*TB 9-6625-2077-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR SIGNAL GENERATOR SG-1144/U

Headquarters, Department of the Army, Washington, DC
1 July 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 bulletin supersedes TB 9-6625-2077-35, dated 12 February 2004.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Signal Generator, SG-1144/U. TM 11-6625-2954-14&P 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. On some models, the highest **TUNING RANGE** switch is designated (16-80 MHZ) instead of 16-90 MHz. This is shown in parenthesis throughout test.

b. Time and Technique. The time required for this calibration is approximately 3 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	Range: 50 kHz to 90 MHz (80 MHz) Accuracy: ±1% indication
Output voltage[1]	Range: 100 nV to 1 V into 50 Ω load Accuracy: ± 1 dB, 1 μV to 1 V ±2 dB, 100 nV to 1 μV[1]
Frequency modulation:	
Internal tones	Range: 150, 400, and 1000 Hz Accuracy: 150 ±1 Hz, 400 ±5 Hz, 1 kHz ±50 Hz
Deviation	Range: 0 to 75 kHz from 20 to 80 Mhz Accuracy: ±15% indication
Distortion	<4%
Amplitude modulation:	
Internal tones	Range 0 to 100% at 400 and 1000 Hz Accuracy: ±6%
Distortion	<1% at 0 to 50% <3% at 50 to 90%

[1]Not checked below -110 dB (.707 μV).

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-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, 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 specification	Manufacturer and model (part number)
AUDIO ANALYZER	Dc level Range: -11 to 1 V dc Accuracy: ±0.75% Frequency Range: 149 Hz to 100 kHz Accuracy: ±0.25% Distortion Capability: < 1%	Boonton, Model 1121 (1121)
MEASURING RECEIVER	Flatness measurement: Frequency: 50 to 500 MHz Accuracy: ±0.188 dB Frequency measurement: Range: 50 to 500 MHz Accuracy: ±0.5% Power measurement: Frequency: 250 and 300 MHz Range: +10 dB to -80 dB Accuracy: ±0.125 dB	Measuring receiver system N5531S consisting of: Spectrum Analyzer Agilent, Model E4440A (E4440A), Power meter Agilent, Model E4419B (E4419B), and Sensor module Agilent, Models 504 (504)

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 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 the procedure. Additional maintenance information is contained in TM 11-6625-2954-14&P

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.

a. Connect the TI to a 115 V ac source.

b. Set **POWER** switch to **ON** and allow at least 30 minutes for equipment to reach operating temperature.

c. Set **POWER** switch to **OFF** and wait 30 seconds. If TI **MODULATION** and **RF OUTPUT** meters do not indicate **0**, adjust to **0** using adjustment screw located below meter face.

d. Set **POWER** switch to **ON**.

NOTE

Verify the proper cal factors are loaded for the measuring receiver power sensor module being utilized.

8. Frequency

a. Performance Check

(1) Set **RF** output switch to **0 dBm** and **MODULATION** switch to **CW**.

(2) Connect TI **RF OUTPUT** to audio analyzer **INPUT HIGH** using a 50 Ω feedthrough termination.

(3) Set **TUNING RANGE** switch to **50-250 kHz** and adjust **TUNING COARSE** and **FINE** controls for **50.00 kHz** on **FREQUENCY** display.

(4) Adjust **RF OUTPUT LEVEL** control for a **0 dBm** indication on TI **RF OUTPUT** meter.

(5) Verify that the audio analyzer indicates within the limits listed in table 3. If audio analyzer does not indicate within the limits specified perform **b** below.

(6) Set TI to the next frequency listed in table 3, using the **TUNING COARSE** and **FINE** controls.

(7) Adjust **RF OUTPUT LEVEL** control for a 0 dBm indication on **RF OUTPUT** meter.

(8) Verify that the audio analyzer indicates within the limits listed in table 3. If audio analyzer does not indicate within the limits specified perform **b** below.

