SC61 CALIBRATION PROCEDURE
(FOR RUN 38 AND HIGHER)

WARNING: **THESE SERVICING INSTRUCTIONS ARE FOR USE BY A QUALIFIED PERSON ONLY. TO AVOID ELECTRICAL SHOCK, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATION INSTRUCTION SECTION OF THE MANUAL UNLESS YOU ARE QUALIFIED TO DO SO. HIGH VOLTAGES UP TO 5000 VOLTS MAY BE PRESENT AT OR NEAR THE CRT. OBSERVE THE CAUTIONS AND WARNINGS MARKED ON THE CHASSIS AND IN THE SERVICE MANUAL WHEN WORKING IN THESE AREAS.**

ACCESS/DISASSEMBLY

WARNING: **HIGH VOLTAGE IS PRESENT ON THE HIGH VOLTAGE BOARD, THE CRT SOCKET AND THE ANODE CONNECTOR WHEN THE CASE IS REMOVED. TAKE CARE NOT TO CONTACT THESE POINTS WHEN THE SC61 IS TURNED ON WITH THE CASE REMOVED.**

Access to the interior of the SC61 for calibration and/or maintenance may be obtained by using the following procedure.

1. Unplug the SC61 from the AC power line.

2. Remove any test probes or other connections to the front and rear panels.

3. Stand the SC61 on the rear of the case using the cord wrappers as feet.

4. Remove the four screws, two on each side, that secure the case to the rear plastic cover.

5. Pull upward on the case to separate it from the chassis. Note that the bezel and case are one piece and that the front panel escutcheons are part of the chassis assembly and will remain with the chassis.

There is no further disassembly required for calibration of the SC61. If a PC board must be removed for service, simply unplug the connectors going to the board and remove the screw securing the board to the chassis standoffs. The only PC boards that may require unsoldering of any leads for disassembly are the input coupling PC board and the two attenuator PC boards. When two or more plus are similar in size, they are color coded at both the PC board connector and the plug.

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SECONDARY CONTROL ADJUSTMENTS

1. Astigmatism
   - 1.1 Set both input coupling switches to "ground" and depress the Vector CRT button.
   - 1.2 Adjust the intensity control until a dot appears that is reduced in brightness enough to prevent blooming.
   - 1.3 Alternately adjust the focus and astigmatism until the dot is as small and round as possible.

2. Trace Rotator
   - 2.1 Depress the Channel A button.
   - 2.2 Adjust the Channel A vertical position control until the trace is adjacent to one of the CRT graticule lines.
   - 2.3 Adjust the trace rotator until the trace is parallel to the CRT graticule line.

3. Trace Balance
   - 3.1 Set the Channel A volts/division switch to .5.
   - 3.2 Set the Channel A vernier control fully counter clockwise.
   - 3.3 Adjust the vertical position control until the trace lies on the horizontal center line of the CRT.
   - 3.4 Turn the Channel A vernier control fully clockwise. If there is any movement of the trace, adjust the trace bal. control until it returns to the center line.
   - 3.5 Repeat steps 2-4 until there is no further improvement.
   - 3.6 Repeat steps 2-5 for Channel B.

4. Invert Balance
   - 4.1 Depress the Channel A button.
   - 4.2 Adjust the Channel A vertical position control until the trace lies on the horizontal center line.
   - 4.3 Pull the Channel A vertical position control to activate the invert function.
   - 4.4 If the trace moves, adjust the invert bal. control to return it to the center line.
   - 4.5 Repeat steps 2-4 until there is no further movement.

CALIBRATION PROCEDURE

As with a precision piece of test equipment, the calibration of the SC61 should be checked periodically to insure that the instrument remains within specifications. A one-year recalibration interval is recommended to insure the SC61 remains within published specifications. The following equipment is required to calibrate the SC61 to factory specifications.

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1. Wavetek function generator, Model 162, or its equivalent having at least a 30MHz output with a square wave rise time of 12 nanoseconds or better.

2. Wavetek sweep generator, Model 1001A, or its equivalent having at least .5 to 100MHz range.

3. 50ohm termination for the output of the function generator.

4. DC power supply having at .05% accuracy.

5. Sencore DVM56 Digital Multimeter or its equivalent having a DC accuracy of .075% or better and a peak-to-peak AC function with 1% or better accuracy.

