

*TB 9-6695-263-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR MODULATION ANALYZER, HEWLETT-PACKARD, MODEL 8901A W/OPTION 002 AND 010

Headquarters, Department of the Army, Washington, DC
13 April 2004

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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, US Army Aviation and Missile Command, AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual. For the World Wide Web, use <https://amcom2028.redstone.army.mil>.

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*This bulletin supersedes TB 9-6695-263-35, 6 June 1983.

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**SECTION I
IDENTIFICATION AND DESCRIPTION**

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Modulation Analyzer, Hewlett-Packard, Model 8901A w/Options 002 and 010. The manufacturer's manual was used as the prime data source in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. Variations among models are described in text, tables, and figures.

b. Time and Technique. The time required for this calibration is approximately 4 hours, 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	
Frequency modulation:	Specifications	Carrier frequency range
Rates	20 Hz to 10 kHz	150 kHz to 10 MHz
	20 Hz to 200 kHz	10 to 1300 MHz
	20 Hz to 20 kHz (w/750 μs filter)	10 to 1300 MHz
Deviation	40 kHz pk max	150 kHz to 10 MHz
	400 kHz pk max	10 to 1300 MHz
	40 kHz pk max (w/750 μs filter)	10 to 1300 MHz

Table 1. Calibration Description - Continued

Test instrument parameters	Performance specifications	
	Specifications	Carrier frequency range
Frequency modulation: Accuracy	$\pm 2\%$ reading ± 1 digit for 20 Hz to 10 kHz rates	250 kHz to 10 MHz
	$\pm 1\%$ reading ± 1 digit for 50 Hz to 100 kHz rates	10 to 1300 MHz
	$\pm 5\%$ reading ± 1 digit for 20 Hz to 200 kHz rates	10 to 1300 MHz
Demodulated output distortion	<0.1% THD for deviations	400 kHz to 10 MHz
AM rejection (50% AM at 400 Hz and 1 kHz) FM calibrator: Deviation Accuracy	<0.1% THD for deviations <100 kHz <i>(THD: Total harmonic distortion)</i>	10 to 1300 MHz
	<20 Hz pk deviation	50 Hz to 3 kHz BW
Amplitude modulation: Rates	20 Hz to 10 kHz 20 Hz to 100 kHz	150 Hz to 10 MHz 10 to 1300 MHz
Depth	to 99%	
Accuracy	$\pm 2\%$ reading ± 1 digit for 50 Hz to 10 kHz rates and depth >5%	150 kHz to 10 MHz
	$\pm 3\%$ reading ± 1 digit for 20 Hz to 10 kHz rates	150 kHz to 10 MHz
	$\pm 1\%$ reading ± 1 digit for 50 Hz to 50 kHz rates and depth >5%	10 to 1300 MHz
	$\pm 3\%$ reading ± 1 digit for 20 Hz to 100 kHz rates	10 to 1300 MHz
Flatness	$\pm 0.3\%$ reading ± 1 digit for 90 Hz to 10 kHz rates and depth 20 to 80%	10 to 1300 MHz
FM rejection	<0.2% AM at 5 kHz pk deviation at 400 Hz and 1 kHz rates	250 kHz to 10 MHz and 50 Hz to 3 kHz BW
	<0.2% AM at 50 kHz pk deviation at 400 Hz and 1 kHz rates	10 to 1300 MHz and 50 Hz to 3 kHz BW
Distortion	<0.3% THD <0.6% THD	$\leq 50\%$ depth $\leq 95\%$ depth
Residual	0.01% rms	50 Hz to 3 kHz BW
AM calibration: Depth Calibration factor accuracy	33.33% nominal $\pm 0.1\%$	- - -

Table 1. Calibration Description - Continued

Test instrument parameters	Performance specifications	
AM calibration:	Specifications	Carrier frequency range
Internal reference Stability	Frequency: 10 MHz <1 x 10 ⁻⁹ per day after 30- day warm-up	
Audio filters: 50 Hz high pass (2 pole) 3 dB cutoff frequency Flatness	50 Hz nominal <1% at ≥200 Hz rates	
300 Hz high pass (2 pole) 3 dB cutoff frequency Flatness	300 Hz nominal <1% ≥kHz at rates	
3 kHz low pass (5 pole) 3 dB cutoff frequency Flatness	3 kHz nominal <1% at ≤ kHz rates	
15 kHz low pass (5 pole) 3 dB cutoff frequency Flatness	15 kHz nominal <1% at ≤10 kHz rates	
20 kHz low pass (9 pole bessel) 3 dB cutoff frequency Flatness	>20 kHz <1% at ≤ kHz rates	
Dc-emphasis filters (1 pole high pass)	25 μs nominal 50 μs nominal 75 μs nominal 750 μs nominal	

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 Reference Calibration Standards Set, NSN 4931-00-621-7878. 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 parenthesis.

