easy against excessive incoming signal.

3. R.I.T CIRCUIT ALIGNMENT

3-1 Test Equipment Required

- (1) None

3-2 Adjustment Procedures

- (1) Set the main dial at 50, on any BAND or SEGMENT selection.
- (2) Pull out RF ATT knob and make the marker oscillator work to obtain about 1,000 Hz beat.
- (3) Set R.I.T knob to 0 at the WIDE (normal) position.
- (4) Adjust potentiometer R665 in AVR unit to obtain the same beat at ON or OFF of the R.I.T SWITCH.
- (5) Again try the same adjustment on R664 in AVR at the NARROW (pull) position of R.I.T.

4. S-METER ADJUSTMENT

4-1 Test Equipment Required

- (1) Standard Signal Generator (SSG)

4-2 Adjustment Procedures

- (1) Connect SSG output to antenna jack.
- (2) Set MODE SWITCH to USB.
- (3) Set BAND SWITCH to 14.0, SEGMENT SWITCH at 200/300, and tune the main dial to receive 14.200 MHz signal.
- (4) Turn RF GAIN CONTROL fully clockwise.
- (5) Turn RF ATT CONTROL fully clockwise.
- (6) Tune PRESELECT knob to obtain maximum noise output.
- (7) Set SSG frequency at other than 14.200 MHz and keep minimum output level.
- (8) Turn potentiometer R387 in the IF unit fully counterclockwise. Then, return it slowly clockwise and stop just before S-Meter starts moving.
- (9) Feed 40 dB of 14.200 MHz unmodulated output to transceiver, and turn the dial to obtain maximum S-Meter readings.
- (10) Adjust potentiometer R389 on the IF unit, so that the S-Meter indicator shows S-9 readings.
- (11) Set SSG Output at 80 dB.
- (12) Adjust potentiometer R392 on the IF unit, so that the indicator shows full-scale readings.
- (13) Repeat (9) – (12) adjustment until both prospective readings are available.

5. ALC METER ADJUSTMENT

5-1. Test Equipment Required

- (1) RF Power Meter.
- (2) Audio Generator (AG) x 2.
- (3) Audio Attenuator (ATT)
- (4) AF Milli-volt Meter (mV)

5-2. Adjustment Procedures

- (1) Connect RF power meter to antenna jack.
- (2) Set two AGs and ATT as described in Fig. 5-2-1, to provide two-tone signals to the microphone jack.

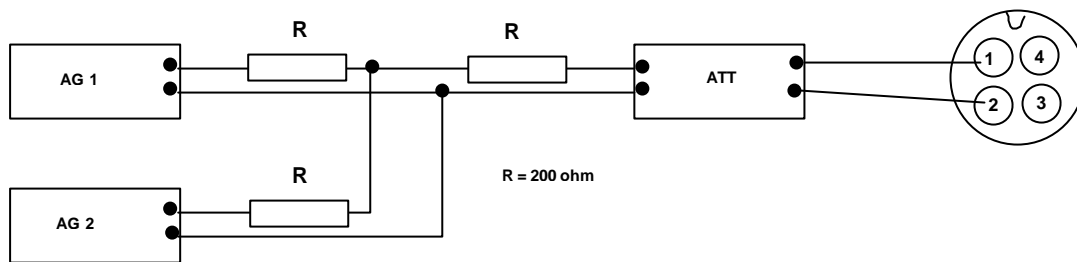


Fig 5-2-1

- (3) Tune and load transmitter at 14.2 MHz to obtain maximum output.
- (4) Set MODE SWITCH to USB.
- (5) Turn MIC GAIN CONTROL fully clockwise.
- (6) Set Meter Switch to ALC position.
- (7) Set AG 1 frequency to 1,900 Hz and AG 2's to 2300 Hz.
- (8) Measure each output voltage at the mV and set them to 10 mV.
- (9) Adjust and set the attenuator just before ALC Meter starts moving.
- (10) Reduce attenuation for 10 dB and increase microphone input.
- (11) Adjust potentiometer R388 on the IF unit so that the indicator points the right end of the green ALC scale on the meter.

RECEIVER ALIGNMENT

1. **ALIGNMENT PREPARATIONS**

1-1. **Set controls and switches on the front panel as indicated below:**

(1) FUNCTION SWITCH	INT.
(2) HTR SWITCH	OFF
(3) STANDBY SWITCH	PTT
(4) R.I.T SWITCH	OFF
(5) N.B. SWITCH	OFF
(6) AGC SWITCH	FAST
(7) MODE SWITCH	USB
(8) RF GAIN SWITCH	Fully Clockwise
(9) AG GAIN CONTROLL	Center position.
(10) SEGMENT SWITCH	0/500 KHz
(11) RF. ATT. CONTROL	Fully Clockwise
(12) OTHER CONTROLS & SWITCHES	Option

1-2. **Set rera panel switch and jack as indicated below:**

- (1) RF POWER AMP SWITCH Off
- (2) Connect external speaker (4 ohms), or 4 ohm dummy load to the EXT. SP jack.

1-3. Set PWR SWITCH to ON after completion of all preparations as mentioned above.

2. **RX RF UNIT ALIGNMENT**

2-1. **Test Equipment Required**

- (1) Standard Signal Generator (SSG)
- (2) AF milli-volt Meter (mV)

2-2. **IF Trap Coil Alignment**

- (1) Connect SSG output to antenna jack.
- (2) Connect mV to speaker or dummy load in parallel.
- (3) Set BAND Switch to 7.0, and SEGMENT SWITCH to 0/500.
- (4) Turn PRESELECT CONTROL fully counter-clockwise.
- (5) Provide 80 dB of 6.187 MHz unmodulated signal from SSG.
- (6) Adjust L01 and L207, so as indicate minimum readings on S-Meter or mV.

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2-3. Tuning Coil Alignment

- (1) Connect SSG output and mV as 2-2 (1), (2).
- (2) Set PRESELECT CONTROL to center position.
- (3) Select BAND SWITCH and SEGMENT SWITCH in order, starting from 15.0 MHz according to the chart 2-2-1-A, and also provide listed frequency signals (unmodulated 40 dB) from SSG as show in the chart 2-2-1-B and receive them by tuning the main dial.
- (4) Get maximum S-Meter or mV readings by adjusting tuning coils as indicated (L201 – L213) on each band.
- (5) Control SSG output during this process to make adjustment easier.

