*TB 9-6625-1967-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TIME DOMAIN REFLECTOMETER AN/USM-437(V)1 (TEKTRONIX, 1503 OPTION 4) AND TEKTRONIX, TYPES 1502, 1502 OPTION 4 AND 1503

Headquarters, Department of the Army, Washington, DC
12 March 2008

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also send in your comments electronically to our E-mail address: 2028@redstone.army.mil or by fax 256-842-6546/DSN 788-6546. For the World Wide Web use: https://amcom2028.redstone.army.mil. Instructions for sending an electronic 2028 can be found at the back of this manual.

*This technical bulletin supersedes TB 9-6625-1967-35, dated 27 January 2005, including all changes.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Time Domain Reflectometer AN/USM-437(V)1 (Tektronix, 1503 Option 4) and Tektronix, Types 1502 and 1502 Option 4 and 1503. The manufacturers' manuals and TM 9-4935-601-14-3&P were used as the prime data sources in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. On AN/USM-437(V)1, some switch positions are different from the Tektronix, Type 1503 and are shown in parenthesis. Tektronix, Types 1502 Option 4 and 1503 Option 4 have a Type 1500 series Y-T Chart Recorder, which is not calibrated.

b. Time and Technique. The time required for this calibration is approximately 3 hours per item, using the dc and low frequency technique.

2. Forms, Records, and Reports

a. Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25.

b. Adjustments to be reported are designated (R) at the end of the sentence in which they appear. When adjustments are in tables, the (R) follows the designated adjustment. Report only those adjustments made and designated with (R).

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
AN/USM-437(V)1 (Tektronix, Type 1503 Option 4) and Tektronix, Type1503	
Vertical deflection Deflection reference Variable (additive to step increments)	Range: + 6 to -18 dB Accuracy: ± 3% Range: 7 steps, 10-dB increments; 0 to 60 dB Accuracy: ± 0.1 dB Range: 0 to 18 dB Accuracy: ± 2.0 dB
Dielectric scales	Solid poly: V_p/V_{air} = 0.66 Foam poly: V_p/V_{air} = 0.81 Variable: V_p/V_{air} = 0.31 to 1.0 Accuracy: ± 2% when VAR turned fully cw
Scale multipliers Distance dial	Range: X10 and X100 Accuracy: ± 2% Range: X10, 0 to 2500 ft; X100, 0 to 25,000 ft Accuracy: ± 2% (+1 digit added to distance control)
Tektronix, Types 1502 and 1502 Option 4	
Vertical system deflection factor	Range: 5 to 500 mρ/DIV in 7 steps Accuracy: ± 3%
Distance dial	Range: X.1, 0 to 100 ft; X1, 0 to 1000 ft Accuracy: ± 2% ± 0.05 ft for X.1 ± 2% ± 1 digit for X1
Dielectric scales	Solid PTFE: Vp/Vair = 0.70 Solid POLY: Vp/Vair = 0.66 OTHER-VAR: Vp/Vair = 0.55 to 1 Accuracy: ± 2% when VAR turned fully cw.

SECTION II
EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Transfer Calibration Standards Set AN/GSM-286; AN/GSM-287; or AN/GSM-705. Alternate items may be used by the calibrating activity. The items selected must be verified to perform satisfactorily prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one ratio between the standard and TI. Where the four-to-one ratio cannot be met, the actual accuracy of the equipment selected is shown in parentheses.

5. Accessories Required. The accessories required for this calibration are common usage accessories, issued as indicated in paragraph 4 above and are not listed in this calibration procedure. The following peculiar accessories are also required for this calibration: Attenuator, X10, Tektronix, Type 011-0059-02 and Termination, 50 Ω; Tektronix, Type 011-0123-00 (supplied with TI) or (Agilent 11048B or 11048C).

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
ATTENUATOR, VARIABLE	Range: 0 to 60 dB Accuracy: ± 0.25 dB (± 0.11 dB)	Agilent, Model 355D (355D)
FUNCTION GENERATOR	Range: 200 Hz Amplitude: 0.3 V	Agilent, Model 33250A (33250A)
MULTIMETER	Range: 0.10 to 200V dc Accuracy: ± 0.1%	Fluke, Model 8840A/AF05 (AN/GSM-64D)
OSCILLOSCOPE CALIBRATOR	Time markers: Range: .1 and 1 µs Accuracy: ± 0.75% Voltage amplitude: Range: -4.75 to 190 V dc Accuracy: ± 0.25%	Fluke, Model 5820A-5C-GHZ (5820A-5C-GHZ)
PULSE GENERATOR	Range: 10 to 100 µs Amplitude: 5 V, Ext Trigger Accuracy: ± 0.75%	LeCroy, Model 9210MOD200 (9210 MOD200) w/plug-ins, LeCroy, Models 9211 (9211) and 9215 (9215) (MIS 45839)

SECTION III
CALIBRATION PROCESS FOR TIME DOMAIN REFLECTOMETER AN/USM-437(V)1 (TEKTRONIX, 1503 OPTION 4) AND TEKTRONIX TYPE 1503

6. Preliminary Instructions

a. The instructions outlined in paragraphs **6** and **7** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name as listed in table 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI.

d. When indications specified in paragraphs **8** through **13** are not within tolerance, perform the power supply check prior to making adjustments. After adjustments are made, repeat paragraphs **8** through **13**. Do not perform power supply check if all other parameters are within tolerance.

e. Unless otherwise specified, all controls and control settings refer to the TI.