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.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
AUDIO ANALYZER	Range: 20 Hz to 100 kHz Distortion: -70 dB min Accuracy: ±2 dB	Boonton, Model 1121 (1121)
CALIBRATION FIXTURE	No substitute	Hewlett-Packard, Model 11715A (11715A)
CALIBRATOR	Range: 20 Hz to 100 kHz Accuracy: ±0.1%	Fluke, Model 5720A (5700A/EP) (p/o MIS-35947)
FREQUENCY DIFFERENCE METER	Measuring capacity of 1×10^{-9}	Tracor, Model 527E
MULTIMETER	Range: 0 to 50 V dc Accuracy: ±0.01%	Hewlett-Packard, Model 3458A (3458A)
SIGNAL GENERATOR	Range: 0.5 to 1100 MHz Accuracy: ±1%	(SG-1207/U)
TIME/FREQUENCY WORKSTATION	Output: 100 kHz; 1, 5, or 10 MHz Accuracy: ±0.1 ppm	Datum, Model ET6000-75 (13589305)

SECTION III CALIBRATION PROCESS

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 tables 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. 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.

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- a. Connect TI to 115 V ac power source.
- b. Press power key to on and allow at least 30 minutes for TI to warm-up and stabilize.

8. Internal Reference Frequency Stability

a. Performance Check

(1) Connect frequency difference meter signal input to TI INT 10 MHz OUT or rear panel time base 10 MHz OUTPUT (OPTION 002).

(2) Connect time/frequency workstation output to frequency difference meter reference input. If TI frequency stability is not $>1 \times 10^{-9}$, perform **b** below.

b. Adjustments. Adjust Y1 COARSE and FINE controls (fig. 1) for a frequency stability of $>1 \times 10^{-9}$.