Chart 2-2-1

	A	B	C
BAND	SEGMENT	FREQ. (MHz)	COIL No.
15.0	0/500	15.000	L201, L208
3.5	100/600	3.600	L202, L209
7.0	100/600	7.100	L203, L210
14.0	200/700	14.200	L204, L211
21.0	200/700	21.200	L205, L212
28.5	0/500	28.500	L206, L213

2-4. IF Tuning Coil Alignment.

- (1) Connect SSG and mV as 2-2 (1), (2)
- (2) Set BAND SWITCH to 14.0, and SEGMENT SWITCH to 200/700.
- (3) Provide 40 dB of 14.200 MHz unmodulated signal from SSG.
- (4) Tune the main dial and receive the input signal, then control PRESELECT knob to get maximum output readings.
- (5) Adjust L214 – L218 so as to get the maximum readings on S-Meter or mV.

3. IF UNIT ALIGNMENT

3-1. Test Equipment Required

(1) Same as 2-1

3-2. Preparations

Take out IF UNIT (PC-078) and put SERVICE EXTENSION BOARD in its place, then CONNECT the IF UNIT to the EXTENSION BOARD.

3-3. Coil Adjustment.

(1) Process the same as 2-4, (1) – (4).

(2) Adjust L351 – L354 to get the maximum readings or S-Meter or mV.

3-4. Carrier Balance Adjustment.

(1) Process the same as 2-4, (1) – (4), but note that SSG output should be 20 dB.

(2) Adjust CARRIER BALANCE potentiometer R374 and trimmer capacitor C370 to get the maximum readings on mV.

TRANSMITTER ALIGNMENT

1. ALIGNMENT PREPARATION

1-1. Set control and switches on the front panel as follows.

- | | |
|-------------------------------|------------------------|
| (1) FUNCTION SWITCH | INT. |
| (2) STANDBY SWITCH | PTT |
| (3) METER SWITCH | IK |
| (4) MIC GAIN CONTROL | Fully counterclockwise |
| (5) CARRIER CONTROL | Fully counterclockwise |
| (6) OTHER CONTROLS & SWITCHES | Option |

1-2. Set rear panel switch and jack as indicated below:

- | | |
|---|----|
| (1) RF POWER SWITCH | ON |
| (2) Connect RF power meter (50 ohms impedance) to antenna jack. | |

1-3. Set PWR and HTR switch to ON after completion of all preparations as mentioned above.

1-4. Please note following instructions at the position of the wordings:

OBTAIN MAXIMUM OUTPUT AT.....MHz, which will be mentioned here after during tuning procedures and marked *

- (1) Make 1-1 1-3 preparations.
- (2) Set MODE SWITCH to TUNE.
- (3) Select BAND and SEGMENT SWITCHES according to the desired frequency.
- (4) Set METER SWITCH to ALC position.
- (5) Set PLATE CONTROL knob around the desired frequency range.
- (6) Set LOAD CONTROL knob to center position.
- (7) Set CARRIER CONTROL knob to center position.
- (8) Set STANDBY SWITCH to MANU.
- (9) Tune PRESELECT CONTROL to get maximum meter readings.
- (10) Set METER SWITCH to PWR.
- (11) Adjust PLATE and LOAD controls by turns to get maximum meter readings.
- (12) Reset the STANDBY SWITCH to PPT position.
- (13) Turn CARRIER CONTROL knob fully counterclockwise.

CAUTION

- (1) During transmitter tuning, do not keep the final tube running untuned for a long period of time. Make quick adjustment of PLATE and LOAD controls.
- (2) High voltage is generated especially inside of the final amplifier and also bottom of the PA compartment. Don't touch part of them.

2. PA IDLING CURRENT ADJUSTMENT

2-1. Test Equipment Required

- (1) None

2-2. Adjustment Procedure.

- (1) Set MODE SWITCH to USB.
- (2) Set STANDBY SWITCH to MANU
- (3) Adjust the BIAS potentiometer, R16 on the rear panel so as to indicate GREEN TRIANGLE MARK on the meter.

3. GENERATOR UNIT ALIGNMENT

3-1. Test Equipment Required

- (1) RF voltage Meter
- (2) AF milli-volt Meter (mV)
- (3) Audio Generator (AG)
- (4) Frequency Counter.
- (5) Oscilloscope

3-2. Preparations

Take out Generator Unit (PC-080) and put a SERVICE EXTENSION BOARD in its place, then connect the GENERATOR UNIT to the EXTENSION BOARD.

- 3-3.** (1) Connect RF voltage meter the (RF VTVM) to Pin 16 of J18.
- (2) Adjust L510 to get maximum meter readings.
- (3) Remove RF VTVM and connect frequency counter to Pin 16 of J18.
- (4) Set MODE SWITCH to USB, and adjust trimmer capacitor C541 so that the frequency counter indicates 6,187.000 kHz.
- (5) Set MODE SWITCH to TUNE, and adjust trimmer capacitor C542 so that the counter reading indicates 6,187.750 kHz.

3-4. Modulator Output Coil Adjustment

- (1) Connect RF VTVM to Pin 6 of J16 (IF UNIT).
- (2) Set RF AMP SWITCH on the rear panel to OFF.
- (3) Set MODE SWITCH to TUNE.
- (4) Turn CARRIER CONTROL knob fully clockwise.
- (5) Set STANDBY SWITCH to MANU.
- (6) Adjust L501 for maximum VFVM indication. It will indicate around 0.2V r.m.s.
- (7) Reset CARRIER CONTROL fully counter-clockwise and STANDBY SWITCH to PTT.
- (8) Connect AG output to the microphone jack and provide 1,500 Hz, 10 mV output.
- (9) Set MODE SWITCH to USB.
- (10) Turn MIC GAIN CONTROL fully clockwise.
- (11) Set STANDBY SWITCH to MANU.
- (12) Adjust L504 for maximum meter indication. It will indicate around 0,3V r.m.s.

3-5. Balanced Modulator Alignment.

- (1) This alignment should be taken place after completion of OUTPUT METER adjustment (5-1, 5-2).
- * (2) Obtain maximum output at 14.2 MHz.
- (3) Set MODE SWITCH to USB.
- (4) Connect RF meter to antenna jack.
- (5) Make sure that MIC GAIN CONTROL is set fully counter-clockwise.
- (6) Set STANBY SWITCH to MANU and adjust R530 for the minimum meter indication.
- (7) Change MODE SWITCH to LSB and USB by yurns, and make presise tuning by adjusting R530 to get equal meter readings on both modes.