7. Equipment Setup

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

a. Connect to 115 V ac power source.

b. Pull **POWER** switch out and allow at least 20 minutes for warm-up.

8. Vertical Attenuation and Gain

a. Performance Check

(1) Position controls as listed in (a) through (j) below:

(a) **RET LOSS (dB)** (**SENSITIVITY (DB)**) switch and **FINE** controls to **0 dB**.

(b) **ZERO REF SET** control ccw.

(c) **NOISE FILTER** pushbutton to out position.

(d) **0-dB SET** control fully cw.

(e) **DISTANCE** dial to **000**.

(f) **FEET/DIV** switch to **.5** (**METRES/DIV** to **1**).

(g) **Multiplier** switch to **X10**.

(h) Both **CABLE DIELECTRIC** pushbuttons to out position.

(i) **VAR** control (**DISTANCE CAL** controls) fully cw.

(j) **IMPLS WIDTH** (ns) to **10**. (**TEST PULSE-SHORT/MED/LONG** control to **MED**.)

(2) Disconnect P21 from VERT AMP/SLOW RAMP BOARD (fig. 1) (located directly behind center of front panel on left side of board) and connect equipment as shown in figure 1.

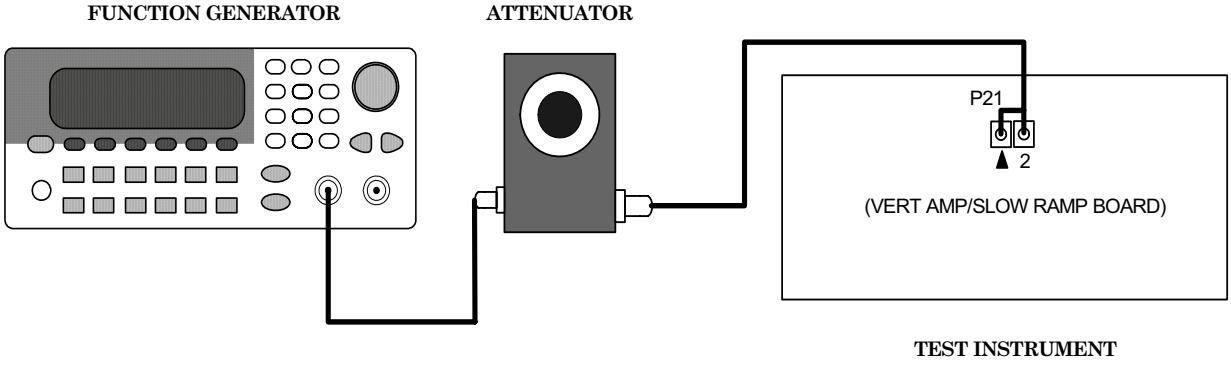

Figure 1. Vertical attenuation and gain - equipment setup.

(3) Set attenuator to 0 dB.

(4) Adjust function generator frequency to 200 Hz and output for 0.3 V.

(5) Adjust **0-dB SET** control for a 6 division reference display on TI.

(6) Set attenuator to 10 dB. Set **RET LOSS (dB)** (**SENSITIVITY (dB)**) switch to **10** and adjust **POSITION** control to center display. Display will indicate between 5.8 and 6.2 divisions.

(7) Repeat technique of (6) above for **RET LOSS (dB)** (**SENSITIVITY (dB)**) switch and attenuator settings listed in table 3. At each setting, TI will display between 5.8 and 6.2 divisions. It may be necessary to adjust **POSITION** control to keep display centered.

Table 3. Vertical Attenuation Check

Test instrument **RET LOSS (dB)** **(SENSITIVITY (dB))** switch settings	Attenuator settings (dB)
20	20
30	30
40	40
50	50
60	60

(8) Disconnect equipment and reconnect P21. Connect a 50 Ω feedthrough termination to **CABLE** connector.

(9) Set **RET LOSS (dB)** (**SENSITIVITY (dB)**) switch to **0-dB** and adjust **ZERO REF SET** control for a convenient display.

(10) Adjust **0-dB SET** control for a 2 division display on TI.

(11) Adjust **RET LOSS (dB)** (**SENSITIVITY (dB)**) **FINE** control to **6 dB**. TI will indicate 4 divisions of display.

(12) Adjust **RET LOSS (dB)** (**SENSITIVITY (dB)**) **FINE** control to **12 dB**. TI will indicate 8 divisions of display.

