TEST SET, RADAR
AN/UPM-53

MANUFACTURED BY
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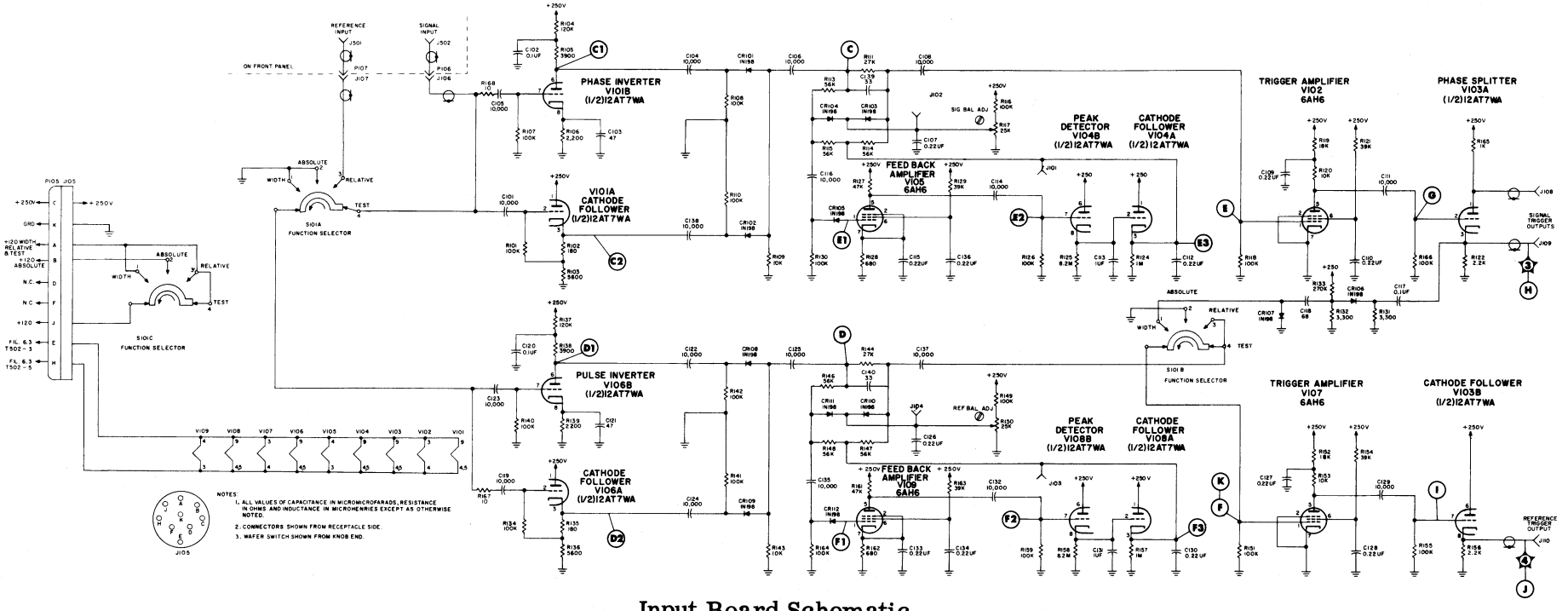
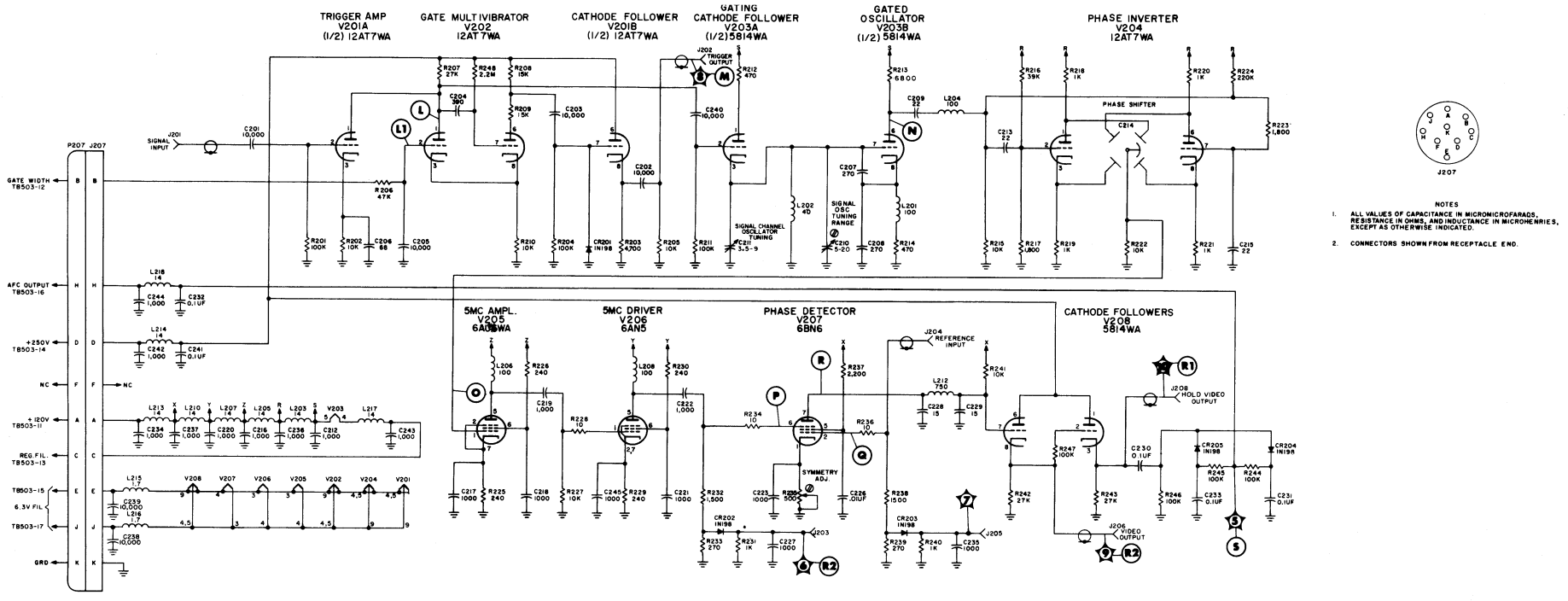


