DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR MODULE TEST SET AN/ASM-297 (NSN 4920-00-839-6672)

Headquarters, Department of the Army, Washington, D. C.
16 March 1978

TB 11-6615-253-35, 3 June 1974, is changed as follows:

The title of the bulletin is changed as shown above.
Page 1, paragraph 2, line 8. "AMSEL-MA-DS" is changed to read: "DRESEL-MA-Q."
Paragraph 3a, line 4. "6615-839-6672" is changed to read: "4920-00-839-6672."
Page 3, paragraph 7d, line 3. "+1" is deleted.
Paragraph 7*d*, line 4. "+5" is deleted.
Paragraph 7*m,* line 1. "and 1 to above" is changed to read: "and 1 above."
Paragraph 8*b*(1), line 1. "TEST No" is changed to read: "TEST NO. 1."
Paragraph 8*b(*2), line 1. "TEST No. 5" is changed to read: "TEST NO. 5."
Paragraph 8*b*(3), line 1. "TEST No. 7" is changed to read: "TEST NO. 7."
Paragraph 8*b*(4), line 1. "TEST No. 8" is changed to read: "TEST NO. 8."
Page 4, paragraph 9*a*(2), line 3. "AN/USM-81" is changed to read: "AN/USM-281."
Paragraph 9*a*(3), line 2. "TB-2" is changed to read: "TB-i."
Page 5, paragraph 9*b*(1), line 1. "TEST No. 1" is changed to read: "TEST NO. 1."
Paragraph 9*b*(2), line 1. "TEST No. 2" is changed to read: "TEST NO. 2."
Paragraph 9*b*(3), line 1. "TEST No. 3" is changed to read: "TEST NO. 3."

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Brigadier General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-36A, Calibration Procedures requirements for AN/ASM-297.

U.S. GOVERNMENT PRINTING OFFICE. 1978-765-096/663

GPO 885-983

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR MODULE TEST SET AN/ASM-297

Headquarters, Department of the Army, Washington, D.C.
3 June 1974

Section I. GENERAL

1. Purpose and Scope. *a.* This bulletin provides information for the periodic calibration of Module Test Set AN/ASM-297. It is to be used by personnel trained and qualified in the use of calibration equipment.

b. This bulletin also contains illustrations showing the front panel view and wave form patterns.

2. Reporting of Equipment Publication Improvements.
Reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications and Blank Forms) and forwarded direct to Commander, U.S. Army Electronics Command, ATTN: AMSEL-MA-DS, Fort Monmouth, NJ 07703.

3. Description. *a. Identification.*

Nomenclature	Module Test Set AN/ASM:297
Federal stock number	6615839-6672
Manufacturer	General Electric Company 97424
Model number	A2141
Size	225 x 15.5 x 19.5 approximately
Weight	60 pounds

b. Technical Characteristics.

Power input requirements	.115 vac, 400 Hz 3-phase wye, 4 wire.
Circuit protection	2-ampere fuse.
Output voltages	-40 to +34.5 vdc- 1.8 to 750 mv. 15 v to 75 v, phases A, B, and C.

c. Calibration.

Time required	Approximately 2 hours
Interval of calibration	In accordance with TB 43-180.

4. General Instructions. *a. DA Form 2416 (Calibration Data Card).* During the use of this bulletin annotate DA Form 2416 in accordance with TM 38-750.

Reportable adjustments are followed by (R) in this procedure.

b. Unit Under Test. Module Test Set AN/ASM-297 (fig. 1) will be r referred to as the UUT (unit under test) throughout this bulletin.

c. Equipment. The equipment referred to throughout this bulletin is identified in table 1.

d. Equipment Setup. Disconnect instructions are not contained in this bulletin.