(13) Remove termination.

(14) Set **RET LOSS (dB)** (**SENSITIVITY (dB)**) switch and adjust **FINE** controls to **0dB** and adjust **0-dB SET** control fully ccw. Record amplitude of TI display.

(15) Adjust **0-dB SET** control fully cw. Display amplitude will be at least four times greater than amplitude recorded in (14) above.

b. Adjustments. No adjustments can be made.

9. Timing

a. Performance Check

(1) Set **RET LOSS (dB)** (**SENSITIVITY (dB)**) switch to **20 dB** and **FEET/DIV** switch to **50**.

(2) Connect equipment as shown in figure 2.

(3) Adjust pulse generator for -5 V output and pulse width of 100 μs and external triggering.

(4) Set oscilloscope calibrator **MODE** for 1μS markers and **TRIG** to /100.

(5) Adjust pulse generator amplitude and pulse width for a stable 1 μS marker display on TI.

(6) Using **ZERO REF SET** control, move TI pulse off screen. Adjust oscilloscope calibrator to align markers with display graticule lines. If oscilloscope calibrator does not indicate 1 μS ±2 percent, perform **b** below.

b. Adjustments. Adjust R1216 (fig. 3) to align 1 time marker per graticule division.

10. Distance Dial

a. Performance Check

(1) Set **FEET/DIV** switch to **5**.

(2) Adjust **ZERO REF SET** control cw until last time marker appears before fully cw is reached and set its leading edge on the second graticule line from the left.

(3) Adjust **DISTANCE** dial to **050**. If leading edge of second time marker does not align with second graticule line within ± 1 digit of **DISTANCE** dial reading, perform **b** below.

(4) Repeat technique of (3) above for **DISTANCE** dial settings of **100**, **150**, **200**, and **250**. Verify that each time marker is located on reference graticule line within ± 1 digit of **DISTANCE** dial reading.

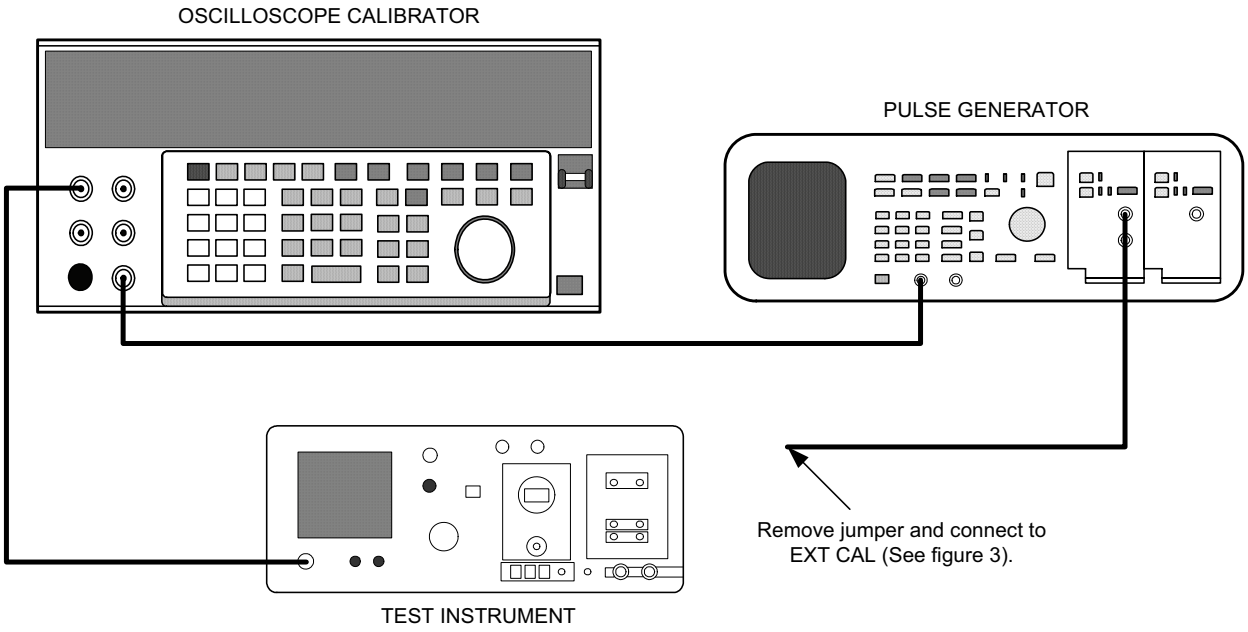

Figure 2. Timing - equipment setup.