3-6. AM Modulation Adjustment

- (1) This alignment also should be made after completion of OUTPUT METER adjustment (5-1, 5-2).
- * (2) Obtain maximum output at 14.2 MHz.
- (3) Set MODE SWITCH to AM
- (4) Set STANDBY SWITCH to MANU.
- (5) Turn CARRIER CONTROL to get 120 mV reading on the meter.
- (6) Connect AG output to microphone jack and provide 1,500 Hz, 10 mV output.
- (7) Set MIC GAIN CONTROL to 3 o'clock position.
- (8) Use Oscilloscope to observe output envelope.
- (9) Adjust R509 to keep about 80% of output modulation level.

4. TRANSMITTER RF CIRCUITS ALIGNMENT

4-1. Test Equipment Required

(1) RF Power Meter.

4-2. Tuning Coil Adjustment

*(1) Obtain maximum output at each frequency in chart 4-2-1-A, but note that PRESELECT CONTROL should be center position.

(2) Set METER SWITCH to ALC.

(3) Turn CARRIER CONTROL knob fully clockwise.

(4) Set STANDBY SWITCH to MANU.

(5) Adjust each coil in chart 4-2-1-B to get the maximum meter reading.

(6) Return CARRIER CONTROL counterclockwise so as to make tuning more easily upon adjustment.

(7) Repeat (1) to (6) procedures on each band in order as show in the chart 4-2-1.

Chart 4-2-1

A	B
Adjusting Frequency (MHz)	Adjusting Coil No.
3.600	L251, L252, L259
7.100	L253, L260
14.200	L254, L261
21.200	L255, L262
28.500	L256, L263

5. *RF output meter adjustment*

5-1. Test Equipment Required

(1) RF Power Meter.

5-2. Adjustment Procedure.

*(1) Obtain maximum output at 14.2 MHz

(2) Set METER SWITCH to PWR.

(3) Turn CARRIER CONTROL knob fully clockwise.

(4) Adjust the meter adjustment potentiometer R08 on the rear panel, so that the IK reading shows 200 mA.

6. *FEEDBACK NEUTRALIZING.*

6-1. Test Equipment Required

(1) RF voltage Meter (RF VTVM)

6-2. Adjustment Procedures.

*(1) Obtain maximum output at 21.2 MHz.

(2) Set RF POWER AMP SWITCH on rear Panel to OFF.

(3) Connect VTVM to antenna jack.

(4) Turn CARRIER CONTROL FULLY clockwise.

(5) Set STANDBY SWITCH to MANU.

(6) Adjust the air trimmer C1037 to obtain minimum meter readings.

CAUTION use insulated screw driver only for this adjustment.

POWER SUPPLY ALIGNMENT

1. *AVR UNIT (PC-082) ALIGNMENT.*

1-1. **Test Equipment Required**

(1) DC Voltage Meter.

1-2. **Voltage Measurement and Adjustment.**

- (1) 8.2V DC Power Source:
Connect DC Voltage meter to Pin 3 of J651, and adjust potentiometer R659 to get 8.2V \pm 0.2V of meter readings.
- (2) 6V DC Power Source:
Connect the meter to Pin 5 of J651, and check that the meter reading indicates within 5.5 – 6.5V.
This process should be made after completion of (1) as mentioned above.
- (3) 5V DC Power Source:
Connect the meter to Pin 9 of J651 and adjust potentiometer R653 to get 5V +0.2 - 0.1V of meter readings.
- (4) R.I.T Power Source:
Connect the DC meter to Pin 6 of J651 and adjust potentiometer R662 to get 1.3V \pm 0.1V of meter readings.

LOCAL OSCILLATOR CIRCUITS ALIGNMENT

1. *VFO UNIT (PC-083, PC-084) ALIGNMENT*

1-1. **Test Equipment Required**

- (1) Frequency Counter
- (2) RF voltage Meter (RF VTVM)

1-2. **Oscillator Frequency Adjustment.**

- (1) Set FUNCTION SWITCH to INT
- (2) Set R.I.T SWITCH to OFF
- (3) Connect Frequency Counter to Pin 5 J701.
- (4) Turn the main dial and set it to 00 KHz (toward 90 kHz, 100 kHz), then adjust L702 to get 9,038 kHz counter reading.
- (5) Then turn the dial to 00 kHz (toward 10 kHz), and adjust trimmer C707 to get 9,138 kHz counter readings.
- (6) Repeat (4) and (5) adjustments until both readings are made correctly.

1-3. **Output Voltage Adjustment.**

- (1) Set switches to same as 1-2 adjustment.
- (2) Connect RF meter to Pin 5 of J701.
- (3) Turn and set the dial to 50 (center) readings.
- (4) Adjust L706 and L707 to get maximum meter readings. It will indicate around 0.4 – 0.5V r.m.s.

2. PLL UNIT (PC-086, PC-087) ALIGNMENT.

2-1. Test Equipment Required

- (1) Frequency Counter
- (2) RF voltage Meter (RF VTVM)

2-2. VCO Unlocked-oscillation Frequency Adjustment.

- (1) Set FUNCTION SWITCH to R. EXT.
- (2) Connect Frequency Counter to the DRAIN of Q807.
- (3) Adjust L801 so as to get 16.000 MHz counter readings.

CAUTION Don't use magnetized tools when adjusting PLL unit because magnetization of VCO coil core may make C/N of oscillation output worse extremely.

2-3. Bandpass Amplifier Alginment.

- (1) Set FUNCTION SWITCH to INT.
- (2) Set SEGMENT SWITCH to 200/700 kHz.
- (3) Turn and set the dial to 50 (center) readings.
- (4) Connect RF voltage meter to the BASE of Q817.
- (5) Adjust L804 – L807 to get maximum meter readings. It will indicate about 0.5V r.m.s.

3. LOCAL OSCILLATOR UNIT (PC-092) ALIGNMENT.

3-1. Test Equipment Required

- (1) RF Voltage Meter.
- (2) Frequency Counter.
- (3) Sweep Generator.
- (4) Oscilloscope.

3-2. Xtal Oscillator Output Adjustment.

- (1) Connect RF voltage meter to TP102.
- (2) Select BAND SWITCH in order, starting from 15.0 MHz, according to chart 3-2-1-A and adjust each coils in 3-2-1-B so as to get 1.5V r.m.s. meter readings, respectively.

Chart 3-2-1

A	B	C	D
BAND	COIL (see 3-2)	Freq. (see 3-3)	TRIMMER (see 3-3)
15.0	L101	37.025 MHz	C116
3.5	L102	25.525	C117
7.0	L103	29.025	C118
14.0	L104	36.025	C119
21.0	L105	43.025	C120
28.0	L106	50.025	C121
28.5	L107	50.525	C122
29.0	L108	51.025	C123
29.5	L109	51.525	C124
27.0	L110	49.025	C125

3-3. Xtal Oscillator Frequency Adjustment.