6. A calibrated frequency source or frequency counter accurate to 1 ppm or better.

If you are unable to obtain the necessary equipment for calibration of your SC61, you may return it directly to the Sencore Factory Service Department. You do not require a return authorization to return your SC61 for calibration or repair. Simply pack the instrument in the original carton with all shock absorbing inserts to prevent shipping damage. Ship the SC61 to:

Sencore Service Department
3200 Sencore Drive
Sioux Falls, SD 57107

Avoid shipping the SC61 by parcel post. It is recommended that United Parcel Service or air freight be used whenever possible.

Be sure to include your name and address on the inside of the carton with the instrument. Please include a note explaining the reason for return; recalibration, improper operation on a given function, etc., to aid the Service Department in repairing the SC61 in the fastest possible time.

POWER SUPPLY ADJUSTMENTS AND CHECKS

1. Low Voltage Power Supply

   The low voltage power supply is located on the underside of the chassis, just below the CRT. This supply has only one adjustment, R13012 the +33 volt adjustment. The other low voltages are controlled by precision IC regulators and no adjustments are necessary. These voltages should be checked after the +33 volt regulator has been set to assure that they are all operational and within specifications.

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To adjust the +33 volt regulated power supply:

1.1 Connect a digital voltmeter (DVM) to Pin 4 of the connector R13012 the +33 volt adjust. Connect the common lead to the chassis.

1.2 Adjust R13012, the +33 volt adjust for a DC reading of +33 volts ± .5 volts.

1.3 Check the other output voltages in the low voltage power supply according to the following chart:

TYPICAL LOW VOLTAGE SUPPLY VALUES

PIN #	REGULATED	NOMINAL VOLTAGE	TYPICAL DC TOLERANCE*	TYPICAL AC PPV RIPPLE*
1 (-72.6)	NO	-70 DC	-60/-80	1.0
2 (138.3)	NO	+135 DC	115/155	2.0
3 (42.6)	NO	+40 DC	34/46	0.8
4 (33.0)	YES	+33 DC	ADJUSTABLE	0**
5 (12.9)	NO	+12 DC	10/14	1.2
6 GND	---	GROUND	---	---
7 (+7.9)	YES	+8 DC	7.6/8.4	0**
8 (- 8.0)	YES	-8 DC	-7.6/-8.4	0**
9 (-7.8)	YES	-8 DC	-7.6/-8.4	0**
9A	N/A	40 VPP AC	N/A	34/36

* Tolerances and ripple voltages show as a trouble shooting guide only.

** Power supplies showing "0" have less than 20 mV PP of ripple.

An incorrect voltage indicates a problem with the low voltage power supply or associated circuits.

There is one additional +5 regulator that is not mounted on the low voltage power supply board. The regular is mounted on a heat sink on the topside of the chassis next to the power transformer. The output (white wire) should read between 4.75 and 5.25 volts referenced to the chassis. (4.9V)

LM340T-5 / QPL109 (T-220)

2. High Voltage Power Supply

The high voltage power supply contains an IC regulated -1500 volt supply for the cathode and control grids of the CRT. The Intensity Limit, Vector Intensity Limit, and Z-

Amplifier High Frequency Compensation adjustments are also located on the High Voltage Supply Board.

To adjust the Intensity Limit control:

2.1 Set the Timebase-Frequency switch to .1 msec/div. and the Input Coupling switch for both Channels A and B to "ground".
2.2 Set the Trigger Mode to "Auto" to obtain a trace on the CRT. Adjust the Focus control to obtain the sharpest possible trace.
2.3 Adjust the front panel Intensity control fully counter clockwise and then turn it back clockwise 1/4 turn.
2.4 Using the insulated screwdriver, adjust the Intensity Limit control (R11013) for a trace that is barely visible on the CRT.

To adjust the Vector Intensity Limit Control:

2.5 Do not reset the Intensity or Focus controls on the front panel from the settings used to adjust the Intensity Limit control in the previous procedure.
2.6 Depress the front panel Vector push button.
2.7 Adjust the Vector Intensity Limit control (R11060) for a dot of the same intensity as the line across the screen for the Intensity Limit adjustment.

3. Z-Amplifier High Frequency Compensation

The Z-axis amplifier is located on the high voltage power supply board. The compensation capacitor balances the amplifier for the highest frequency sweep speed to produce and equal intensity trace across the entire CRT screen.

Z-Amplifier Compensation Adjustment:

3.1 Set the Input Coupling switches for both Channels A and B to "ground" and the Trigger Mode switch to "Auto" to obtain a trace on the CRT.
3.2 Set the Timebase-Frequency. switch to .1 usec/div. and depress the Channel A display push button.
3.3 Adjust the front panel Intensity control for a trace that is barely visible.
3.4 Adjust the Frequency Compensation capacitor, C11033, for trace with uniform intensity from the beginning of the sweep all the way across the screen. The compensation capacitor will have the greatest effect on the first division of the trace.