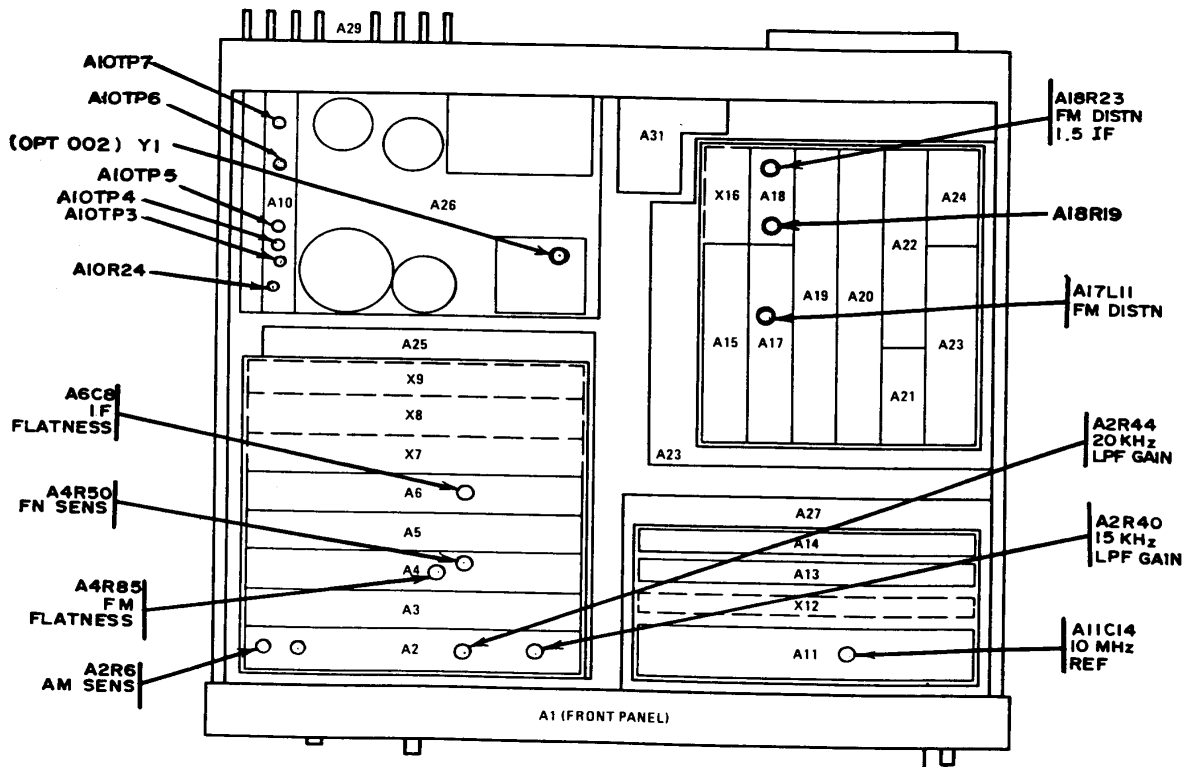


Figure 1. Modulation analyzer - top view.

9. AM Accuracy at 10 kHz

a. Performance Check

(1) Connect TI CALIBRATION OUTPUT to TI INPUT.

(2) Press MEASUREMENT AM and CALIBRATION pushbuttons and allow time for at least two readings. TI indication will be between 99 and 101 percent.

(3) Press **2.2 SPCL** pushbuttons and allow time for at least two readings. If TI does not indicate between 99 and 101 percent, perform **b** below. Record indication for use in paragraph 13.

b. Adjustments. Adjust A2R6 AM SENS (fig. 1) for 100 percent indication on TI display (R).

10. Residual AM

a. Performance Check

- (1) Connect calibration fixture **AM** output to **TI INPUT**.
- (2) Set calibration fixture test mode switch to **AM**.
- (3) Press **TI MEASUREMENT FREQ** pushbutton.
- (4) Adjust calibration fixture frequency to 12.5 MHz.
- (5) Position TI controls as listed in (a) through (e) below:
 - (a) **MEASUREMENT AM** pushbutton pressed.
 - (b) **2.0 SPCL** pushbuttons pressed.
 - (c) **HP FILTER 50 Hz** pushbutton pressed.
 - (d) **LP FILTER 3 kHz** pushbutton pressed.
 - (e) **DETECTOR AVG** pushbutton pressed.
- (6) TI display will indicate 0.01 percent or less.

b. Adjustments. No adjustments can be made.

11. AM Distortion

a. Performance Check

- (1) Connect equipment as shown in figure 2.
- (2) Set calibrator for a wideband output of 20 kHz at an amplitude of 175 mV.
- (3) Position TI controls as listed in (a) through (c) below:
 - (a) All **HP FILTER** pushbuttons released (off).
 - (b) All **LP FILTER** pushbuttons released (off).
 - (c) **DETECTOR PEAK +** (positive) pushbutton pressed.
- (4) Adjust calibrator wideband output for a 50 percent AM indication on TI display.
- (5) Set audio analyzer to measure signal distortion with 80 kHz low-pass filtering. Distortion will be 0.3 percent or less.
- (6) Increase calibrator wideband output for a 95 percent AM indication on TI display. Measured distortion will be 0.6 percent or less.
- (7) Adjust calibrator frequency to 20 Hz and adjust wideband output to maintain 95 percent AM indication on TI display. Measured distortion will be 0.6 percent or less.
- (8) Decrease calibrator wideband output for a 50 percent AM indication on TI display. Measured distortion will be 0.3 percent or less.
- (9) Remove cable from **TI MODULATION OUTPUT**.