- (1) Connect Frequency Counter to TP102 through 1pF capacitor.
- (2) Select BAND SWITCH in order starting from 15.0 MHz according to the chart 3-2-1-A and adjust each trimmer in 3-2-1-D so as to obtain frequency readings as shown in 3-2-1-C respectively.

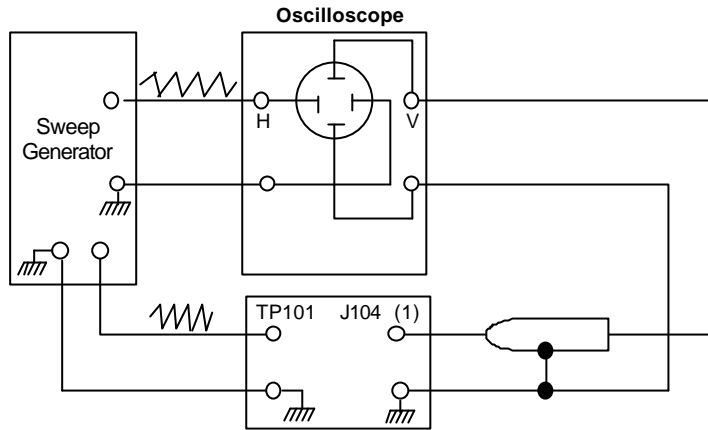
3-4. VCO Buffer Amplifier Adjustment.

- (1) Connect RF voltage meter to DRAIN of Q113.
- (2) Set BAND SWITCH to 3,5 MHz.
- (3) Set SEGMENT SWITCH to 200/700 kHz.
- (4) Turn and set the dial to 50 (center) readings.
- (5) Adjust L121 and L122 to get maximum meter readings.

3-5. Bandpass Filter Adjustment.

(1) Connect test equipments as show in Fig 3-5-1

Fig 3-5-1



(2) Select BAND SWITCH in order, starting from 15.0 MHZ according to the chart 3-5-1 and adjust each coil (3-5-1-C) so as to get the assigned wave from on oscilloscope (3-5-1-B) respectively.

(3) After completion of these adjustments, remove sweep generator and oscilloscope. Then, connect RF voltage meter to Pin 1 of J104 and confirm that meter readings on each band show 0.7 – 1.3V r.m.s.

Chart 3-5-1

A	B	C
BAND	WAVE FORM	COIL
15.0	Fig. 3-5-2	L123, L130
3.5	3-5-3	L124, L131
7.0	3-5-4	L125, L132
14.0	3-5-5	L126, L133
21.0	3-5-6	L127, L134
28.0	3-5-7	L128, L135
28,5	3-5-8	L129, L136

VOLTAGE MEASUREMENTS

1. TUBE

Section	Pin No Tube	T R	1	2	3	4	5	6	7	8	9	P
Final	V1001 6146B	T	0.29	(12.6)	205	0.29	-50	0.29	(6.3)	0	-	750
		R	0	(12.6)	215	0	-79	0	(6.3)	0	-	900
Final	V1002 6146B	T	0.29	(6.3)	205	0.29	-50	0.29	0	0	-	750
		R	0	(6.3)	215	0	-79	0	0	0	-	900
*Final	V1001 6146B	T	0.23	(12.6)	218	0.23	-50	0.23	(6.3)	0	-	430
		R	0	(12.6)	218	0	-79	0	(6.3)	0	-	460

2. Transistor & FET

Section	Q Nr.	TYPE	T or R	E or S	C or D	B or G1	G2
L.O	Q 101	2SC735Y	R	0	4.5	0	
	102	2SC784R	R	1.6	5.0	2.2	
	103	2SC372Y	R	1.6	5.0	2.2	
	104	2SC372Y	R	1.6	5.0	2.2	
	105	2SC784R	R	1.6	5.0	2.2	
	106	2SC784R	R	1.6	5.0	2.2	
	107	2SC784R	R	1.6	5.0	2.2	
	108	2SC784R	R	1.6	5.0	2.2	
	109	2SC784R	R	1.6	5.0	2.2	
	110	2SC784R	R	1.6	5.0	2.2	
	111	2SC784R	R	1.6	5.0	2.2	
	112	2SC380Y	R	1.7	11.7	2.4	
	113	3SK35BL	R	0.5	12.0	0	
	115	2SK19GR	R	2.0	11.5	0	
	116	2SC380Y	R	6.5	10.1	5.0	
	117	2SC380Y	R	6.5	10.1	5.0	
	118	2SC380Y	R	2.8	11.4	3.4	
	119	2SC372Y	R	0	10.3	0	
	120	2SC372Y	R	0	5.7	0	
	RX-RF	Q 201	3SK35GR	R	0.6	10.6	0.5
202		3SK35GR	R	1.1	11.8	0	4.4
203		2SK19GR	R	1.4	11.8	0	-
204		2SK19GR	R	0.7	0.9	0	-
TX-RF IF	Q 251	3SK35BL	T	0.7	11.0	0	1.3
	Q 351	3SK35GR	R	0.7	7.4	0.6	4.0
	352	3SK35GR	R	0.7	7.4	0.6	2.6
	353	3SK35GR	R	0.7	7.4	0.6	2.6
	354	2SC372Y	R	0.8	5.0	1.5	-
	355	2SK19GR	R	0.1	1.3	0	-
	356	2SC372Y	R	0.8	8.2	1.3	-
	357	2SC372Y	T	0	0.8	1.0	-
	357	2SC372Y	R	0	0.8	0	-

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Section	Q Nr.	TYPE	T or R	E or S	C or D	B or G1	G2
AF	Q 401	2SK30AY	R	0	1.3	4.7	-
	402	2SC372Y	R	4.5	9.8	5.0	-
	403	2SC372Y	R	0.1	3.5	0.7	-
	404	2SC372Y	R	1.4	7.9	0	-
	405	2SA495Y	R	10.2	0	0	-
	406	2SC372Y	R	1.4	1.5	2.0	-
	407	2SC735Y	R	0	12.0	0	-
	408	2SC372Y	CW R	1.7	5.9	2.3	-
	409	2SC372Y	R	1.1	3.3	1.8	-
	GE	Q 502	2SC380Y	T	0.2	2.5	1.2
503		2SC372Y	T	2.5	7.4	3.2	-
506		2SC372Y	SSB T	2.6	6.7	3.3	-
507		2SC380Y	T & R	2.1	6.6	2.7	-
508		2SC380Y	T & R	1.5	7.5	2.1	-
AVR	Q 651	2SC372Y	R	5.8	8.7	6.4	-
	652	2SC11730	R	5.0	8.7	5.8	-
	653	2SC372Y	R	2.6	6.4	3.2	-
	654	2SC11730	R	11.1	12.0	11.8	-
	655	2SC372Y	R	8.9	11.1	9.5	-
	656	2SC11730	R	8.2	11.1	8.9	-
	657	2SC373Y	R	2.6	9.5	3.2	-
	658	2SC372Y	R	6.0	8.2	6.7	-
	VFO	Q 701	2SK19GR	R	0.5	4.2	0
702		2SK19GR	R	1.0	4.5	0	-
703		2SC380Y	R	0.9	4.8	1.4	-
OPR RF-PA	Q 754	2SC380Y	R	0.7	4.3	1.4	-
	Q1001	2SC9830	T	-50	-1.0	-50	-
	Q1001	2SC9830	R	-79	0	-79	-