Table 3. Frequency Measurement Using Audio Analyzer

Test instrument		Audio analyzer indications (kHz)	
TUNING RANGE control setting	**FREQUENCY** display	Min	Max
50-250 kHz	50 kHz	49.500	50.500
50-250 kHz	100 kHz	99.000	101.000

(9) Disconnect TI from audio analyzer **INPUT HIGH**.

(10) Connect sensor module to the power reference output. Perform sensor zero and calibration.

(11) Connect measuring receiver sensor module to TI without the 50 Ω feedthrough termination.

(12) Set measuring receiver to the frequency counter mode.

(13) Set **TUNING RANGE** switch to the first setting listed in table 4.

(14) Adjust **TUNING COARSE** and **FINE** controls for a reading on the **FREQUENCY** display that is equal to the value listed in table 4.

(15) Adjust **RF OUTPUT LEVEL** control for a **0 dBm** indication on **RF OUTPUT** meter.

(16) Verify that the measuring receiver indicates within the limits listed in table 4. If measuring receiver does not indicate within the limits specified perform **b** below.

(17) Repeat technique of (12) through (16) above for settings and indications listed in table 4.

Table 4. Frequency Measurement Using Measuring Receiver

Test instrument		Measuring receiver indications (MHz)	
TUNING RANGE control setting	**FREQUENCY** display	Min	Max
50-250 kHz	250 kHz	0.24750	0.25250
.25-1.25 MHz	.300 MHz	0.29700	0.30300
.25-1.25 MHz	.500 MHz	0.49500	0.50500
.25-1.25 MHz	1.250 MHz	1.23750	1.26250
1-5 MHz	2.000 MHz	1.98000	2.02000
4-20 MHz	5.00 MHz	4.95000	5.05000
16-90 MHz (16-80 MHz)	80.00 MHz	79.20000	80.80000

b. Adjustments

(1) Set **POWER** switch to **OFF**.

(2) Remove cover from TI.

(3) Remove assembly A3 and reconnect using extender board (fig. 1).