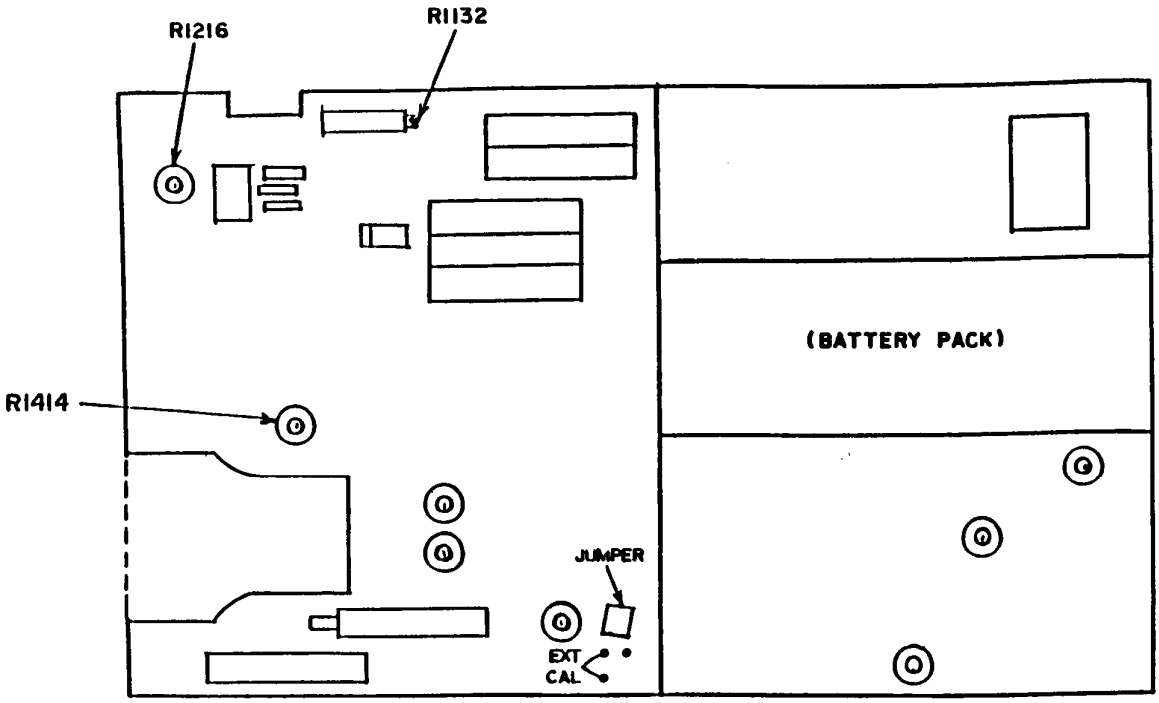

Figure 3. - Main board - bottom view.

b. Adjustments. Adjust R1414 (fig. 3) until second time marker is aligned with leading edge of second graticule line. Check that the pulse is at the same point on the graticule when the **ZERO REF CHECK** button is pressed.

11. Cable Dielectrics

a. Performance Check

(1) Set **FEET/DIV** switch to **5** feet.

(2) Set oscilloscope calibrator for 1μS markers.

(3) Press **SOLID POLY** pushbutton (set **DISTANCE CAL** switches to **.6** and **.06 (.66)**) and align time marker on second graticule line from the left using the **ZERO REF SET** control. Two markers displayed will be 6.59 divisions apart within ±0.1 divisions.

(4) Press **FOAM POLY** pushbutton and release **SOLID POLY** pushbutton. (Set **DISTANCE CAL** switches to **.8** and **.01 (.81)**). TI will display two pulses 8.1 divisions apart within ±0.1 divisions.

(5) Release **SOLID POLY** and **FOAM POLY** pushbuttons. (Set **DISTANCE CAL** switches fully cw.)

b. Adjustments. No adjustments can be made.

12. X100 Timing and Position

a. Performance Check

(1) Set multiplier switch to X100.

(2) Set oscilloscope calibrator for 1μS markers and adjust for 1 marker per graticule division display. Oscilloscope calibrator will indicate 1μS, ± 2 percent.

(3) Deenergize TI; remove all connections, and replace **EXT CAL** connector (fig. 3).

(4) Energize TI and press **IMPLS WIDTH (ns) 100** pushbutton, (Set **TEST PULSE SHORT/MED/LONG** switch to **MED**) and set **RET LOSS (dB)** (**SENSITIVITY (dB)**) switch to **0 dB**.

(5) Adjust **ZERO REF SET** control to position leading edge of pulse display on graticule centerline.

(6) Set multiplier switch to **X10** while observing pulse display. If leading edge does not remain on graticule centerline, perform **b** below.

b. Adjustments

(1) Adjust R1132 (fig. 3) to align leading edge of pulse display on TI graticule centerline.

(2) Alternately set multiplier switch between X100 and X10 positions while adjusting R1132 (fig. 3) for no movement of display.

13. X-Y Output

a. Performance Check

NOTE
Perform this check only if TI has the X-Y output module.

(1) Place TI terminal connection link on negative slope terminal as shown in figure 4.

(2) Set **REF LOSS (dB)** (**SENSITIVITY (dB)**) switch to **0 dB** and **DISTANCE** dial to **000**.