3. IC

Unit	I.C.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
GE	Q 501 MC 1496	1.6	0.9	0.7	1.4	1.0	4.8	0	3.8	0	3.8	0	4.8	0	0
	Q 504 MC 1496	2.5	1.8	1.8	2.5	1.0	5.1	0	4.6	0	4.6	0	5.1	0	0
	Q 505 TA7063P	1.3	0.6	0	0	0.7	4.5	7.2	-	-	-	-	-	-	-
AF	Q 410 TA7204P	0	5.8	12.0	7.1	1.4	10.4	11.3	5.6	5.8	5.5	-	-	-	-

Notes

- (1) Unit: Volt
- (2) Voltage depends on 10M ohm Impedance of V.T.V.M
- (3) T: Voltage at maximum TUNE output
R: Voltage at receiving at no signal
- (4) Voltage in the parentheses means on AC and others on DC
- (5) E: Emitter C: Collector B: Base S: Source
D: Drain G1: Gate 1 G2: Gate 2
- (6) Mark * means final section of 2020P which is modified to 10W for domestic marker use.

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VOLTAGE MEASUREMENT

PLL UNIT

Set SEGMENT SWITCH at 0 position
 Set BAND at 14.0 MHz
 Set VFO DIAL at 00

		E or S	B or G1	G2	C or D
Q 803	2SC1682	1.2 V	1.7 V		5.0 V
804	2SC373	0.7	1.2		3.3
805	2SC373	0	0.7		3.3
806	2SK19	0.5	-		3.2
807	2SK19	0.8	-		4.2
808	3SK35	0.9	-		8.8
809	2SK19	0.8	-		8.7

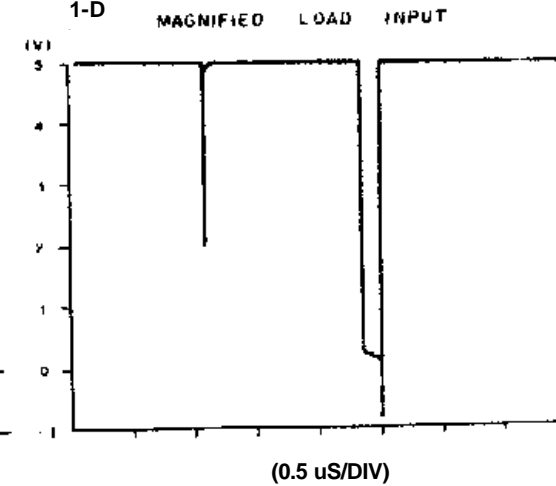
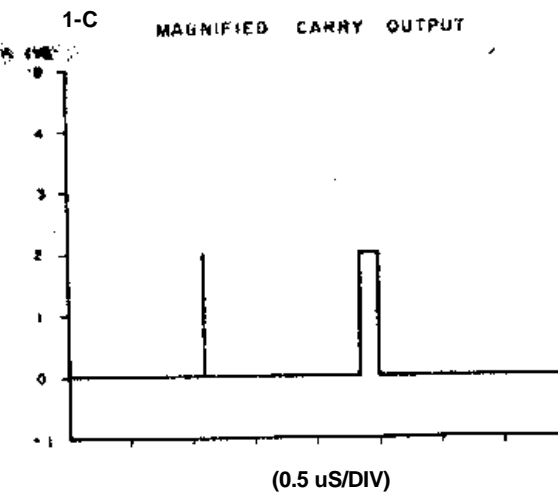
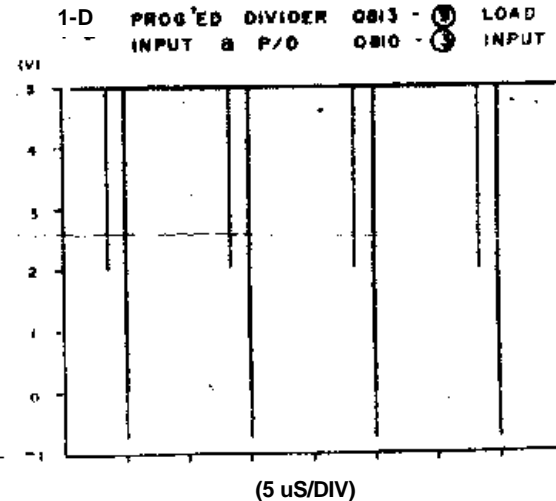
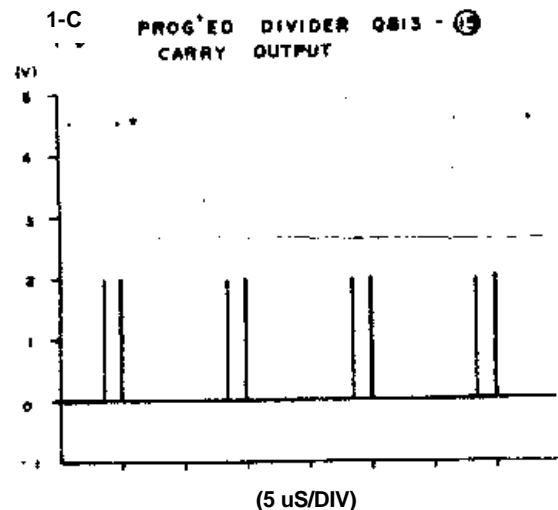
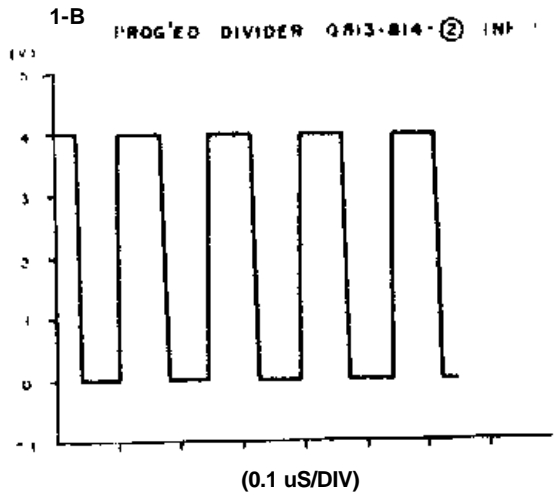
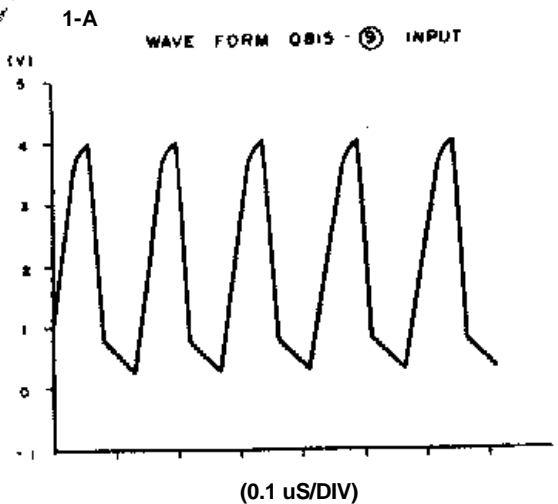
Measurement by DIGITAL VOLTMETER