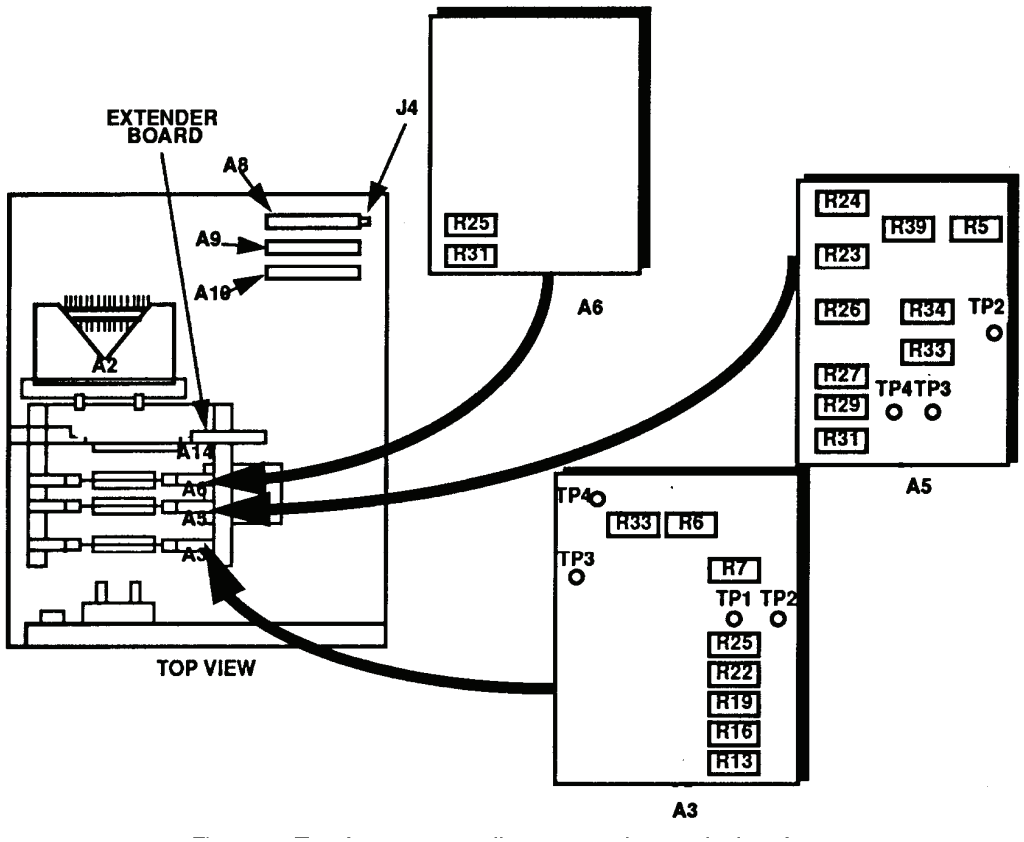

Figure 1. Test instrument – adjustment and test point locations.

(4) Position controls as listed in (a) through (e) below:

(a) **POWER** switch to **ON**.

(b) **MODULATION** switch to **CW**.

(c) **RF OUTPUT** switch to **0 dBm**.

(d) **TUNING RANGE** switch to **16-90 MHz (16-80 MHz).**

(e) **RF OUTPUT LEVEL** control for **0 dB** indication on TI **RF OUTPUT** meter.

(5) Set measuring receiver to frequency counter mode.

(6) Connect TI **RF OUTPUT** to measuring receiver power sensor and adjust **TUNING COARSE** and **FINE** control for an indication of 80.00000 MHz on measuring receiver.

(7) Disconnect cable from J4 on assembly A8 (fig. 1) and adjust A3R7 (fig. 1) for an indication of 0.00 on **FREQUENCY** display (R).

(8) Reconnect cable to J4 (fig. 1).

(9) Connect audio analyzer **INPUT HIGH** to A3TP2 and A3TP1 (common) (fig. 1). Do not connect to chassis ground.

(10) Set audio analyzer to measure V dc and adjust A3R6 (fig. 1) for a -1.004 V dc indication on audio analyzer (R).

(11) Move positive lead to A3TP4 (fig. 1).

(12) Adjust A3R33 (fig. 1) for a 1.000 V dc indication on audio analyzer.

(13) Repeat (6) above and adjust A3R25 (fig. 1) for 80.00 MHz on **FREQUENCY** display (R).

(14) Set **TUNING RANGE** switch to **4-20 MHz**.

(15) Adjust **COARSE** and **FINE TUNING** control for an indication of 20.00000 MHz on measuring receiver.

(16) Adjust A3R22 (fig. 1) for 20.00 MHz on **FREQUENCY** display (R).

(17) Set **TUNING RANGE** switch to **1-5 MHz**.

(18) Adjust **COARSE** and **FINE TUNING** controls for an indication of 5.00000 MHz on measuring receiver.

(19) Adjust A3R19 (fig. 1) for 5.000 MHz on **FREQUENCY** display (R).

(20) Set **TUNING RANGE** switch to **.25-1.25MHz**.

(21) Adjust **COARSE** and **FINE TUNING** controls for an indication of 1.25000 MHz on measuring receiver.

(22) Adjust A3R16 (fig. 1) for 1.250 MHz on **FREQUENCY** display (R).

(23) Set **TUNING RANGE** switch to **50-250 kHz**.

(24) Adjust **COARSE** and **FINE TUNING** controls for an indication of 0.25000 MHz on measuring receiver.

(25) Adjust A3R13 (fig. 1) for 250.0 kHz on **FREQUENCY** display (R).

(26) Set **POWER** switch to **OFF** and reinstall assembly A3 and extender board (fig. 1) in proper locations.

(27) Set **POWER** switch to **ON**.

9. Output Voltage and Attenuation

a. Performance Check

(1) Connect sensor module to the power reference output. Perform sensor zero and calibration.

(2) Connect measuring receiver power sensor to TI **RF OUTPUT**, and set measuring receiver to measure frequency.