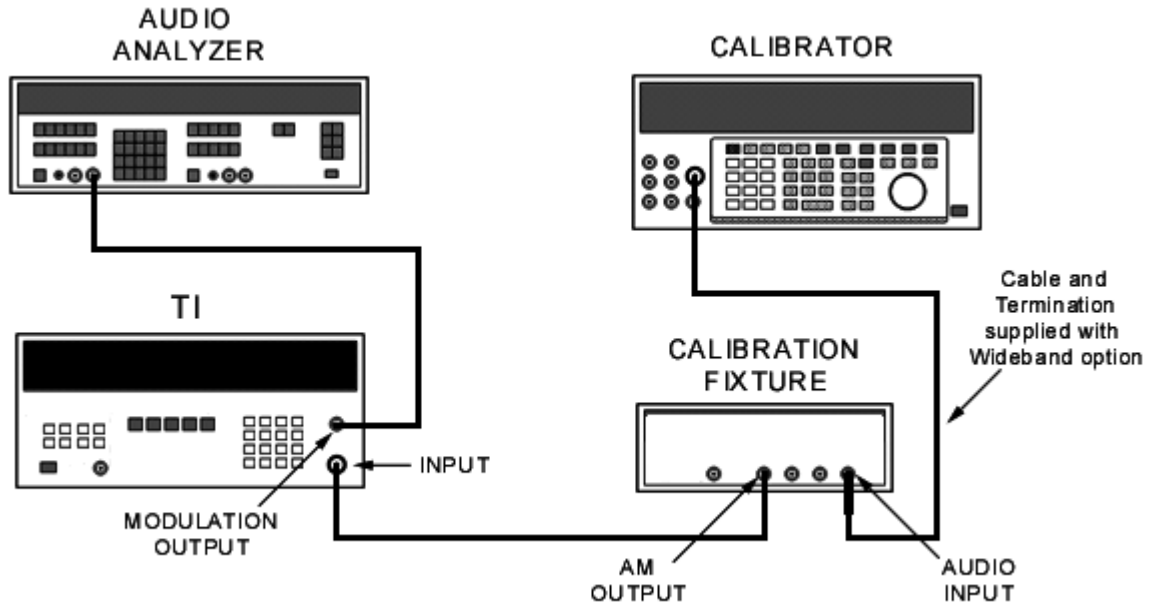


Figure 2. AM distortion - equipment setup.

b. Adjustments. No adjustments can be made.

12. AM Flatness

a. Performance Check

- (1) Set calibrator for a wideband output of 1 kHz at an amplitude of 280 mV.
- (2) Adjust calibrator output for an 80 percent AM indication on TI display.
- (3) Press **DETECTOR AVG.** and **RATIO %** pushbuttons.
- (4) Adjust calibrator frequency to 10 kHz, 150 Hz, and 90 Hz, and note TI display at each frequency. TI will display less than 0.8 percent REL difference between any two indications.

b. Adjustments. No adjustments can be made.

13. AM Accuracy

a. Performance Check

- (1) Position TI controls as listed in (a) through (c) below:
 - (a) **RATIO %** pushbutton released (off).
 - (b) **DETECTOR PEAK +** (positive) pushbutton pressed.
 - (c) **5.1 SPCL** pushbuttons pressed.
- (2) Set calibrator for a wideband output of 1 kHz at an amplitude of 280 mV.
- (3) Adjust calibrator output amplitude for a TI indication of 80 percent of value recorded in paragraph 9 a (3).
- (4) Press TI **80**, **RATIO %** pushbuttons.

(5) Adjust calibrator to frequencies listed in table 3 without changing output level. TI will indicate within limits specified.

Table 3. AM Accuracy

Calibrator frequencies (Hz)	Test instrument AM limits (% REL)	
	Min	Max
50,000	98.9	101.1
100,000	96.9	103.1
50	98.9	101.1
20	96.9	103.1
20 ¹	96.9	103.1
50	97.9	102.1
10,000	97.9	102.1

¹Press 3.1 SPCL pushbuttons.

b. Adjustments. No adjustments can be made.

14. AM Rejection

a. Performance Check

- (1) Set TI controls as listed in (a) through (c) below:
 - (a) **RATIO %** pushbutton off.
 - (b) **HP FILTER 50 Hz** pushbutton on.
 - (c) **LP FILTER 3 kHz** pushbutton on.
- (2) Set calibrator for a wideband output of 1 kHz at an amplitude of 175 mV.
- (3) Adjust calibrator output amplitude for a 50 percent AM indication on TI display.
- (4) Press TI **MEASUREMENT FM** pushbutton.
- (5) Momentarily disconnect calibration fixture audio input. Record TI residual FM indication.
- (6) Reconnect calibration fixture audio input. Record TI FM indication. Displayed FM indication minus one-half residual FM value recorded in (4) above will be 20 Hz peak or less.
- (7) Press **3.0 SPCL** pushbuttons. Repeat (4) through (6) above.

b. Adjustments. No adjustments can be made.

