502/A Calibration Outline

1. Power Supplies — All supplies ±3%. Watch for slow DC drift with change in line volts.

Supply	Typical Ripple
-150 (Adj)	8-12mv
+100	8-12mv
+350	40mv
-5.8 (502)	8mv
-6.3 (502A)	8mv

2. Calibrator (R879) — Check all ranges ±3%.

3. High Voltage (R841) — -2900V, check regulation.

4. Adj Astigmatism Controls

5. Adj Geometry

6. Adj Beam Registration & Horiz. Sens. Balance.

→ Do STEP 15 (EXT. HORIZ. GRID I)

7. X20 & X1 Cal — Check X2, X5, & X10 ±5%.

8. Norm. Mag. Registration — This interacts with X1 Cal.

9. Sweep Length — 10.5 CM

10. Check Timing (.1ms - 5sec) — ±3%

11. Check Var. Time/CM Control & Neon

12. Check Single Sweep

13. Adj Timing 50us - 1us — Check other ranges ±3%

Sweep Speed	Adjustment
10usec	C160C
20usec	Check
50usec	Check
5usec	C160A*
1usec	C311 *
2usec	Check
	*Interact

14. Adj Ext. Horiz. DC Bal.

15. Ext. Horiz. Grid Current — 2mm max at .1v/cm.

16. Check Ext. Horiz. Attenuators — All ±5%

17. Vertical Amplifier Adjustments — There are two different procedures one for the tube type vertical & one for the transistor vert. Follow the apropriate one on the following pages.

502/A Calibration Outline (cont.)
Tube type vertical.

DO STEPS 1-11 FOR ONE VERTICAL THEN THE OTHER.

1. DC Balance — Min trace shift from .2v/cm to 200uv/cm.
2. Grid Current & Hum — Grid I - 2cm max at 200uv/cm. Hum - 3mm at 200uv/cm
3. .2v/cm Diff Bal — Use .5v cal signal.
4. .2mv/cm Diff Bal — Use .5v cal signal. Interacts with step 3.
5. .2v/cm Gain
6. .2mv/cm Gain
7.
7. Check Attenuators (+ & -) — Accuracy - ±3%
8. Var DC Bal (R429) — Use .2v/cm.
9. Check DC Shift — 1mm max drift after 8cm deflection.
10. High Freq Compensations (C470, C480, C478, C469) — Use .2v/cm, 10kc square waves. B-DC : Adj C470, C480, & C478. A-DC : Adj C469. Interaction
11. Adj Common Mode Rejection — Apply 1v of 200kc sine wave to A & B inputs at 1mv/cm & to Ext Horiz at .1v/cm. Adj lead dress of wire from end of R462 to pin 5 of V414 for min eye opening (2cm max).

THIS CAP DOES NOT EXIST.

Repeat steps 1 thru 11 for the other vertical amplifier.

12. Gain Adj for Horiz Mode — Match Horiz to Vert- Use 8cm of 50kc sine wave.
13. XY Phasing Check

Range	Freq.	Amp.	Max. Opening
.2v/cm	1MC	3cm	2.5mm
100mv/cm	400kc	6cm	5mm
50 "	"	"	"
20 "	200kc	"	"
10 "	"	"	"
5 "	"	"	"
2 "	"	"	"
1 "	"	"	"
.5 "	100kc	"	"
.2 "	"	"	"
.1 "	50kc	"	"

14. Band Pass — Approx. 1.4 to 1.5 MC at .2v/cm.

502/A Calibration Outline (cont.)
Tube type vertical

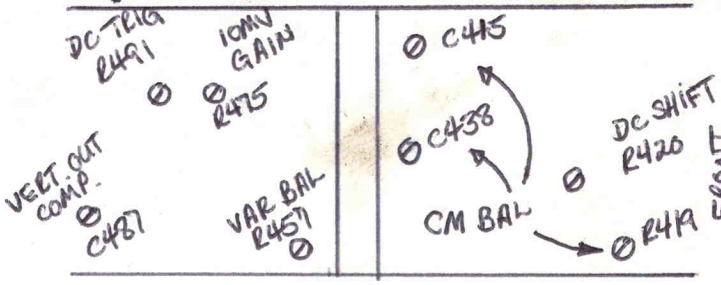
15. Input C (Both Verticals) — 47pf & 1kc. at .2v/cm
A : C410
B : C440

16. Attenuators Compensations (Both)

A : 2v/cm - C406A, C406C
5v/cm - C406G, C406J
B : 2v/cm - C407A, C407C
5v/cm- C407G, C407J

17. Feedback Bal — Use .2mv/cm & 200 cycle sq. wave. Adj for same corner on A as on B.

502A Vertical Calibration



1. DC Balance — Min trace shift from .2v/cm to .1mv/cm.

2. Grid I & Hum — I_g = 4cm max. Hum-30uv max with input grounded.

3. Var DC Bal (R457) — Min trace shift as Var is retated at .2v/cm.

4. DC Shift Compensations (R420) — Min Drift after a fast DC shift.

5. Drift With Line Voltage — 300uv from 105-125.

6. 10mv/cm Gain (R475)

7. Check Attenuators ±3%

8. Check CM Dynamic Range — 1kc sine wave, 30v p-p before display breaks up.

9. Amp. CM Bal (R419, C415, C438) (.1mv/cm - .5v/cm) — 50cps, 10v sinewave.

Sens.	Display	Freq.	Adj.	For
.1mv	1 Ext v/cm	50cps	R419	Min Tilt
		50kc	C415	Min Loop
.2v	Norm	50kc	C438	Min Defl.

10. Input Atten. CM Bal (R403E, C405C) (.5v/cm - 20v/cm) — 50cps, 50v : adj R403E @ .5v/cm
50 kc, 50v : adj C405C "

502A Vertical Calibration

11.	Vert. Signal Out Compensations (C487)	Best response at vert out using 1kc squarewaves.
12.	High Freq. Compensations (C496)	10kc at 10mv/cm. Upper beam cap on Horiz Display switch.
13.	Band Pass	.1mv/cm - 100kc 5v/cm - 1 mc
14.	Gain Adj for Horiz Mode	.2v/cm & use 50kc sinewave.
15.	XY Phasing (C408)	.1mv/cm & 6cm of 100kc sine wave. Max opening 1.4mm. There are 2 C408's, one is on the Atten. Sw. On RM502A's on the left side on the deflection plate leads there is a cap C???, adj at .2v/cm with 6cm of 100kc sine wave.
16.	XY Phasing Check	See step 13 for tube type vert. Change Freq at .1mv/cm to 100kc & opening to 1.4mm. All other openings are typically less.
17.	Input Capacitance 47pf	A - DC : .2v/cm C404 .5v/cm C403A, C403C B - DC : .2v/cm C406 .5v/cm C405A, C405C* * C405C adj in step 10, don't adj.

502/A All Instruments

18.	Trigger Level Centering	200mv Cal signal externally.
19.	Stability Adj	Use Line & 100usec/cm, Auto Mode.
20.	Internal Trigger DC Level (Both Beams)	