

# COMPANY CONFIDENTIAL

## 4S1 CALIBRATION OUTLINE

- 1. 50Ω INPUT RESISTANCE:  
*USE SPECIAL CHECKER*      ~~490 ± 1% maximum error~~  
*CHECK HERE → 500 ± 1% at delay line input*
- 2. TRIGGER ZERO (R1022)      0 volts, ± 5 mv
- 3. TRIGGER AMP COMPENSATIONS (C1032, C1037)  
About 75 mv of 50KC signal at output. Adjust for best square wave
- 4. DC OFFSET: 0 v + 100 mv      -100 v ± 5% to +104.5 ± 10%
- \* 5. BRIDGE BALANCE (R1063, R2063)      No trace shift when rotating MV/CM SW. (5cm or less)
- \* 6. SMOOTHING BALANCE (R1125, R2125)      No trace shift when rotating SMOOTHING (1 cm or less)  
Noise should be <1 cm
- \*\* 7. AC AMP GAIN (C1107, C2107)      Set for optimum Bridge Volts (usually about mid range)
- \*\* 8. MEMORY GATE WIDTH (R2023)      Variable from 200-1200 nsec. Set for maximum sampling efficiency.
- \*\* 9. SNAP-OFF CURRENT (R2007)      Set for optimum Bridge Volts
- \*\*10. BRIDGE VOLTS (R1067, R2067)      Set for proper dot transient response.  
Minimum +2 and -2 volts

*(USE MAX METER SENSITIVITY AND ADJ. CHECKER FOR NULL)*

*MAX SEPARATION WITH THIS PULSES (25KC)*

Repeat steps 5 and 6

- 11. NOISE and MICRO      NOISE: 1 mv P-P  
DUAL TRACE: 1.5 mv P-P  
MICRO: 4 mv
- 12. RISE TIME      350 ps or less. Check both + and - input signals.
- 13. OVERSHOOT and UNDERSHOOT      3% maximum
- 14. SCALING DRIFT      3 mm or less on 10 MV/CM from 10 cps to 100KC

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451 CALIBRATION OUTLINE

- 15. MEMORY SLASH Less than 0.5 cm (200 MV/CM range) at 10 cps
- 16. INVERTER ZERO (R1161, R2161) 2 mm trace shift (200 MV/CM)  
Check trace positioning.  
*DC OFFSET MUST BE 0V AT FRONT PANEL JACKS. BRIDGE BAL MUST BE ON.*
- 17. 2 MV GAIN CHANGE 3% maximum deviation through range of DC offset control
- 18. GAIN (R2182, R1172) NORMAL:  $\pm 0.5\%$   
INVERTED:  $\pm 1.5\%$   
VERT SIG OUT:  $\pm 2\%$   
Indicated gain on CRT
- 19. ATTENUATOR ACCURACY 200 MV/CM: Adjusted  
100-10 MV/CM:  $\pm 2\%$   
5-2 MV/CM:  $\pm 3\%$
- 20. VARIABLE MV/CM 3:1 GAIN all MV/CM positions
- 21. COMPRESSION and EXPANSION NONE apparent with 1.6 v signal through VERT. POS. limits
- 22. ADDED ALGEBRAICALLY 4 cm indicates 8 cm  $\pm 1$  mm in 200 MV/CM position
- 23. REJECTION RATIO 50:1 with 0.5 v signal at 50 MV/CM. (POSITION controls centered)
- 24. CROSSTALK 1% maximum. Less than 16 mv with 1.6 v input signal
- 25. DELAY TIME DIFFERENCE 20 pico seconds or less
- 26. LISSAJOUS OPERATION 0.5 cm maximum (Use LKMC through T)
- 27. TRIGGERING 40 mv, 2 ns wide  
JITTER: 200 ps maximum
- 28. PROBE POWER 100 v  $\pm 2\%$   
12.6 v  $\pm 5\%$
- 29. DELAYED PULSE OUT Check risetime of pulse: 0.4 ns maximum. S/N 101-269:  $t_r = 200ps$   
S/N 270 up:  $t_r = 70ps$

\* INTERACTION  
 \*\* EFFECT DOT TRANSIENT RESPONSE

JANUARY COMPANY