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VERTICAL AND HORIZONTAL COLLECTOR VOLTAGE ADJUST

The adjustment of the voltages on the collectors of the output transistors establishes the proper operating bias for the output stage.

To adjust the horizontal output bias:

1. Set the Timebase-Frequency switch to .1 msec/div. The Trigger Mode switch should be set to the "Auto" position.

2. Depress the Channel A display button and set the Channel A Input Coupling switch to "ground". There should be a straight line on the CRT.

3. Short the input of the horizontal amplifier by connecting a jumper between Pins 1 and 2 of the input connector on the Horizontal Output board. The result should be a single dot on the screen. Blue Cable

NOTE: Do not remove the plug or short the terminals to ground. Only short the two input connectors together.

4. Measure the collector voltages of each of the horizontal output transistors, TR10004 and TR10009, to ground. The average of the two voltages should be 65 volts. For example, one collector may read 70 volts while the second reads 60 volts, resulting in an average of 65 volts. If the two voltages don't average 65 volts ±10 volts, adjust R10016 until the two output voltages produce the proper average. OK 64V "Average"

To adjust the Vertical Output Bias:

1. Make sure that the trace is centered vertically.

2. Measure the collector voltage of each vertical output transistor, TR9007 and TR9009, to ground. (EACH) "Not Average"

3. The collector voltage should read between +16 and +18 volts. If both collectors are not within this range, adjust R9025 to bring the voltages within this range. OK 17V

4. Remove the jumper from the input of the horizontal output amplifier.

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A + B CENTERING

The A + B centering function algebraically adds Channels A and B together. The "A + B" Centering control assures that the DC gain of the "A + B" mode agrees closely with the sum of the DC levels of the two inputs.

To adjust the A + B centering:

1. Depress the A and B display push button and set the Input Coupling switch of both Channels A and B to "ground".

2. Set the Timebase-Frequency switch to 1 msec/div.

3. Set the Trigger Mode switch to "Auto" to obtain a trace across the CRT.

4. Center the Channel A and B traces on the center graticule line with the Vertical Position controls.

5. Depress both Channel A and Channel B display buttons at the same time to obtain the A + B function.

6. Adjust R2056, the A + B Centering control located on the Vertical Amplifier board, to center the A + B trace on the center graticule line.

7. Depress the A and B display push button to confirm that Channels A and B traces are still centered on the center graticule. If not, re-center them and repeat steps 5 and 6.

HORIZONTAL TIMEBASE ADJUSTMENTS

The horizontal timebase adjustments calibrate the sweep width, sweep speeds and X1 and X10 horizontal gain. The adjustment of the sweep width establishes the proper length of the trace and proper bias of the sweep amplifiers. The X1 Gain Cal. adjustment affects the low frequency sweep speeds and the Sweep Rate Cal. capacitor affects the higher sweep speeds. The X10 Gain and Centering controls affect the X10 expand function. These controls should be adjusted in the following order to reduce interaction.

To adjust horizontal sweep width:

1. Depress Channel A display push button and set the Timebase-Frequency switch to 1 msec/div. Make sure the horizontal vernier control is in the "calibrated" position.

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2. Set the Input Coupling switch to AC.

3. Connect an accurate 1 Khz square wave signal to the input of Channel A and adjust the trigger controls to lock the square wave on the CRT screen.

4. Adjust the Horizontal Sweep Width control R8086, located on the Horizontal Sweep board, for 11 square wave cycles across the CRT screen. The final results of this adjustment is a trace that is one major division (10%) wider than the CRT graticule to insure any waveform can be made to fit into the 10 horizontal division.

To adjust the X1 gain:

5. Set the function generator to produce a 10KHz square wave.

6. Set the Timebase-Frequency switch to .1 msec/div. and adjust the trigger controls to lock the square wave on the CRT screen. Make sure the horizontal vernier control is in the fully clockwise "calibrated" position.

7. Adjust the X1 gain control, R8123, on the Horizontal Sweep board for exactly 10 cycles of the 10KHz signal within the 10 divisions of the graticule, or one cycle per division.

8. Set the function generator to 100 Hz and the Timebase-Freq. control to 10 msec/div. There should be 10 cycles ($\pm$1.5 minor divisions) on the CRT screen.