(3) Set **TUNING RANGE** switch to **1-5 MHz** and adjust **TUNING COARSE** and **FINE** controls as required for an indication of 3.000 MHz on **FREQUENCY** display.

(4) Set measuring receiver to measure power.

(5) Set **RF OUTPUT** switch to **+10.00 dBm** and adjust **RF OUTPUT LEVEL** control to indicate 0 dB on **RF OUTPUT** meter.

(6) Using measuring receiver and RF power measurement techniques; measured power will indicate within the limits specified in table 5 for the TI **RF OUTPUT** switch setting.

Table 5. Attenuation Accuracy

RF OUTPUT switch	Measuring receiver indications (dBm)	
setting	Min	Max
10	9.000	11.000

(7) Set **RF OUTPUT** switch to the first value listed in table 6 and adjust **RF OUTPUT LEVEL** control to the value indicated for the **RF OUTPUT** switch setting on the TI **RF OUTPUT** meter.

(8) Set measuring receiver to measure tuned RF level; verify the measuring receiver indicates within the limits specified in table 6 for the TI **RF OUTPUT** switch setting.

(9) Repeat technique of (7) and (8) above for remaining settings listed in table 6. measuring receiver will be within limits specified.

Table 6. Attenuation Accuracy (Tuned Level)

RF OUTPUT switch settings	Measuring receiver indications (dBm)	
	Min	Max
0	-1.000	+1.000
-10	-9.000	-11.000
-20	-19.000	-21.000
-30	-29.000	-31.000
-40	-39.000	-41.000
-50	-49.000	-51.000
-60	-59.000	-61.000
-70	-69.000	-71.000
-80	-79.000	-81.000
-90	-89.000	-91.000
-100	-99.000	-101.000
-110	-108.000	-112.000

b. Adjustments

(1) Set **POWER** switch to **OFF**.

(2) Remove assembly A6 and reconnect using extender board (fig. 1).

(3) Set **POWER** switch to **ON**.

(4) Set **RF OUTPUT** switch to **0 dBm**.

(5) Connect sensor module to the power reference output. Perform sensor zero and calibration.

(6) Connect measuring receiver power sensor to TI **RF OUTPUT** and set measuring receiver to measure power.

(7) Adjust **RF OUTPUT LEVEL** control for a +3.00 dBm indication on measuring receiver.

(8) Adjust A6R31 (fig. 1) for a +3.00 dBm indication on TI **RF OUTPUT** meter (R).

(9) Adjust **RF OUTPUT LEVEL** control for a -7.00 dBm indication on measuring receiver.

(10) Adjust A6R25 (fig. 1) for a -7 dBm indication on TI **RF OUTPUT** meter (R).

(11) Set **POWER** switch to **OFF** and reinstall assembly A6 and extender board (fig. 1) in proper locations.

(12) Set **POWER** switch to **ON**.

10. Frequency Modulation

a. Performance Check

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

(a) **RF OUTPUT** switch to **+10 dBm**.

(b) **TUNING RANGE** switch to **16-90 MHz (16-80 MHz)**.

(c) **MODULATION** switch to **FM 150 Hz**.

(d) **FM METER RANGE** switch to **10 kHz**.

(2) Connect TI **RF OUTPUT** to measuring receiver power sensor.

(3) Adjust **TUNING COARSE** and **FINE** controls for an indication of 20.00 MHz on **FREQUENCY** display.

(4) Set measuring receiver to frequency counter mode to determine the center frequency.

(5) Adjust **RF OUTPUT LEVEL** control for a 0 dBm indication on TI **RF OUTPUT** meter.

(6) Adjust **MODULATION LEVEL** control for a 10 kHz indication on TI **MODULATION** meter.

(7) Set measuring receiver controls to measure modulation rate. If measuring receiver does not indicate within limits specified in first row of table 7, perform **b** below.

(8) Repeat technique of (1) (c), (1) (d) and (4) through (6) above for the remainder of **MODULATION** switch settings and **MODULATION** meter indications listed in table 7. If measuring receiver does not indicate within limits specified in table 7, perform **b** below.