Input Board Schematic



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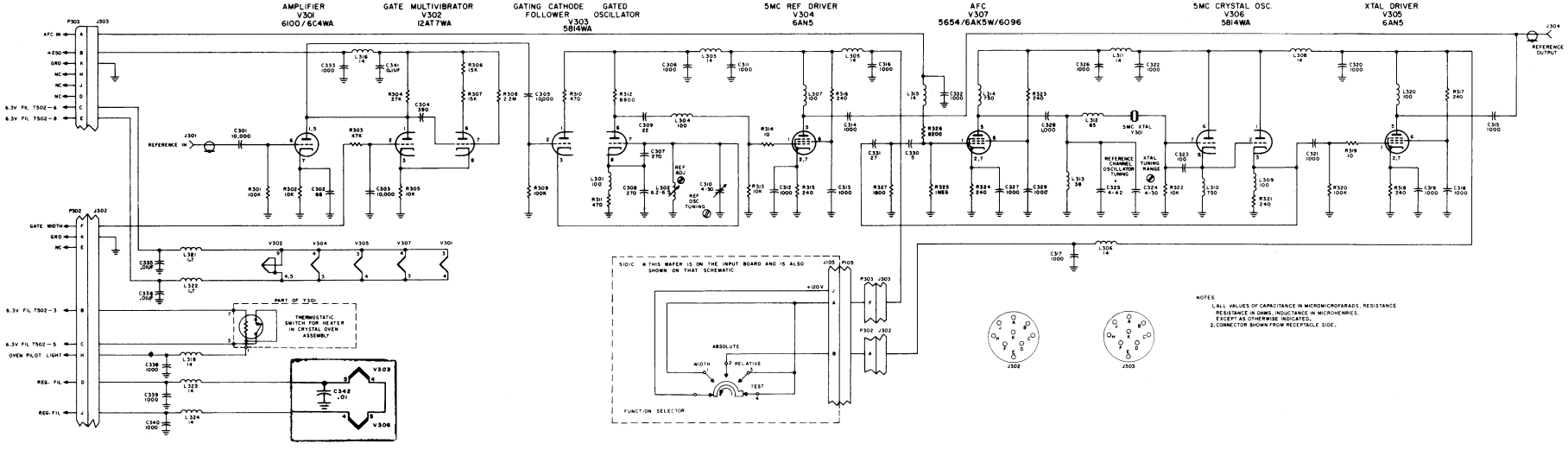
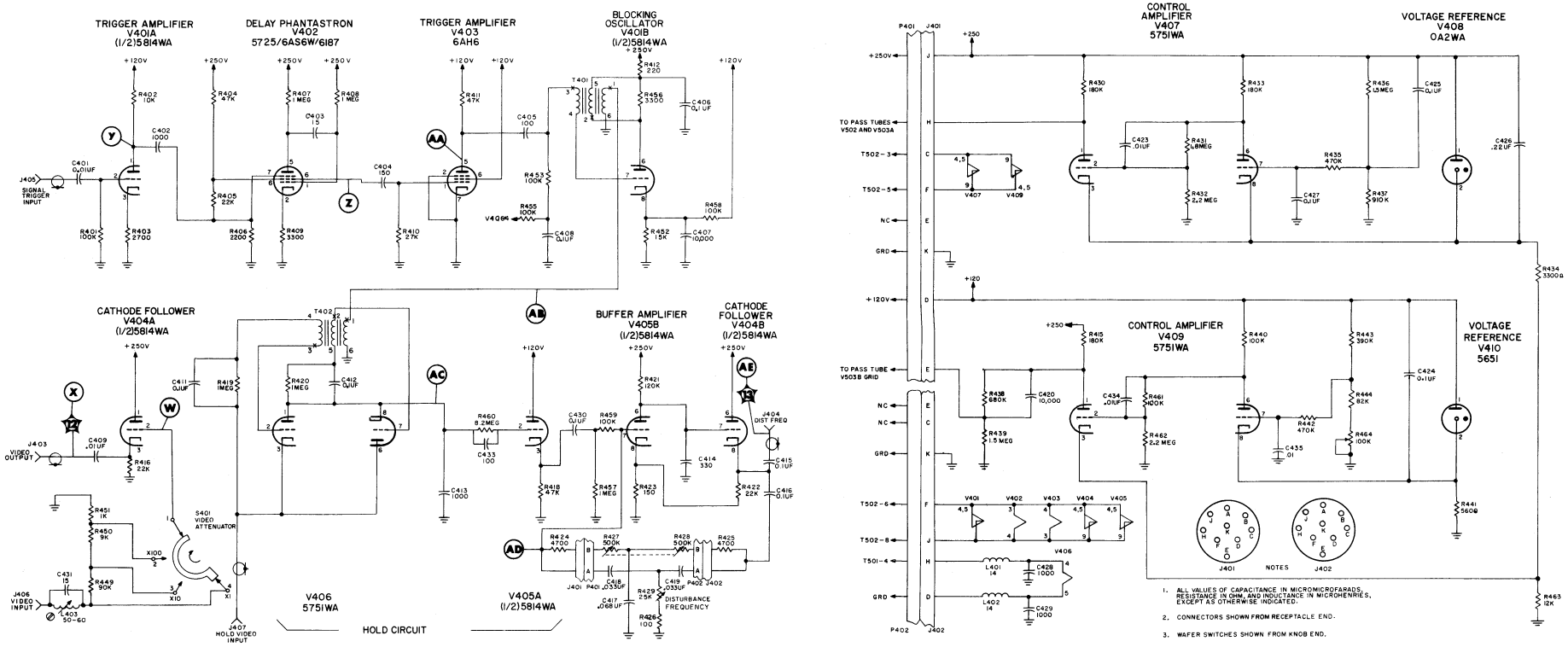
NOTES

