661 CALIBRATION OUTLINE

1. +300 v (R718): ± 750 mv	7.5 mv ripple @ 117 v
2. +100 v supply: ± 2 v	7.5 mv ripple @ 117 v. Adjustable (R686) in s/n 900 & up.
3. -100 v supply: ± 2 v	10 mv ripple
4. +19 v (R666): ± 50 mv	5 mv ripple
5. -19 v (R651): ± 50 mv	5 mv ripple
6. -25.2 v supply: ± 1.25 v	15 mv ripple
7. CRT: Check only when new CRT installed.	Check SCAN: 8 cm vert, 10 cm horiz FOCUS: lines 1 mm apart GEOMETRY: 1° tilt COMP & EXP: 0.5 mm max

REMOVE PLUG-IN AMPLIFIERS

8. HIGH VOLTAGE (R841):	Adjust for 8 cm vertical scan with 200 ua input (497k ohm form 100 v cal signal at Q404 Base). Position signal with VERT DC BAL (R477).
9. VERT DC BAL (R477):	Center dot to ELECTRICAL CRT center with 1.5k ohm form Q404 Base to ground.
10. HORIZ GAIN ADJ. (R359):	Adjust for 9.84 cm scan with 200 ua input (497k ohm from 100 v cal signal at base Q344). Position trace with HORIZ DC (R357).
11. HORIZ TAKEOFF GAIN (R380):	Probe V384, pin 8, and adjust for 50 volts with 10 cm deflection.
12. HORIZ DC BAL (R357):	Center dot to CRT electrical center No trace shift between MAGNIFIER positions
13. HORIZ TAKEOFF DC LEVEL (R378):	0 volts out with dot at first graticule line. Measure at pin 8, V384
14. BLANK BAL (R866):	0 volts between wiper arm and V874, pin 6. White-blue wire or gray-blue-blue coax fron CRT socket (No voltage between deflection blanking plates) Do Not adjust unless necessary.

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WITH POWER OFF--INSERT PLUG-IN AMPLIFIERS:

15. Ext Horiz Input: Use 497k ohm to test scope calibrator and check for deflection as shown.

EXT. INPUT V/CM	CAL	DEFLECTION	ACC
0.05	5 v	4.6 cm	4%
0.1	10 v	4.6 cm	3%
0.2	20 v	4.6 cm	2%
0.5	50 v	4.6 cm	2%
1	100 v	4.6 cm	2%
2	100 v	2.4 cm	2%
5	100 v	0.95 cm	2%

16. DELAYED PULSE GEN BIAS (R990): Set to point just BEFORE t.D. fires. Check for proper operation unterminated and terminated in 50 ohms.

17. HORIZONTAL AMP COMP (C302): Use 5 samples/cm and 100x mag. Adjust for minimum tail.

USE STEPS 18 THROUGH 24 FOR 661's s/n 101-1999

18. CALIBRATOR FREQ. ADJUSTMENTS: Monitor output into 50 ohm load, and ADD with 184 in 1A1. Less than one cycle should be displayed. Use 1000mv amplitude.

TEST SCOPE TIME/cm	CALIBRATOR	184 ~~180A~~	MIN TIME for 1 cycle	ADJUST
1 m sec	10 us	10 µs	12.5 ms	L901
0.1 m sec	1 us	1 µs	1.25 ms	L906
10 µs	0.1 us	.1 µs ~~10 mc~~	125 µs	L911
10 µs	.01 us	100 mc	12.5 µs	C916

19. AMPL LIMIT (R959) 14 volts at Q953 emitter. (Do not adj. unless cal. amplitudes won't make at least 1v).

20. 1 mc CAL AMPL (R909): Set for 1 volt output, ±1%

21. 100kc CAL AMPL (R904): Set for 1 volt output, ±1%

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22. 10 mc CAL AMPL (R914): Set for 1 volt output, 1%

23. ATTENUATOR ACCURACY: Use 1 µs output

OUTPUT	ACCURACY
1000mv	(adjusted)
100 mv	± 2%
10 mv	± 3%
1 mv	± 4%

24. 100mc CAL AMPL (C920): Set for 1 volt output, ± 1%. Use sampling scope vertical.

USE STEPS 25 THROUGH 32 FOR 661's s/n 2000-up

25. CAL SYMMETRY (R962): Use .1 µsec/cycle. Observe on sampling vertical. R942 may have to be adjusted to start calibrator.

26. OSC. FEEDBACK (R942): Adjust for min waveform distortion.

27. C971 Level top and bottom on waveform.

28. C942 Use .01 µsec/cycle. Adjust or squarest corners.

29. C968 Use .01 µsec/cycle and 100mv. Adjust for least distortion and best symmetry.

30. OUTPUT AMPLITUDE R965 Use .01 µsec/cycle. Adjust for proper amplitude into calibrated 50 ohm sampling vertical.

31. HF AMPL COMP R967 Use .1 µsec/cycle. Adjust for proper amplitude as above. Check 1 and 10 µsec/cycle.

32. CALIBRATOR FREQ. ADJUSTMENTS Monitor output into 50 ohm load and add with 184 in 1A1. Use 1000 mv amplitude.

usec/cycle	184	MIN TIME/cycle	ADJUST
10	10 usec	5 msec	L901
1	1 usec	.5 msec	L906
.1	.1 usec	50 usec	L911
.01	10 nsec	5 usec	L916

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