(3) Connect termination to **CABLE** input. Adjust **0 dB SET** control for a 4 division display on TI.

(4) Connect multimeter positive lead to **PEN LIFT** red terminal and common lead to **PEN LIFT** black terminal. Multimeter will indicate approximately +5 V dc.

(5) Lift **RECORD/CAMERA** switch to **RECORD** and release while observing crt sweep and multimeter in indications. Multimeter will indicate 0 ± 0.5 V at start of sweep and approximately +5 V at end of sweep.

(6) Disconnect link from negative slope and connect to positive slope as shown in figure 4. Multimeter will indicate approximately -0.5 V.

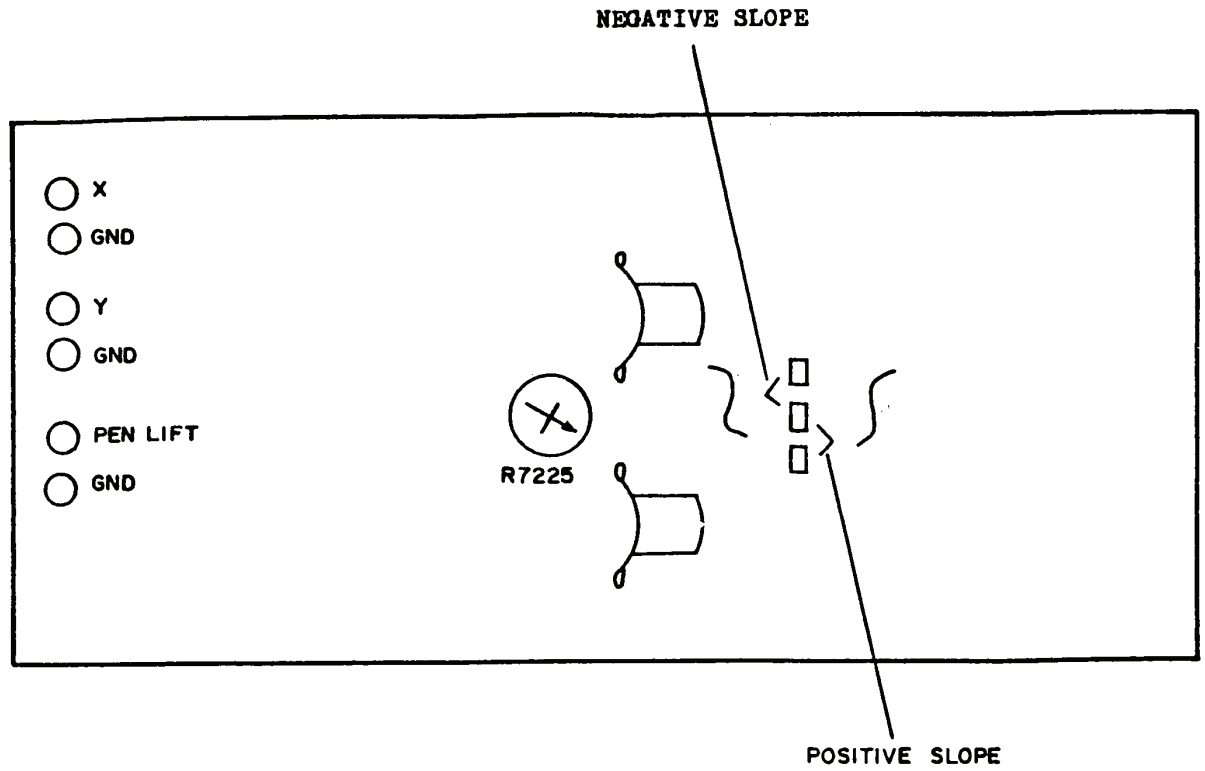

Figure 4. X-Y Output module - top view.

(7) Repeat (5) above while observing beginning and ending indications of +4 V or more and -0.5 V or less respectively.

(8) Move multimeter connections to TI **Y** terminals.

(9) Adjust **ZERO REF SET** control fully cw.

(10) Lift and hold **RECORD/CAMERA** switch to **RECORD** and adjust **POSITION** control for a 0.0 V indication on multimeter.

(11) Adjust **ZERO REF SET** slowly ccw. If multimeter does not rise to approximately +0.4 V, perform **b** below. Release **RECORD/CAMERA** switch.

(12) Move multimeter connections to TI **X** terminals and lift **RECORD/CAMERA** switch to **RECORD**. Multimeter will indicate between 0 and 1 V as dot moves across crt screen. Release **RECORD/CAMERA** switch.

b. Adjustments. Lift **RECORD/CAMERA** switch to **RECORD** while adjusting R7225 (fig. 4) for a +0.4 V indication on multimeter (R).

14. Power Supply

a. Performance Check

NOTE

Do not perform power supply check if all other parameters are within tolerance.

(1) Connect multimeter common lead to TP6332 (GND) (fig. 5) and positive lead to TP6256 (+25 V) (fig. 5). If multimeter does not indicate between 24.75 and 25.25 V dc, perform **b** below.