1. ALL VALUES OF CAPACITANCE IN MICROMICROFARADS, RESISTANCE IN OHMS, AND INDUCTANCE IN MICRONENRIES, EXCEPT AS OTHERWISE INDICATED.
2. CONNECTORS SHOWN FROM RECEPTACLE END.

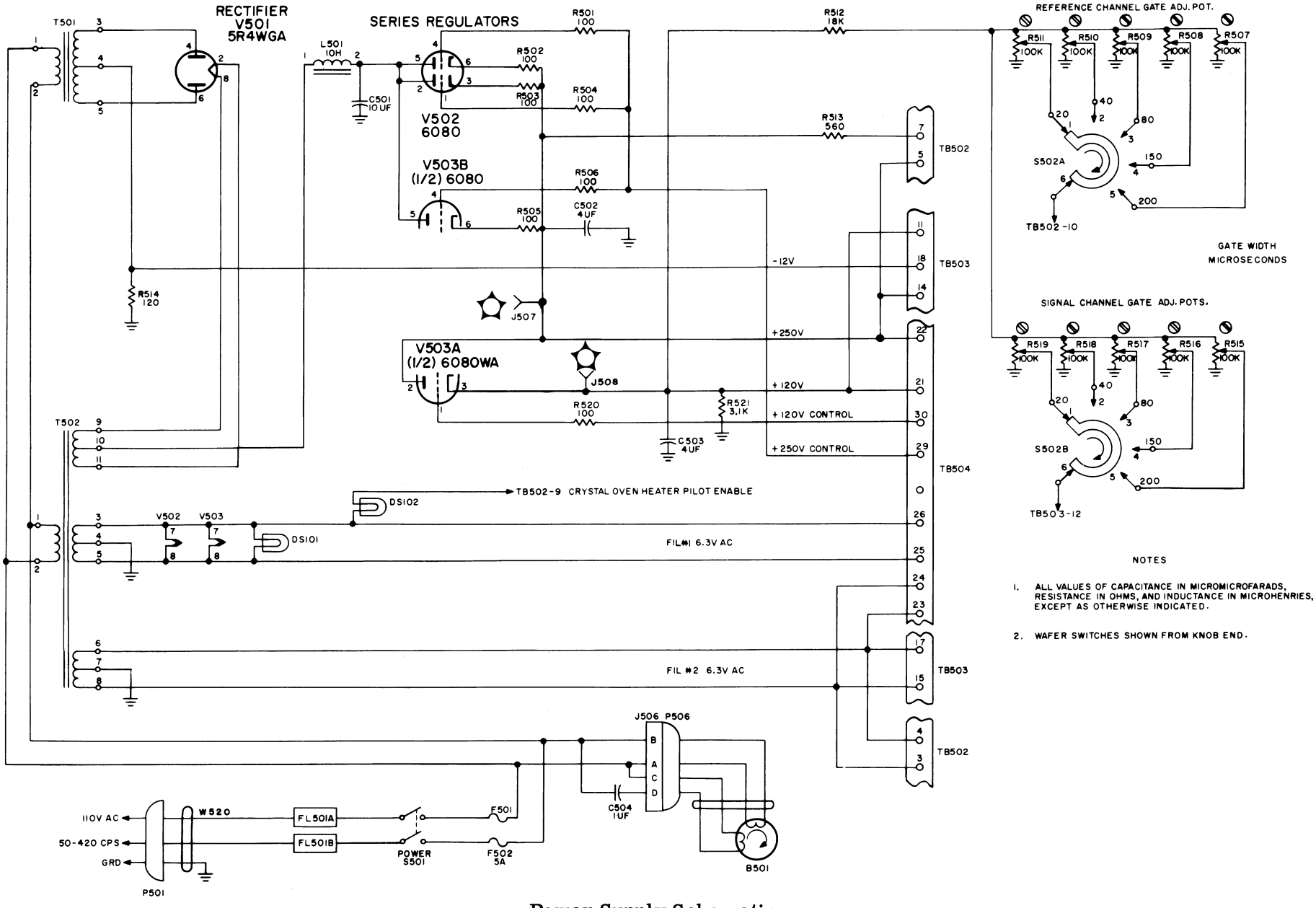
Signal Board Schematic



Reference Board Schematic



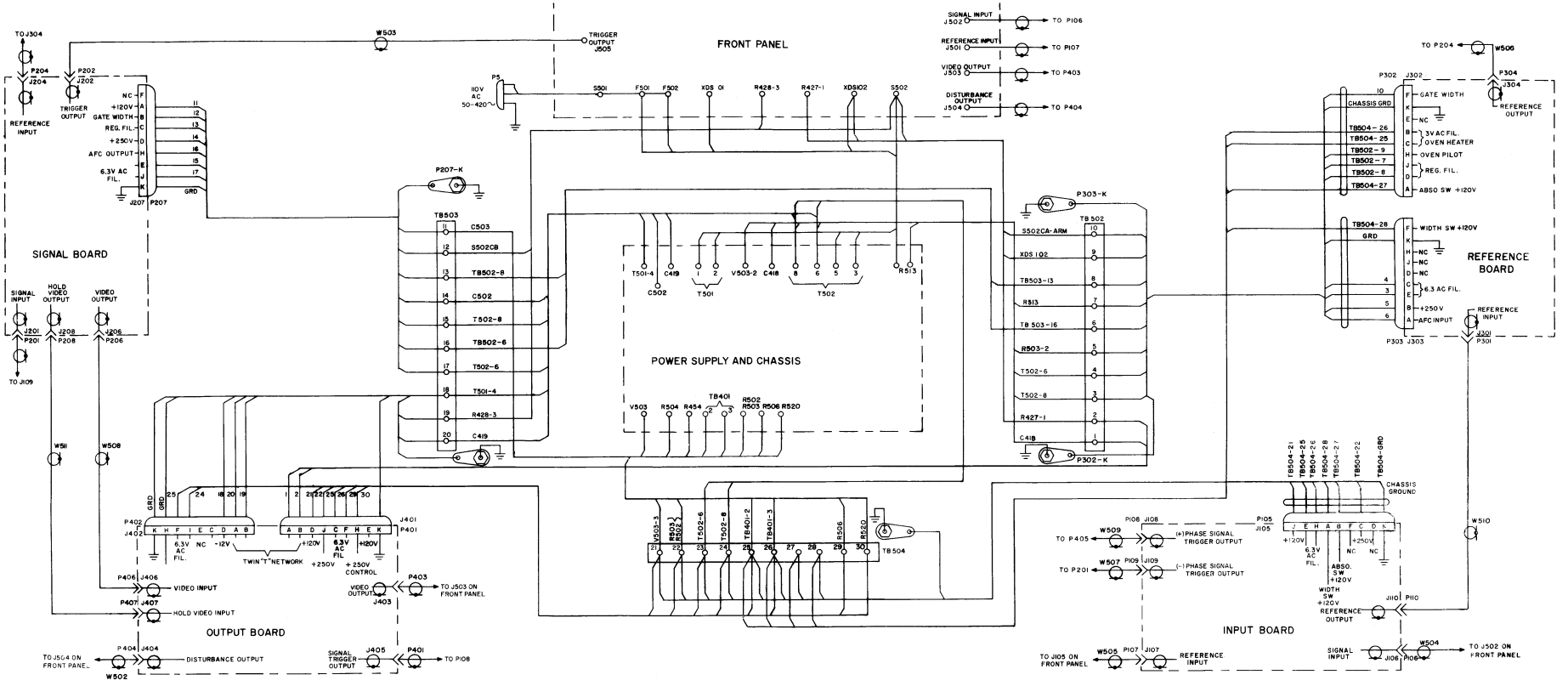
Output Board Schematic



NOTES

1. ALL VALUES OF CAPACITANCE IN MICROMICROFARADS, RESISTANCE IN OHMS, AND INDUCTANCE IN MICROHENRIES, EXCEPT AS OTHERWISE INDICATED.
2. WAFER SWITCHES SHOWN FROM KNOB END.

Power Supply Schematic



Interconnection Diagram

OPERATING INSTRUCTIONS
RADAR TEST SET AN/UPM-53

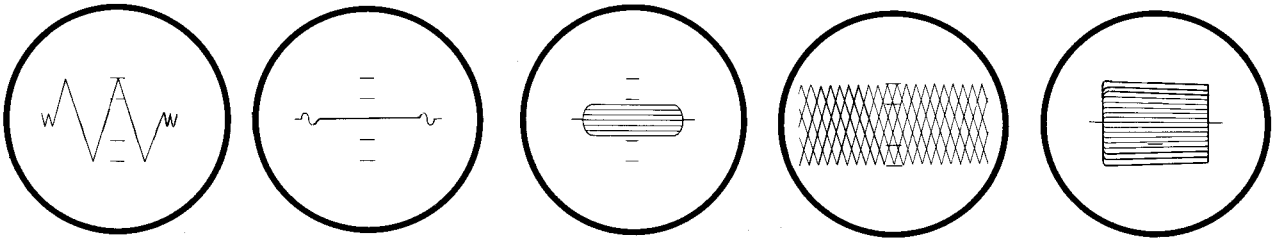
These instructions are not intended to replace instruction books but to provide ready reference to standard operating procedures. Read your instruction book for complete information.

I STARTING THE EQUIPMENT

	Instructions in this column pertain to the test set.	Instructions in this column pertain to the external synchroscope.