RF VOLTAGE

		B or G1	G2	C or D
Q 806	2SK19	-		2.2 V P-P
807	2SK19	0.8 V P-P		2.0 V P-P
808	3SK35	240 mV P-P	1.6 V P-P	0.9 V P-P
809	2SK19	0.8 V P-P		7.5 V P-P
817	2SC735	1.4 V P-P		5.0 V P-P

Measurement by CRT Oscilloscope

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PLL Unit (PC-086)

Fig. 17

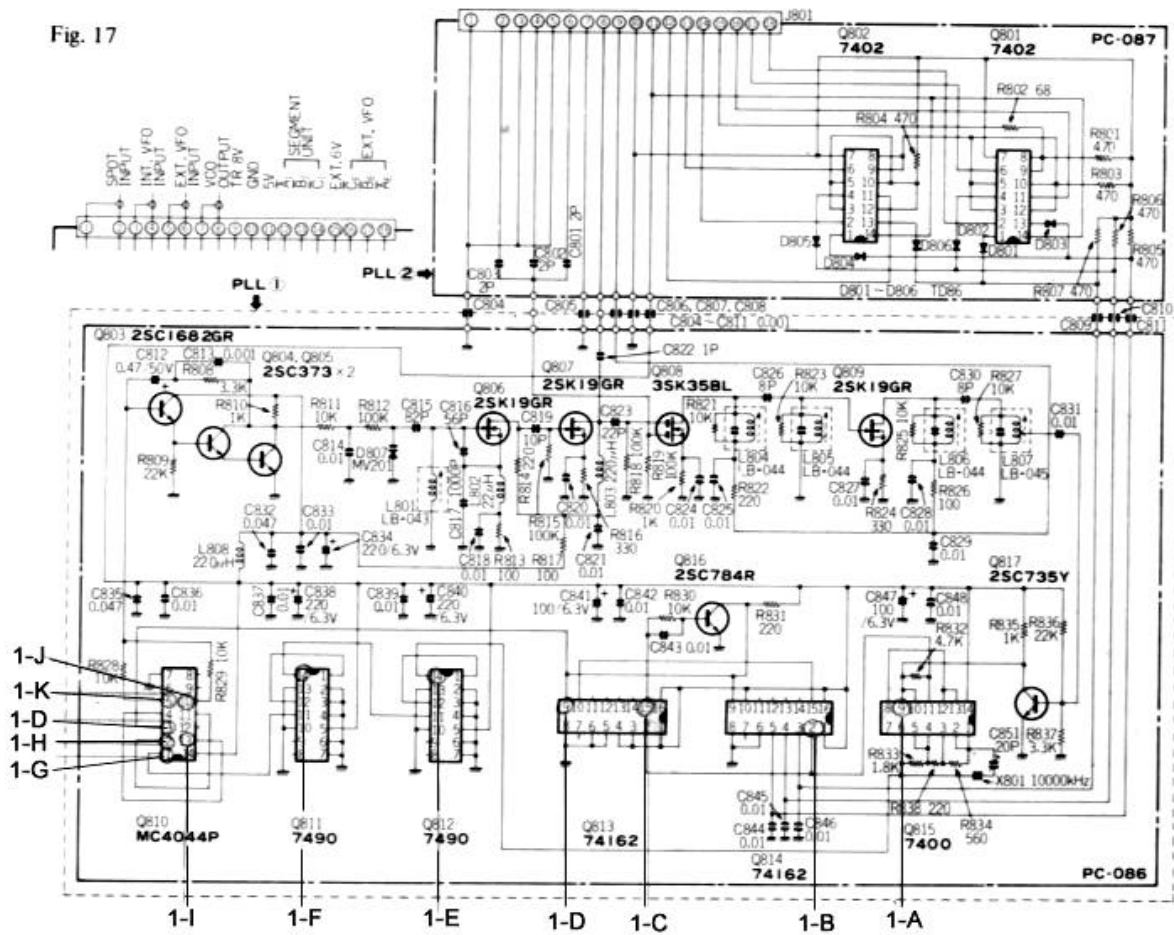
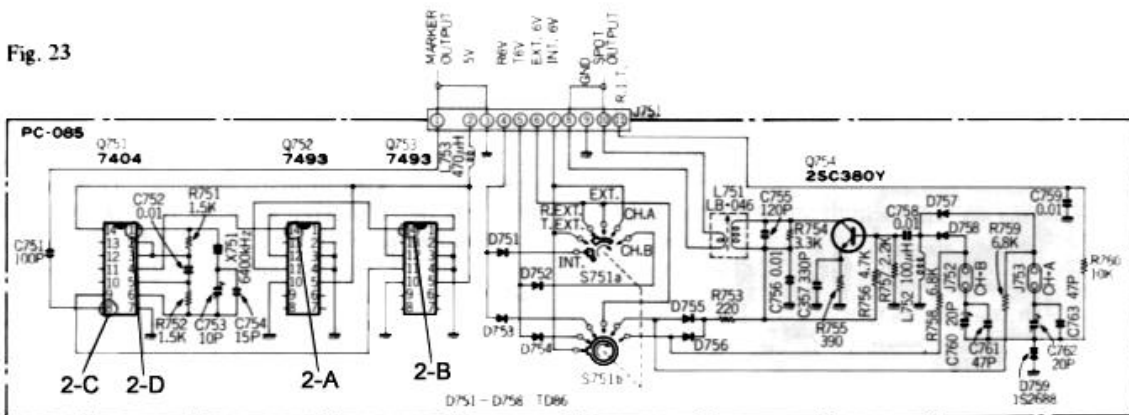
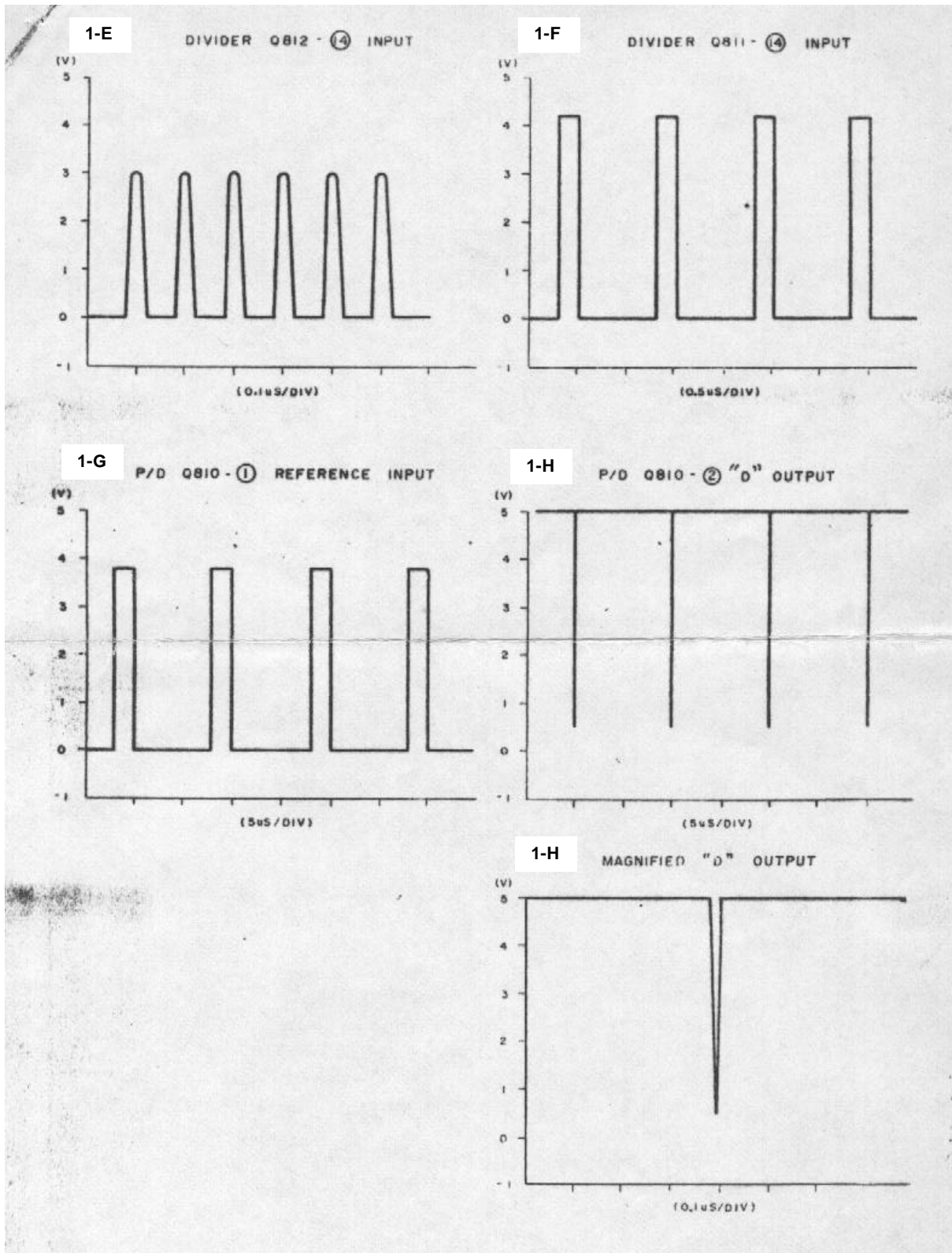