15. FM Accuracy at 10 kHz

a. Performance Check

- (1) Connect TI **CALIBRATION OUTPUT** to TI **INPUT**.
- (2) Press **FM** and **CALIBRATION** pushbuttons and allow time for at least two readings. TI indication will be between 99 and 101 percent. Record TI indication.
- (3) Press **2.3 SPCL** pushbuttons and allow time for two readings. If TI does not indicate between 99 and 101 percent, perform **b** below.
- (4) Disconnect cable connected in (1) above.

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- (5) Connect calibration fixture **FM ÷ 4** output to **TI INPUT**.
- (6) Set calibration fixture test mode switch to **FM**.
- (7) Set calibrator for a wideband output frequency of 10 kHz at an amplitude of 0.5 V.
- (8) Press **MEASUREMENT FREQ** pushbutton.
- (9) Adjust calibration fixture frequency to 100 MHz.
- (10) Position TI controls as listed in (a) through (d) below:
 - (a) **MEASUREMENT FM** pushbutton pressed.
 - (b) **LP FILTER 15 kHz** pushbutton pressed.
 - (c) **2.0 SPCL** pushbuttons pressed.
 - (d) **DETECTOR AVG.** pushbutton pressed.
- (11) Adjust calibrator output for a 20 kHz average deviation as displayed on TI.
- (12) Press **TI RATIO %** pushbutton.
- (13) Move connection to **FM ÷ 32 OUTPUT** without disturbing calibration fixture controls. Multiply displayed ratio by value recorded in (2) above. Result will be between 12.35 and 12.65 percent REL.

b. Adjustments. Adjust A4R50 FM SENS (fig. 1) for a 100 percent indication on TI display (R).

16. FM Distortion, Accuracy, and Rejection at 1.5 MHz IF

a. Performance Check

- (1) Connect equipment as shown in figure 2, except connect calibration fixture **FM ÷ 4 OUTPUT** to **TI INPUT**.
- (2) Position TI controls as listed in (a) through (c) below:
 - (a) **HP** and **LP FILTER** pushbuttons pressed to off.
 - (b) **DETECTOR PEAK +** (positive) pushbutton pressed
 - (c) **RATIO** pushbuttons pressed to off.
- (3) Set calibrator for a wideband output frequency of 100 kHz at an amplitude of 370 mV.
- (4) Adjust calibrator output for a 100 kHz indication on TI display.
- (5) Measure distortion on audio analyzer with all filters off. If audio analyzer does not indicate 0.1 percent or less distortion, perform **b** below.
- (6) Adjust calibrator frequency to 10 kHz and output level for TI display equal to 100 kHz times calibration factor recorded in a **15 a** (2). (For example, if calibration factor in **15 a** (2) is 100.4 percent, set output level for display of 100.4 kHz.)
- (7) Adjust calibrator to frequencies listed in table 4. TI display will indicate within limits specified.

Table 4. FM Accuracy

Calibrator frequencies (Hz)	Test instrument FM limits (kHz)	
	Min	Max
100,000	98.9	101.1
200,000	94.9	105.1
50	98.9	101.1
20	94.9	105.1

(8) Press **HP FILTER 50 Hz** and **LP FILTER 3 kHz** pushbuttons.

(9) Set calibrator for a wideband output frequency of 1 kHz and output level for a 50-kHz indication on TI display.

(10) Press **MEASUREMENT AM** pushbutton.

(11) Momentarily disconnect cable from calibration fixture **AUDIO INPUT**. Record TI display.

(12) Reconnect cable to **AUDIO INPUT** and record TI display.

(13) Subtract one-half of value recorded in (11) above from value recorded in (12) above. If result is not 0.2 percent or less, perform **b** below.

b. Adjustments

(1) Adjust calibrator frequency for 100 kHz.

(2) Set calibration fixture test mode switch to **FM**.

(3) Connect **TI INPUT** to calibration fixture **FM OUTPUT**.

(4) Press **HP FILTER 50 Hz** and **41.0 SPCL** pushbuttons.

(5) Adjust calibration fixture carrier frequency to 400 MHz.

(6) Press **INPUT FREQ MHz** and **MEASUREMENT FM** pushbuttons.