STEP 1	Place POWER switch to ON position. Allow test set to warm up until OVEN indicator goes on before performing any jitter measurements.	Turn synchroscope on.
STEP 2	Using one cord CG-409E/U, connect one end to VIDEO OUTPUT connector.	Connect other end of cord to vertical input connector.
STEP 3	Using second cord connect one end to TRIGGER OUTPUT connector.	Connect other end of cord to external trigger input connector.
STEP 4		Set sync selector switch to external position.
STEP 5	Set VIDEO ATTENUATOR switch to 100:1 position.	
STEP 6	Set the GATE WIDTH switch to the 80 usec position.	
STEP 7	Using third cord, connect equipment under test to SIGNAL INPUT connector. If relative jitter measurements are to be made, use fourth cord to connect the reference output of equipment under test to REFERENCE INPUT connector.	

II PERFORMING JITTER MEASUREMENTS

STEP 1	Determine jitter measurement to be performed and set FUNCTION SELECTOR switch accordingly. For WIDTH, RELATIVE, or TEST (residual) jitter measurements, proceed to STEP 2. For ABSOLUTE jitter measurements, proceed to STEP 8.	
STEP 2	Tune SIGNAL CHANNEL OSCILLATOR TUNING control for synchroscope display of approximately two cycles of calibration waveform.	
STEP 3		Adjust vertical gain control for a vertical amplitude of exactly five major graticule marks.
STEP 4	Use PHASE SHIFTER control as required to center the display and return to STEP 3 if necessary.	
STEP 5	Tune SIGNAL CHANNEL OSCILLATOR TUNING control for zero beat display.	
STEP 6	Reset VIDEO ATTENUATOR switch to 1:1 position.	
STEP 7	Read out jitter display in millimicroseconds.	Calibration of synchroscope is now 0.25 millimicroseconds of jitter per major graticule division.
STEP 8	For absolute jitter measurements, set FUNCTION SELECTOR switch to ABSOLUTE position, and proceed as directed in STEPS 3 and 4; then proceed to STEP 9.	
STEP 9	Tune SIGNAL CHANNEL OSCILLATOR TUNING control until display is composed of horizontal lines.	