9. Set the function generator to 100KHz and the Timebase-Frequency switch to 10 usec/div. There should be 10 cycles ($\pm$1.5 minor divisions) on the CRT screen.

10. If there is an improper number of cycles displayed on the CRT, readjust the X1 gain control (R8123) for the best overall balance among the three frequencies. There should be no more than $\pm$1.5 minor divisions (3%) difference at any of the three frequencies.

Sweep Rate Calibration:

11. Set the function generator to 200 KHz and the Timebase-Frequency control to 5 usec/div.

12. Adjust C8022, the Sweep calibration capacitor, for 10 cycles across the 10 major divisions, the graticule, $\pm$1.5 minor divisions.

13. Set the function generator to 10 MHz and the Timebase-Frequency control to .1 usec/div. There should be 10 cycles, ±1.5 minor divisions, across the screen. Readjust C8022, if necessary, for the best overall balance between the two settings.

To adjust the X10 gain:

NOTE: The SC61 should be placed right side up for accurate adjustment of the next control.

14. Set the function generator to 10 KHz and the Timebase-Frequency switch to .1 msec/div.

15. Pull out the X10 Expand control and adjust the X10 Gain control, R8121, located on the Horizontal Sweep board, for 1 complete cycle across the 10 major divisions of the graticule.

To adjust the X10 centering:

16. Using the Horizontal Pos. control, adjust the trace until the first vertical transition is positioned on the center vertical graticule line with the X10 Expand control pulled out.

17. Without turning the Horizontal Pos. control, push the X10 Expand control back in for X1 gain. Adjust the X10 Centering control, R1804, so the first vertical transition is now on the center vertical graticule line.

18. Repeat steps 1-16 two to three times to eliminate the interaction between control settings.

DELTA RANGE ADJUST

There are three Delta adjustments located on the sweep board, one $\triangleq$ Centering Control and two $\triangleq$ Range adjustments. The $\triangleq$ Centering control centers the intensified portion on the trace. The two $\triangleq$ Range adjustments control the ability to move the intensified portion completely off either side of the trace.

To adjust the $\triangleq$ Center Control:

1. Depress the Channel A display push button and set the Input Coupling switch to "ground".

2. Depress the CH A $\triangleq$ VPP display push button and turn the front panel $\triangleq$ Begin control fully counter clockwise and the $\triangleq$ END fully clockwise.

3. Adjust the Δ Centering control, R8016, to center the intensified portion on the trace.

To adjust the Δ Range Controls:

4. Adjust the Horizontal Pos. control until you can see the right hand edge of the trace.

5. Turn the Δ Begin control fully clockwise. If part of the intensified Δ trace can still be seen, adjust R8014 until it moves to the right hand edge of the trace and disappears.

6. Turn the Δ Begin control fully counter clockwise.

7. Adjust Horizontal Pos. control until you can see the left hand edge of the trace.

8. Turn the Δ END control fully counter clockwise. If part of the intensified trace can still be seen, adjust R8015 until it moves to the left hand edge and disappears.

VECTOR MODE ADJUSTMENTS

There are three Vector mode adjustments, two on the Horizontal Sweep board and one on the Vertical Amplifier board. The two adjustments on the Horizontal Sweep board control the horizontal centering and horizontal gain of the vector display. The Vertical Amplifier adjustment controls the phase delay between the two channels and proved a maximum phase shift of 3 degrees between the channels from 100 KHz to 4 MHz.

To adjust the Vector Centering control:

1. Set the Input Coupling switches for Channels A and B to "ground" and the Trigger Mode switch to the "Auto" position to produce a trace on the CRT.

2. Using the Horizontal Pos. control, adjust the trace until it starts on the first graticule line on the left side of the CRT. Disregard the overscan on the right hand side of the CRT.

To adjust Vector Gain control:

4. Connect a 20 millivolt peak-to-peak 100KHz sinewave signal from a function generator to the input of Channel B.

5. Depress the Channel B display push button and set the Input Coupling switch for Channel B to "AC".

6. Set the Channel B Volts/Division switch to .05V/div. Note the amplitude of the 100KHz signal. It should be about 4 major divisions in amplitude.

7. Depress the Vector display push button and adjust the Vector Gain control, R8102, for a horizontal line of the same length as the amplitude of the 100KHz signal in step 6 above.

To adjust the Vector Delay control:

8. Connect Channel A and B test probes to a 4 MHz sinewave signal with both Volts/Division switches set to .05 volts/div. The trace should now be a diagonal line or a very thin oval Lissajous pattern.