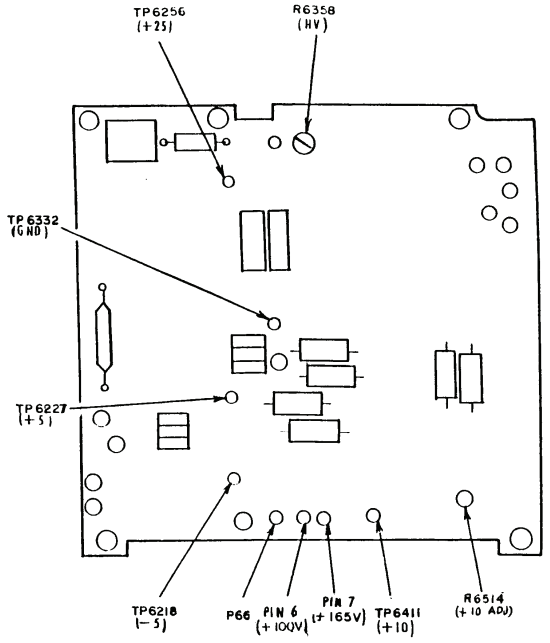

Figure 5. Power supply board – to view.

NOTE

Leave common lead connected to TP6332 (GND) (fig. 5) throughout this performance check.

(2) Repeat technique of (1) above for test points listed in table 4 and shown in figure 5. If multimeter does not indicate within limits specified, perform adjustment listed in table 4.

b. Adjustments. Adjust R6358 (HV) (fig. 5) for a 25-V dc indication on multimeter (R).

Table 4. Low-Voltage Power Supply

Test instrument test points (fig. 5)	Multimeter indications (V dc)		Adjustments (fig. 5)
	Min	Max	
TP6411 (+10)	+9.9	+10.1	R6514 (+10 ADJ) (R)
TP6227 (+5)	+4.75	+5.25	- - -
TP6218 (-5)	-4.75	-5.25	- - -
P66 (PIN 6) +100V	+90	+110	- - -
P66 (PIN 7) +165V	+155	+175	- - -

15. Final Procedure

a. Deenergize and disconnect all equipment and reinstall protective cover on TI.

b. Annotate and affix DA label/form in accordance with TB 750-25.

SECTION V
CALIBRATION PROCESS FOR TIME DOMAIN REFLECTOMETER TEKTRONIX TYPES 1502 AND 1502 OPTION 4

16. Preliminary Instructions

a. The instructions outlined in paragraphs **16** and **17** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name as listed in table 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI and TM 9-4935-601-14-3&P.

d. When indications specified in paragraphs 1**8** through **21** are not within tolerance, perform the power supply check prior to making adjustments. After adjustments are made,

repeat paragraphs 18 through **21**. Do not perform power supply check if all other parameters are within tolerance.

17. Equipment Setup

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

a. Remove battery pack from rear of TI.

b. Remove cover from TI by loosening 4 screws on rear.

c. Stand TI face up and press down on handle pivots to break seal.

d. Remove EMI (electromagnetic interference) shield from top and bottom of TI.

e. Connect battery pack to TI using adapters and cable.

f. Connect to 115 V ac power source.

g. Pull **POWER** switch out and allow at least 20 minutes for warm-up.

18. Dc Balance and Vertical Attenuation

a. Performance Check

(1) Position controls as listed in (a) through (j) below:

(a) **INTENSITY** control for normal viewing.

(b) **ZERO REF** control fully cw.

(c) **POSITION** control to midrange.

(d) **mρ /DIV** switch to **100**.

(e) **NOISE FILTER** pushbutton to out position.

(f) **DISTANCE** dial to **000**.

(g) **FEET/DIV** control to **100**.

(h) Multiplier switch to **X.1**.

(i) **CABLE DIELECTRIC** pushbuttons as listed in (1) through (3) below:

1 **SOLID POLY** to in position.

2 **SOLID PTFE** to out position.

3 **OTHER** to out position.

(j) **VAR** screwdriver adjustment fully cw.

(2) Connect termination to TI **CABLE** connector.

(3) Position base of pulse on crt horizontal graticule centerline, using **POSITION/FINE** controls.

(4) Remove termination. If trace shifts by more than 0.5 divisions, perform **b** below.

(5) Set **mρ /DIV** switch to **500** or lower to obtain 1.000 V in next step.

(6) Connect multimeter negative lead to ground terminal GND of P21 (fig. 6) and positive lead to left end of R2229 (fig. 6).

(7) Adjust **POSITION/FINE** and **ZERO REF (SET)** controls until multimeter indicates 1.000 V ± 0.008 V.