Table 7. Modulation Frequency

Test instrument **MODULATION** switch setting	Test instrument **MODULATION** meter indications	Measuring receiver indications (Hz)	
(Hz)	(kHz)	Min	Max
150	10	149.000	151.000
400	10	395.00	405.000
1000	15	950.00	1050.00

(9) Adjust **MODULATION LEVEL** **c**ontrol for 10 kHz indication on **MODULATION** meter.

(10) Set measuring receiver to measure FM deviation.

(11) If measuring receiver does not indicate between the values specified in table 8, perform b below.

Table 8. Deviation – 10 kHz FM Meter Range

Test instrument **MODULATION** meter indications	Measuring receiver indications (kHz)	
kHz	Min	Max
10	8.5	11.5

(12) Set **FM METER RANGE** switch to **75 kHz** and adjust **MODULATION LEVEL** control for **MODULATION** meter indications listed in table 9. If peak deviation is not within limits specified in table 9, perform **b** below.

Table 9. Deviation – 75 kHz FM Meter Range

Test instrument **MODULATION** meter indications	Measuring receiver indications (kHz)	
(kHz)	Min	Max
25	21.25	28.75
50	42.5	57.5
75	63.75	86.25

(13) Set **MODULATION** switch to **FM 150 Hz** and **FM METER RANGE** switch to **75 KHz**.

(14) Set **RF OUTPUT** switch to **0 dBm** and adjust **RF OUTPUT LEVEL** control for a 0 dBm indication on TI **RF OUTPUT** meter.

(15) Adjust **MODULATION LEVEL** control for a 75 kHz indication on **MODULATION** meter.

(16) Set measuring receiver to measure FM deviation. Allow measuring receiver to acquire signal.

(17) Set measuring receiver to measure modulation distortion.

Table 10. Distortion

Test instrument **MODULATION** switch setting	Measuring receiver distortion indication
(Hz)	(%)
150	< 4
400	< 4
1000	< 4

(18) Measure FM distortion at 150 Hz. If measuring receiver distortion indication is not less than 4.0 percent, perform **b** below.

(19) Repeat (14) through (17) above with **MODULATION** switch set at **FM 400 Hz** and **FM 1 KHz** listed in table 10.

b. Adjustments

(1) Set **POWER** switch to **OFF**. Remove assembly A5 and reconnect, using extender board (fig. 1).

(2) Position controls as listed in (a) through (h) below:

(a) **POWER** switch to **ON**.

(b) **MODULATION** switch to **CW**.

(c) **MODULATION LEVEL** control fully ccw**.**

(d) **FM METER RANGE** switch to **10 KHz**.

(e) **TUNING RANGE** switch to **16-90 MHz** (**16-80 MHz**).

(f) **TUNING FINE** control to midrange.

(g) **TUNING COARSE** control cw less one-half turn.

(h) **RF OUTPUT LEVEL** control fully cw.

(3) Set audio analyzer controls to measure dc volts and connect audio analyzer **INPUT HIGH** to A5TP2 and A5TP3 (common) (fig. 1).

(4) Adjust A5R5 (fig.1) for a -11.000 V dc indication on audio analyzer.

(5) Disconnect audio analyzer and set **MODULATION** switch to **FM 150 Hz**.

(6) Set audio analyzer controls to measure frequency and connect audio analyzer **INPUT HIGH** to A5TP4 and A5TP3 (common) (fig. 1).

(7) Adjust A5R27 (fig. 1) for an indication of 150.000 Hz on audio analyzer (R).

(8) Set **MODULATION** switch to **FM 400.00 Hz**. Adjust A5R29 (fig. 1) for an indication of 400.00 Hz on audio analyzer (R).

(9) Set **MODULATION** switch to **FM 1 KHz**. Adjust A5R31 (fig. 1) for an indication of 1000.00 Hz on audio analyzer (R).

(10) Set audio analyzer controls to measure distortion.