NOTE: Both probes must be compensated identically for this adjustment. If the probes are not properly adjusted, they may affect the phase shift of the signal applied and result in an incorrect setting of the Vector Delay control.

9. Adjust the Vector Delay adjustment, C2023, located on the Vertical Amplifier board, until the sides of the oval coincide as a single line, indicating zero phase shift between the two signals.

PEAK-TO-PEAK CALIBRATION

There are five peak-to-peak calibration adjustments. There are two on each Attenuator/Preamplifier board and one on the Digital Controller board. The controls located on the Channel A and B attenuator/Preamplifier boards are the VPP Calibration adjustments. The adjustment on the Controller board is the Monotisity adjust. Monotisity adjusts the linearity of the VPP function for different settings of the Volts/division switch.

NOTE: The probes must be compensated before calibrating VPP. The signal source used to calibrate the peak-to-peak volts section should have an accuracy of at least .2% for reliable results. The preferred signal source is the low distortion sine-wave output of a meter calibrator. Set the calibrator to 4.95 volts RMS (1KHz) to produce a 14 volt peak-to-peak output.

1. Connect an accurately-controlled signal source to the input of Channel A and adjust the output of the generator for a 14 volt peak-to-peak sinewave.

2. Depress the Channel A VPP push button and set both Channels A and B Volts/Division switches to 2 volts/div.

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3. Adjust the VPP calibration control, R1049, on Channel A Attenuator/Preamplifier board, for a reading of 14 volts peak-to-peak on the digital display.

4. Adjust R1038 for 7 divisions on the CRT.

5. Switch the Volts/Division control from 2 volts/div. to 20 volts/div.

6. Adjust the Monotisity control, R7102 on the Digital Controller board, for a reading of 14 volts peak-to-peak on the digital display.

7. Move the signal source from the input of Channel A to the input of Channel B and repeat steps 2-4 for Channel B.

FREQUENCY CALIBRATION

There are three different methods that can be used to calibrate the frequency counter. Using a signal source with a known accurate frequency, comparing the SC61's frequency to a frequency counter of higher accuracy, or using the 3.58 MHz oscillator of a television receiver. Only one of the three frequency calibration procedures needs to be performed. The procedure you choose depends upon the equipment available to you.

To calibrate the SC61's counter using a known accurate signal source:

1. Connect a signal source until a frequency over 100 KHz and verified accuracy better than 1 ppm (.0001%) to the Channel A input.

2. Depress the Channel A display push button and adjust the trigger controls to lock the signal on the CRT screen.

3. Depress the Channel A Frequency push button.

4. Adjust the Frequency Counter Calibration capacitor, C7022, on the Controller board, for a reading on the digital display equal to the input frequency.

To calibrate the SC61's frequency counter using a separate frequency counter:

1. Connect a stable signal source (through a 50 ohm terminator) with a frequency over 100 KHz to the input of a frequency counter accurate to at least 1 ppm.

2. Note the frequency readout on the frequency counter.

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3. Move the cable and 50 ohm terminator from the input of the frequency counter to the SC61 Channel A Input.

4. Depress the Channel A display push button and adjust the trigger controls to lock in the signal.

5. Depress the Channel A Frequency push button.

6. Compare the reading of the frequency counter to the frequency counter of the SC61. They should read the same.

7. If there is a difference, adjust the SC61's Frequency Counter Calibration capacitor, C7022 on the Controller board, to read the same frequency as the frequency counter.

8. Move the cable and 50 ohm terminator back to the input of the frequency counter. If the frequency has drifted more than ±10 counts, repeat steps 1-7.

To calibrate the SC61's frequency counter using the 3.58 TV oscillator:

1. Remove the back of a color TV receiver.

WARNING: **TV RECEIVERS CONTAIN HIGH VOLTAGE AND CAN PRESENT A SERIOUS SHOCK HAZARD. USE EXTREME CAUTION WHEN USING THIS METHOD.**

2. Locate the output of the receiver's 3.58 MHz color burst oscillator. Make sure this test point is isolated by at least one amplifier stage from the 3.58 MHz oscillator to prevent the capacity of the SC61's test leads from pulling the oscillator off frequency.

3. Turn in a local station whose signal is locked to a network color program.

4. Fine tune the receiver for proper color.

5. Connect the test probe of the SC61 to the 3.58 MHz test point.

6. Observe the receiver's CRT to verify the color is still properly locked after the connection is made.

7. Adjust the Frequency Counter Calibration capacitor, C7022 on the Controller board, for a reading of 3.57954 ±1 count.

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DC VOLTS ADJUSTMENT

1. Connect the Channel A test probe to DC voltage source accurate to at least .05%. Be sure that the banana plug on the low-capacity probe is connected to the DCV IN jack on the front panel of the SC61.