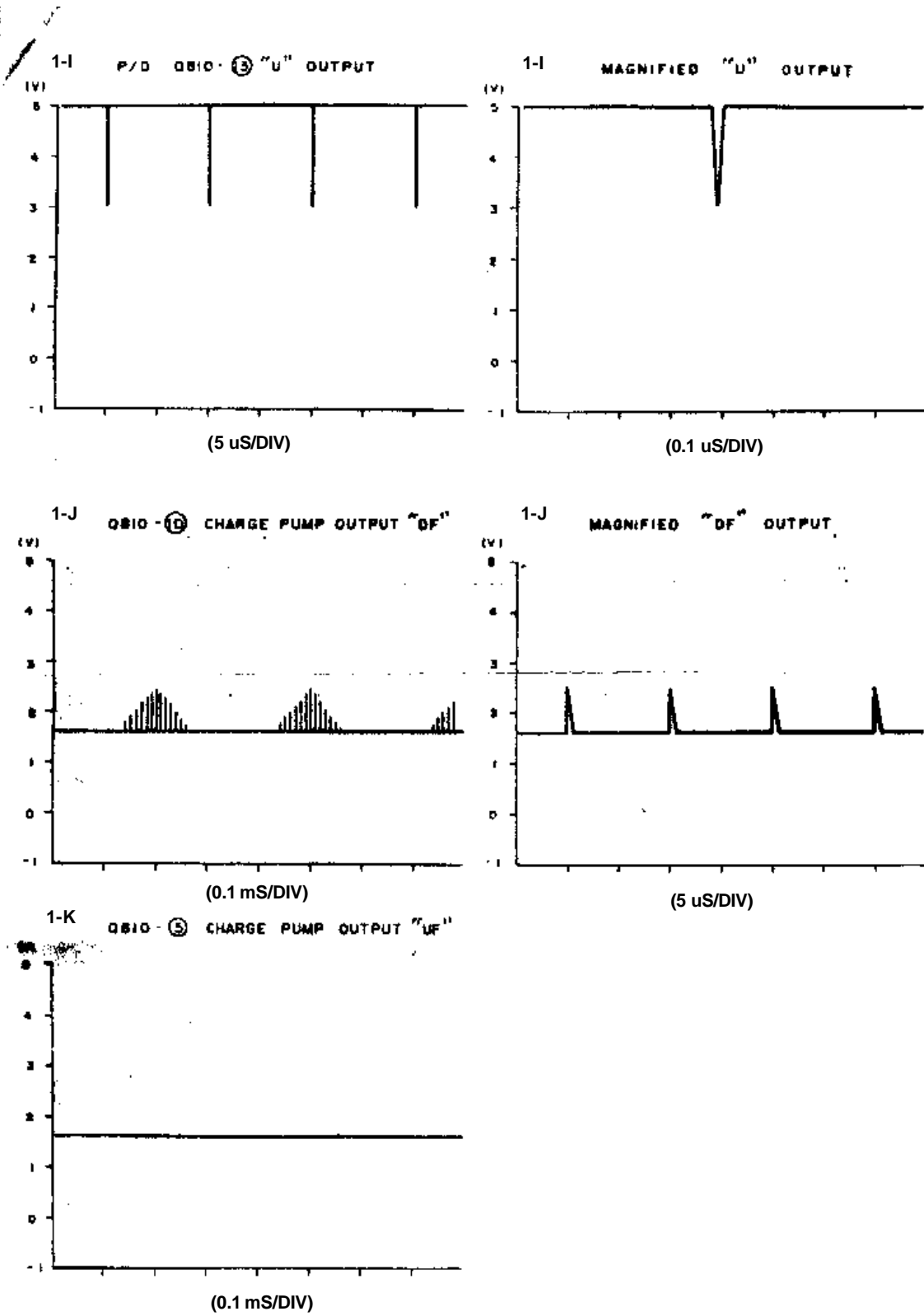
Fig. 23



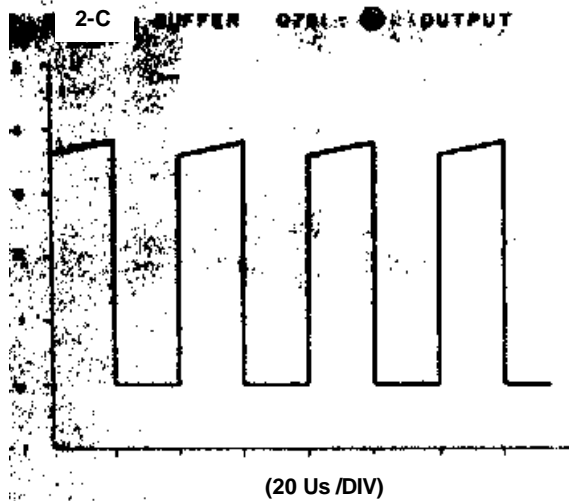
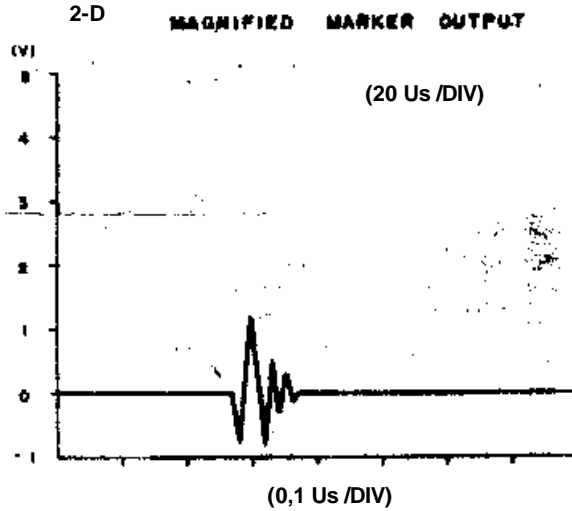
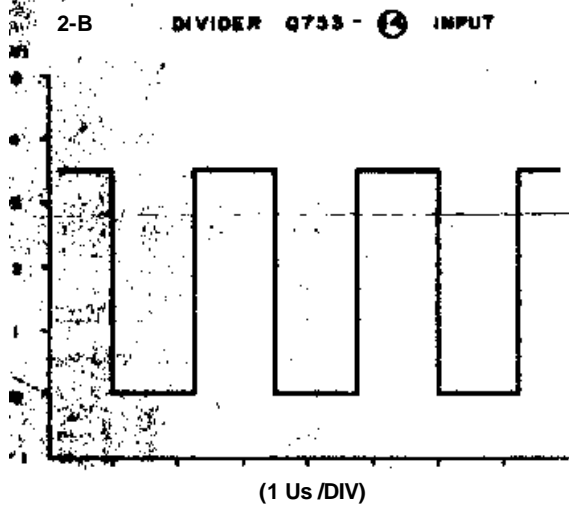
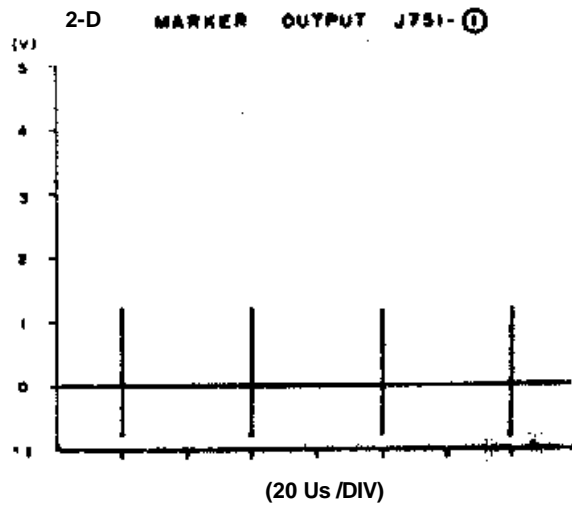
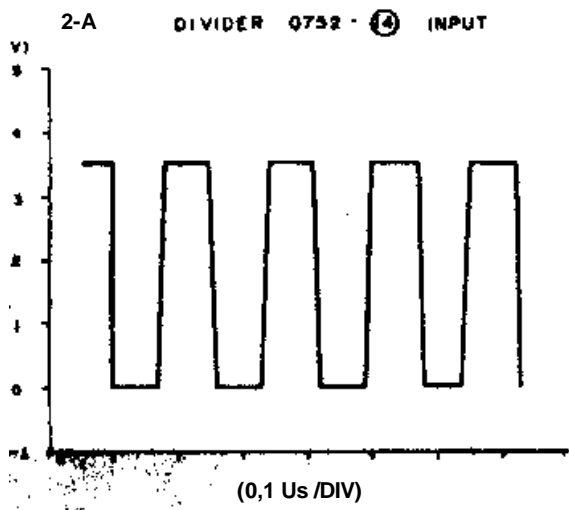
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