NOTE

Do not adjust A5R33 (fig. 1) to full cw position. This action will cause the output of the internal oscillator to become zero volts.

(11) Alternately adjust A5R33 and A5R34 (fig. 1) for minimum distortion, less than 1 percent (R).

(12) Disconnect the audio analyzer from equipment setup.

(13) Set **MODULATION** switch to **FM EXT** and adjust A5R39 (fig. 1) for a 0 indication on TI **MODULATION** meter (R).

(14) Set **MODULATION** switch to **FM 1 kHz**.

(15) Connect **RF OUTPUT** to measuring receiver power sensor.

(16) Set measuring receiver to measure modulation rate.

(17) Adjust **MODULATION LEVEL** control for an indication of 10 kHz peak deviation on measuring receiver.

(18) Adjust A5R26 (fig. 1) for an indication of 10 kHz on **MODULATION** meter (R).

(19) Set **FM METER RANGE** switch to **75 kHz**.

(20) Adjust **MODULATION LEVEL** control for an indication of 75 kHz peak deviation on measuring receiver.

(21) Adjust A5R23 (fig. 1) for an indication of 75 kHz on TI **MODULATION** meter (R).

(22) Set **POWER** switch to **OFF** and disconnect test equipment.

(23) Reinstall assembly A5 and extender board (fig. 1) in proper locations.

(24) Set **POWER** switch to **ON**.

11. Amplitude Modulation

a. Performance Check

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

(a) **RF OUTPUT** switch to **+10 dBm**.

(b) **TUNING RANGE** switch to **4-20 MHz**.

(c) **MODULATION** switch to **AM 1 kHz**.

(2) Connect TI **RF OUTPUT** to measuring receiver power sensor

(3) Adjust **TUNING COARSE** and **FINE** controls for an indication of 10.00 MHz on **FREQUENCY** display.

(4) Set measuring receiver to frequency counter mode to determine center frequency.

(5) Adjust **RF OUTPUT LEVEL** control for a 0 dBm indication on TI **RF OUTPUT** meter.

(6) Set measuring receiver to measure AM depth.

(7) Adjust **MODULATION LEVEL** control for 20 percent modulation on TI **MODULATION** meter. If measuring receiver does not indicate between the values listed in table 11 for the **MODULATION LEVEL** setting, perform **b** below.

(8) Set measuring receiver to measure modulation distortion.

(9) Measuring receiver will indicate 1 percent distortion or less.

(10) Repeat technique of (5) through (8) above for remaining settings listed in table 11. If measuring receiver indications are not within limits specified, perform **b** below.

Table 11. Percent Modulation

	Signal generator		
Test instrument modulation (%)	Measuring receiver indications (%)		Measuring receiver distortion indications (%)
	Min	Max	
20	18.80	21.20	< 1
40	37.6	42.4	< 1

Table 11. Percent Modulation - Continued

	Signal generator		
Test instrument modulation (%)	Measuring receiver indications (%)		Measuring receiver distortion indications (%)
60	56.4	63.6	< 3
80	75.2	84.8	< 3
90	84.6	95.4	< 3

b. Adjustments

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

(a) **MODULATION** switch to **AM 1 KHz**.

(b) **MODULATION LEVEL** control fully ccw.

(c) **TUNING RANGE** switch to **16-90 MHz (16-80 MHz)**.

(d) **RF OUTPUT LEVEL** control fully ccw.

(e) **RF OUTPUT** switch to **+10dBm**.

(2) Adjust **TUNING COARSE** and **FINE** controls for an indication of 80.00 MHz on **FREQUENCY** display.

(3) Adjust **RF OUTPUT LEVEL** control for a +3 dBm indication on TI **RF OUTPUT** meter.

(4) Adjust **MODULATION LEVEL** control for an indication of 90 percent modulation on measuring receiver.

(5) Adjust A5R24 (fig. 1) for an indication of 90 percent on TI **MODULATION** meter (R).

12. 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
0719020

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 342220, requirements for calibration procedure TB 9-6625-2077-24.

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.