2. Depress the Channel A DCV push button.

3. Adjust the DC volts adjustment, R7082 on the Controller board, for a DC reading equal to the input voltage.

COMPENSATION

1. Connect one of the probes from Channel A to the function generator.

2. Set the SC61 timebase on 2ms and the Volts/div. to .5 volts.

3. Set the function generator for an output of a 1 KHz squarewave at 2 volts peak-to-peak.

4. Adjust C18004, on the Channel A input board, for the best squarewave.

5. Remove the probe from Channel A, connect it to Channel B and adjust C18004 on Channel B for the best squarewave.

6. Connect another probe to Channel A, switch to A and B, and connect the Channel A probe to the function generator also.

7. Adjust the Channel A probe compensation to get a squarewave that looks like Channel B.

8. Reverse the probes. The squarewave must be the same as the above step.

9. Adjust the compensation caps on the Channel A attenuator board (1000) for the best squarewave, (C2 for square, C1 for peak).

10. Repeat step 9 for Channel B.

11. Set the volts/div. for 5 volts on both channels and set the function generator for 20 volts peak-to-peak.

12. Adjust the compensation caps on the Channel A attenuator for the best squarewave (C4 for square, C3 for peaks).

13. Repeat step 12 for Channel B.

VIDEO TRIGGER ADJUSTMENT

1. Connect a video signal from the VA62 to the input of Channel A.

2. Depress the Channel A button.

3. Adjust the Channel A volts/div. to 5 and set the timebase/frequency to video preset and depress the video horizontal push button.

4. Set the trigger source switch to the Channel A position and adjust trigger source switch to the Channel A position.

5. Adjust R5029 for the best locked in signal possible.

SWEEP RESPONSE

1. Connect a sweep generator to the input of Channel A (through a 50 ohm terminator) and set the sweep generator to sweep from 0-100 MHz.

2. Set the Channel A volt/div. switch to .05 volts/div. and the trigger source to "AC line". Set the timebase frequency switch to .5 msec/div. and adjust the vernier control to put exactly 1 sweep envelope across the 10 graticule lines.

3. Adjust C9001 on the vertical output board and CR1017A on the Channel A attenuator/preamplifier board for peak amplitude of the sweep response signal. C9001 has the greatest effect near 10 MHz on the sweep envelope and C1017A has the greatest effect in the 40 to 60 MHz area.

4. Adjust R2040 and C2011 on vertical amplifier board for the flattest possible sweep response from 0-50 MHz.

5. Depress the Channel A $\hat{}$ PPV push button and adjust the $\hat{}$ Begin and $\hat{}$ End controls until the intensified portion of the trace covers only the 2nd minor division. Note the peak-to-peak voltage reading on the digital display.

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6. Adjust the ^ Begin and ^ End controls until the intensified portion of the trace covers only the 3rd minor division. Note the peak-to-peak voltage reading on the digital display. Repeat this step for every minor division out to 60 MHz. The peak-to-peak voltage shouldn't vary more than 6% (2% + .5db) to 30 MHz and 41% (2% + 3db) to 60 MHz.

7. Move the cable and 50 ohm terminator from the input of Channel A to the input of Channel B and press the Channel B CRT display button.

8. Set the Channel B volts/div. control to .05 volts/div. Set the timebase/frequency to .5 msec/div and adjust the vernier control to put exactly 1 sweep envelope across the graticule lines.

9. Adjust C1017B on the Channel B attenuator/preamplifier board for peak amplitude of the sweep signal. C1017B has its greatest effect in the 40 to 60 MHz area of the sweep pattern.

AUXILIARY TRIGGER LEVEL ADJUSTMENT

1. Connect a 10 MHz signal to the input of Channel A.

2. Depress Channel A button and lock trace in.

3. Set the trigger source to Channel B.

4. Decrease the amplitude of the signal by using the volts/division and the vernier control until the frequency reading of 10 MHz on the LCD display begins to decrease.

5. Adjust R4050 to bring back up the frequency to the 10 MHz reading.

6. Repeat steps 4 and 5 until no further improvement can be made.

PROBE COMP ADJUSTMENT

1. Connect a SC61 to the probe comp jack.

2. Adjust R8093 for a reading of 1 volt peak-to-peak on the SC61.