STEP 2 STEP 5 STEP 7 STEP 8 STEP 9

II PERFORMING JITTER MEASUREMENTS (Continued)

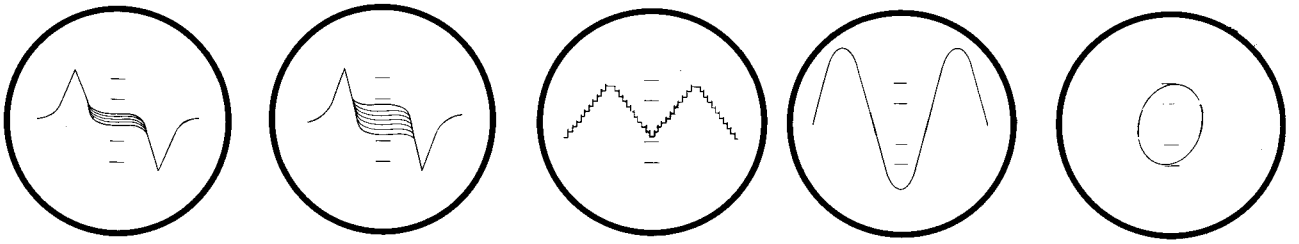
	Instructions in this column pertain to the test set.	Instructions in this column pertain to the external synchroscope.
STEP 10	Tune REFERENCE CHANNEL OSCILLATOR TUNING control for zero beat display. If necessary, alternately perform STEPS 9 and 10 until zero beat appears.	
STEP 11	Reset VIDEO ATTENUATOR switch to 10:1 position.	
STEP 12	Read out jitter display in millimicroseconds.	Calibration of synchroscope is now 2.5 millimicroseconds of jitter per major graticule division.
STEP 13	If display of STEPS 7 or 12 goes "off screen", reset VIDEO ATTENUATOR to 100:1 position. Then, read out jitter display in millimicroseconds.	Calibration of synchroscope is now 25 millimicroseconds of jitter per major graticule division.
STEP 14	If jitter display of STEPS 7 and 12 is unstable, set GATE WIDTH switch for greatest stability and least jitter.	

III DISTURBANCE FREQUENCY ANALYSIS

	Instructions in this column pertain to the test set.	Instructions in this column pertain to the external synchroscope.	Instructions in this column pertain to the external audio oscillator.
STEP 1	Perform any jitter measurement, then do not change settings of controls.		Turn on audio oscillator.
STEP 2	Remove cord from VIDEO OUTPUT connector and connect to DISTURBANCE FREQUENCY connector.		
STEP 3	Vary concentric DISTURBANCE FREQUENCY CONTROLS individually for maximum, stable display.	Use horizontal and vertical position and gain controls to keep display "on screen".	
STEP 4		Remove cord from the external trigger input connector.	
STEP 5		Using fifth cord, connect one end to external horizontal input connector.	Connect other end of cord to oscillator output connector.
STEP 6		Set horizontal display selector switch to external.	Set oscillator range switch to X1.
STEP 7			Slowly vary tuning control until a well defined 1:1 Lissajous figure is displayed.
STEP 8	Read out disturbance frequency components.	Calibration of display is dial reading on oscillator.	
STEP 9	Repeat STEPS 3, 7 and 8 for other frequency components.		

IV STOPPING THE EQUIPMENT

STEP 1	Set POWER switch to OFF position.	Turn off synchroscope.	Turn off oscillator.



STEP 10 STEP 11 STEP 2 STEP 3 STEP 7