(7) Adjust calibrator output level for a 400-kHz peak deviation on TI display.

(8) Alternately press **DETECTOR PEAK +** (positive) and **PEAK -** (negative) pushbuttons while observing TI display. If indications are not equal in both positions, adjust A18R23 FM DISTN 1.5 IF (fig. 1) for an equal indication on TI (R).

(9) Press **3000 kHz** and **+** (down) pushbuttons.

(10) Alternately press **DETECTOR PEAK +** (positive) and **PEAK -** (negative) pushbuttons while observing TI display. If difference between the two indications is not less than 1.6 kHz, adjust A18R23 again to diminish difference by one-half.

(11) Press **↑ kHz** pushbutton. TI is properly adjusted when $pk1+ = pk2-$ and $pk1 = pk2+$.

(12) Connect calibration fixture **FM ÷ 4** output to **TI INPUT**.

(13) Press **LP FILTER** pushbutton to **3 kHz** and press **AUTOMATIC OPERATION** pushbutton.

(14) Adjust calibrator to 1 kHz and adjust amplitude level for 50 kHz peak deviation on TI.

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(15) Press **AM** pushbutton and adjust A18R19 (fig. 1) for a minimum display less than 0.2 percent.

NOTE

The specification for incidental AM requires 0.5 times residual AM be subtracted. Residual AM, requires 0.5 times residual AM be subtracted. Residual AM can be measured by momentarily disconnecting audio - input to calibration fixture and noting displayed AM; - Subtracting 0.5 times displayed AM from AM measured in (15) above gives actual incidental AM.

17. FM Distortion, Accuracy, and Rejection at 455 kHz IF

a. Performance Check

(1) Connect equipment as shown in figure 2, except connect calibration fixture **FM ÷ 32 OUTPUT** to **TI INPUT**.

(2) Set TI controls as listed in (a) through (c) below:

- (a) Press **3.1 SPCL** and **MEASUREMENT FM** pushbuttons.
- (b) Press **RATIO %** pushbutton to off.
- (c) Press **PEAK +** pushbutton to on.

(3) Adjust calibrator wideband frequency to 1 kHz and output level for a 5 kHz peak deviation as displayed on TI.

(4) Press **MEASUREMENT AM** pushbutton.

(5) Momentarily disconnect cable from calibration fixture audio input and record residual AM displayed on TI.

(6) Reconnect cable to calibration fixture and record AM displayed on TI.

(7) Subtract one-half of value recorded in (5) above from value recorded in (6) above. Result will be 0.2 percent or less.

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

- (a) **MEASUREMENT FM** pushbutton pressed.
- (b) All **HP FILTER** pushbuttons pressed to off.
- (c) **LP FILTER >20 kHz** pushbutton pressed.

(9) Adjust calibrator frequency to 1 kHz and output level for 10 kHz peak deviation times calibration factor value recorded in paragraph **15 a (2)**.

(10) Adjust calibrator frequency to 20 Hz and 10 kHz. TI will indicate FM between 9.79 and 10.21 kHz at each frequency.

(11) Adjust calibrator frequency to 10 kHz and output level to 10 kHz peak deviation.

(12) Measure distortion on audio analyzer with 30 kHz low-pass and 400 Hz high-pass filtering. If measured distortion does not indicate 0.1 percent or less, perform **b** below.

b. Adjustments

(1) Disconnect cable from **TI INPUT**.

- (2) Connect signal generator output to **TI INPUT**.
- (3) Adjust signal generator frequency to 2.45 MHz at 0 dBm with 10 kHz peak FM deviation at a 1 kHz rate.
- (4) Press **41.1 SPCL** and **10.0 SPCL** pushbuttons.
- (5) Position controls as listed in (a) through (d) below:
 - (a) **MEASUREMENT AM** pushbutton pressed.
 - (b) **HP FILTER 50 Hz** pushbutton pressed.
 - (c) **LP FILTER 3 kHz** pushbutton pressed.
 - (d) **DETECTOR AVG.** pushbutton pressed.
- (6) Adjust A6C8 IF FLATNESS (fig. 1) until TI indicates a minimum but less than 0.2 percent (R).
- (7) Disconnect signal generator and reconnect cable disconnected in (1) above.
- (8) Adjust calibrator to 10 kHz frequency and output level for 2 V ac.
- (9) Set calibration fixture test mode switch to **FM**.
- (10) Position controls as listed in (a) through (c) below:
 - (a) **MEASUREMENT FM** pushbutton pressed.
 - (b) All **LP FILTER** pushbuttons pressed to off.
 - (c) **DETECTOR PEAK +** (positive) pushbutton pressed.
- (11) Adjust calibration fixture carrier frequency to 12.5 MHz.
- (12) Press **3.1 SPCL** and **MEASUREMENT FM** pushbuttons.
- (13) Adjust calibrator output level to 10 kHz peak deviation as indicated on TI.
- (14) Adjust A17L11 FM DISTN (fig. 1) for less than 0.1 percent distortion indication on audio analyzer (R).