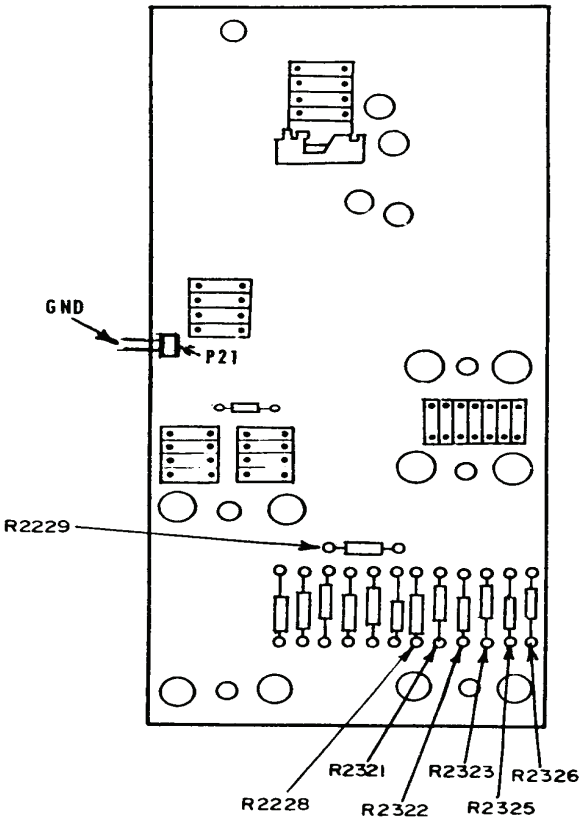

Figure 6. Vert amp/slow ramp board - top view.

NOTE

If unable to obtain 1.000 V in (7) above, set **mρ /DIV** switch to **200**.

(8) Repeat technique of (7) above, using only the positive lead to connect to resistors listed in table 5. Multimeter will indicate within limits specified.

NOTE

Leave negative lead connected to P21 throughout this performance check.

Table 5. Vertical Attenuation

Test instrument resistor test points (fig. 6)	Multimeter indications (V dc)	
	Min	Max
R2326	0.392	0.408
R2325	0.195	0.203
R2323	0.0971	0.1011
R2322	0.0397	0.0413
R2321	0.0196	0.0204
R2228	0.0098	0.0102

b. Adjustments. Adjust R1659 DC BAL (fig. 7) for minimum trace shift while disconnecting and connecting termination (R).

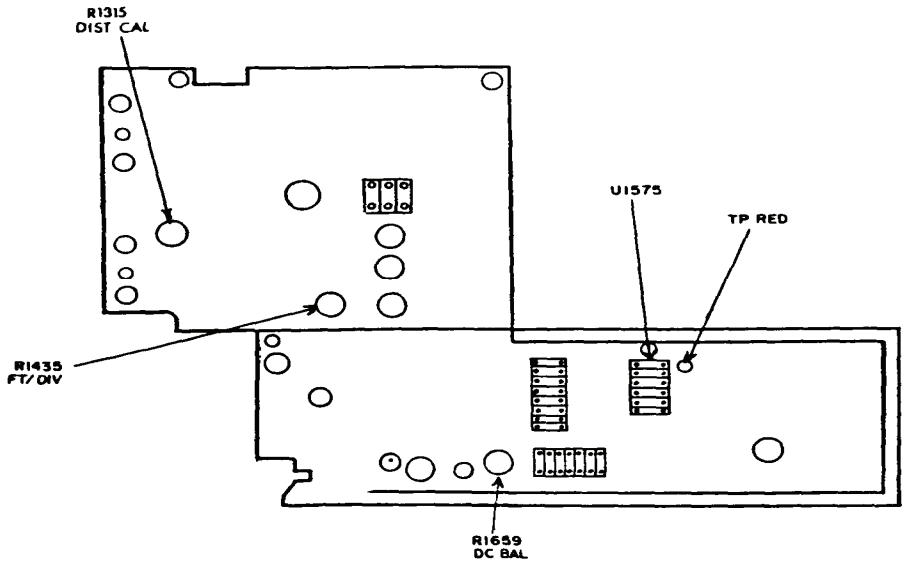

Figure 7. Main board - bottom view.

19. Timing

a. Performance Check

(1) Push **POWER** switch to off.

(2) Remove U1575 (fig. 7) from TI.

(3) Connect pulse generator to TP RED (fig. 7), using test lead.

(4) Set pulse generator for 50 μs duration, -3.5 V output with +2.0 V offset and external trigger.

(5) Pull **POWER** switch to on.

(6) Position controls as listed in (a) through (c) below:

(a) **mρ /DIV** switch to **200**.

(b) Multiplier switch to **X1**.

(c) **CABLE DIELECTRIC** (all pushbuttons to out positions).

NOTE

In (9) below, do not exceed 0.85 V to **CABLE** input with oscilloscope calibrator.

(7) Connect oscilloscope calibrator output to **CABLE** input, using cable and X10 attenuator.

(8) Connect oscilloscope calibrator external trigger output to pulse generator trigger input.

(9) Set oscilloscope calibrator for 0.2 μS marker output.