18. Audio Filters

a. Performance Check

- (1) Connect equipment as shown in figure 2, except connect calibration fixture **FM ÷ 4 OUTPUT** to **TI INPUT**.
- (2) Set calibration fixture test mode switch to **FM**.
- (3) Set calibrator for a wideband output frequency of 200 Hz at a level of 130 mV.
- (4) Press **41.0 SPCL** pushbuttons.
- (5) Adjust calibration fixture carrier frequency to 100 MHz.
- (6) Position TI controls as listed in (a) through (c) below:
 - (a) **INPUT FREQ MHz** pushbutton pressed.
 - (b) **MEASUREMENT FM** pushbutton pressed.
 - (c) **DETECTOR AVG** pushbutton pressed.
- (7) Adjust calibrator output level for a 25 kHz average deviation as indicated on TI.

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(8) Adjust calibrator to frequencies listed in table 5. At each frequency, press all **RATIO**, **HP** and **LP FILTER** pushbuttons to off. Then press **RATIO %** and **FILTER** pushbuttons as listed in table 5. If TI does not indicate between 98.99 and 101.01 percent, at each setting, perform **b** below.

Table 5. Audio Filter

Calibrator frequencies (Hz)	Test instrument FILTER pushbuttons
200	50 Hz HP FILTER
2,000	50 Hz HP FILTER
1,000	300 Hz HP FILTER
10,000	300 Hz HP FILTER
1,000	3 kHz LP FILTER
100	3 kHz LP FILTER
10,000	15 kHz LP FILTER
1,000	15 kHz LP FILTER
10,000	>20 kHz LP FILTER
1,000	>20 kHz LP FILTER

b. Adjustments

- (1) Disconnect cable from TI **INPUT**.
- (2) Connect signal generator output to TI **INPUT**.
- (3) Adjust signal generator frequency for 11 MHz at 0 dBm with 30 percent AM at a 1 kHz rate.
- (4) Position controls as listed in (a) and (b) below:
 - (a) **41.0 SPCL** pushbuttons pressed.
 - (b) **MEASUREMENT AM** pushbutton pressed.
- (5) Press **RATIO %** pushbutton button.
- (6) Press **LP FILTER >20 kHz** pushbutton.
- (7) Adjust A2R44 20 kHz LPF GAIN (fig. 1) until TI indicates 100 percent (R).
- (8) Press **LP FILTER 15 kHz** pushbutton.
- (9) Adjust A2R40 15 kHz LPF GAIN (fig. 1) until TI indicates 100 percent (R).

19. Power Supply

NOTE

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

a. Performance Check

- (1) Connect multimeter input between A10TP3 (fig. 1) and ground. If multimeter does not indicate between 14.9 and 15.1 V dc, perform **b** below.
- (2) Connect multimeter input between test points listed in table 6 and ground. Multimeter will indicate within limits specified.

Table 6. Power Supply

Test instrument test points (fig. 1)	Dc voltmeter indications (V dc)	
	Min	Max
A10TP7	-15.2	-14.8
A10TP5	+5.1	+5.3
A10TP4	-5.3	-5.1
A10TP6	+40.5	+42.5

b. Adjustments. Adjust A10R24 (+15 V ADJ) (fig. 1) for a 15.0-V dc indication on multimeter (R).

20. 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:

Official:



JOEL B. HUDSON
*Administrative Assistant to the
Secretary of the Army*

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Distribution:

To be distributed in accordance with the IDN 343116, requirements for calibration procedure
TB 9-6695-263-35.

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.