(10) Align first time-mark behind first vertical graticule line on crt using **DISTANCE** control. If the 11th time-mark does not align within 0.2 minor divisions to the left of the 11th graticule line, perform **b** below.

(11) Push **POWER** switch to off and replace U1575 (fig. 7). Pull **POWER** switch to on.

b. Adjustments. Adjust R1435 FT/DIV (fig. 7) to align alternate markers behind each vertical graticule line using **DISTANCE** control to keep first time-mark behind first vertical graticule line (R).

20. Distance Dial

a. Performance Check

(1) Position controls as listed in (a) through (d) below:

(a) **mρ /DIV switch** to **500**.

(b) **FEET/DIV** switch to **1**.

(c) **CABLE DIELECTRIC SOLID POLY** pushbutton in.

(d) Multiplier switch to **X.1**.

(2) Align incident pulse of crt display to graticule reference line (2d graticule), using **ZERO REF** control.

(3) Connect a 36" BNC to BNC, RG-58 cable to **CABLE** input.

(4) Adjust **DISTANCE** dial to **031.5**. If leading edge of reflected pulse is not centered on graticule reference line within ± 0.1 division, perform **b** below.

(5) Press **ZERO REF CHECK** pushbutton. If the incident pulse does not return to graticule reference line, press and hold **ZERO REF CHECK** pushbutton while adjusting **ZERO REF SET** control until incident pulse is aligned on graticule reference line.

b. Adjustments. Adjust R1315 DIST CAL (fig. 7) to align leading edge of reflected pulse to reference graticule line.

21. X-Y Output

NOTE
Perform this check only if TI has the X-Y output module.

a. Performance Check

(1) Place TI terminal connection link on negative slope terminal as shown in figure 4.

(2) Connect multimeter positive lead to **PEN LIFT** red terminal and common lead to **PEN LIFT** black terminal. Multimeter will indicate approximately + 5 V dc.

(3) Press and release **RECORD** switch while observing sweep and multimeter indications. Multimeter will indicate +0.5 V or less at start of sweep and approximately +5 V at the end of sweep.

(4) Disconnect link from negative slope and connect to positive slope as shown in figure 4. Multimeter will indicate approximately -0.5 V.

(5) Repeat (3) above while observing for beginning and ending indications of +4 volts or more and +0.5 V or less respectively.

(6) Move multimeter connections to TI **Y** terminals.

(7) Adjust **ZERO REF SET** control fully cw.

(8) Press and hold **RECORD** switch and adjust **POSITION** control for a 0.0 V indication on multimeter.

(9) Adjust **ZERO REF SET** control fully ccw. If multimeter indication does not rise to approximately +0.4 V, perform **b** below. Release **RECORD** switch.

(10) Connect multimeter to TI **X** terminals and press and release **RECORD** switch. Multimeter will indicate between 0 and 1 V as dot moves across crt screen.

b. Adjustments. Press and hold **RECORD** switch while adjusting R7225 (fig. 4) for a +0.4 V indication on multimeter. Release **RECORD** switch (R).

22. Power Supply

NOTE

Do not perform power supply check if all other parameters are within tolerance.

a. Performance Check

(1) Connect multimeter common lead to TI TP6332 (GND) (fig. 5) and positive lead to TP6256 (+25) (fig. 5). If multimeter does not indicate between 24.75 and 25.25 V dc, perform **b** below.

NOTE

Leave common lead connected to TP6332 (GND) (fig. 5) throughout this performance check.

(2) Repeat technique of (1) above for test points listed in table 6. If multimeter does not indicate within limits specified, perform adjustment listed in table 6.

Table 6. Low-Voltage Power Supply

Test instrument test points (fig. 5)	Multimeter indications (V dc)		Adjustments (fig. 5)
	Min	Max	
TP6411 (+10)	+9.9	+10.1	R6514 (+10ADJ) (R)
TP6227 (+5)	+4.75	+5.25	- - -
TP6218 (-5)	-4.75	-5.25	- - -
P66 (PIN 6) +100V	+90	+110	- - -
P66 (PIN 7) +165V	+155	+175	- - -

b. Adjustments.

Adjust R6358 (HV) (fig. 5) for a 25 V dc indication on multimeter (R).

23. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0802804

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 342161, requirements for calibration procedure TB 9-6625-1967-24.

Instructions for Submitting an Electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@redstone.army.mil
To: <2028@redstone.army.mil

Subject: DA Form 2028

1. **From**: Joe Smith
2. Unit: home
3. **Address**: 4300 Park
4. **City**: Hometown
5. **St**: MO
6. **Zip**: 77777
7. **Date Sent**: 19-OCT –93
8. **Pub no:** 55-2840-229-23
9. **Pub Title**: TM
10. **Publication Date**: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter FName**: Joe
14. Submitter MName: T
15. **Submitter LName**: Smith
16. **Submitter Phone**: 123-123-1234
17. **Problem**: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text**

This is the text for the problem below line 27.