5. Differences Among Models. None.

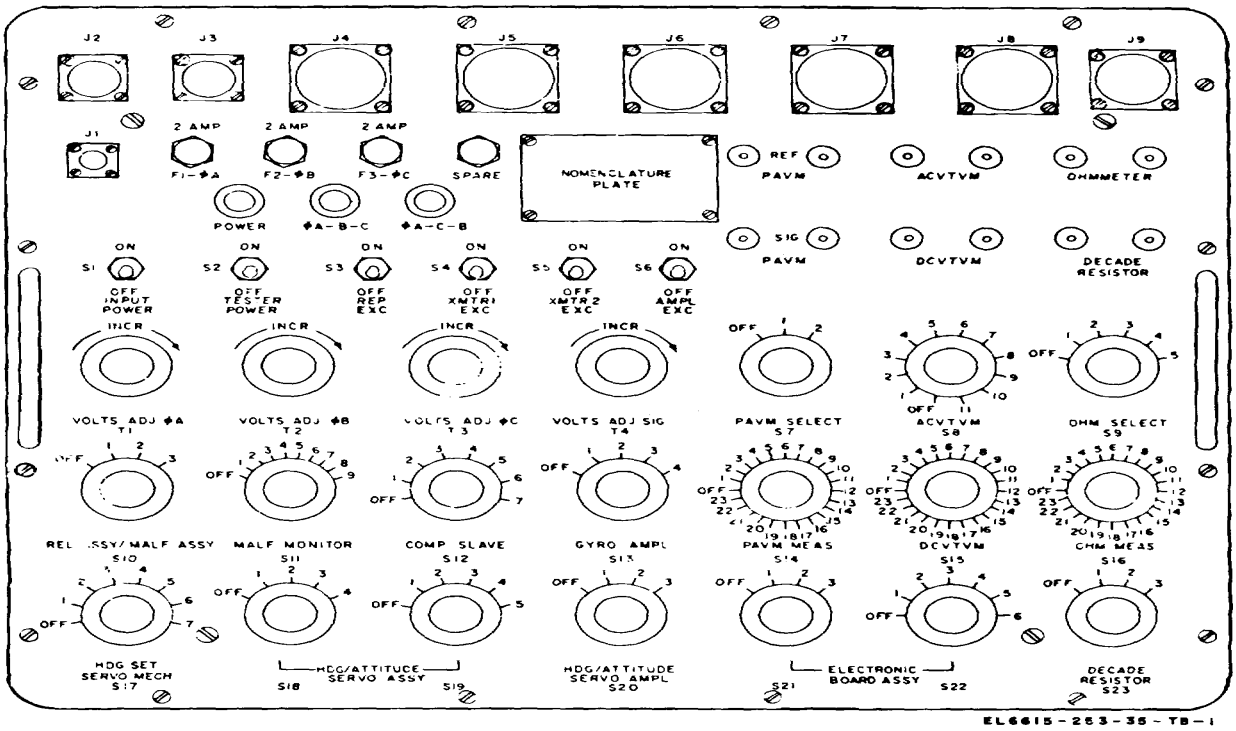

Figure 1. Module Test Set AN/ASM-297, front panel view.

Section II. CALIBRATION

6. Equipment Required. Table 1 lists minimum use specifications of equipment required for calibration performance checks and adjustments. Minimum use specifications are provided to assist in the selection of alternate equipment. Alternate equipment may be used provided it meets the specifications and bears evidence of current calibration.

Table 1. Equipment Required

Item Number	Common name	Minimum use specification
A1	Electronic Voltmeter ME-30B/U	Range: 110 to 115 Accuracy: None required
A2	Oscilloscope AN/USM-281 with preamplifier	Range: 400 to 800 Hz Accuracy: 3%
A3	Variable Power Transformer CN-16/U	Range: 115 VAC Accuracy: None required
A4	Electronic Voltmeter ME-202/U	Range: 2 mv to 115 VAC Accuracy: ±0.05%

NOTE

It is recommended that personnel familiarize themselves with the entire procedure prior to performing calibration.

7. Preliminary Procedures. *a.* Open the pressure relief valve in front of the UUT to equalize inside and outside air pressures.

b. Unlatch and remove the cover. Release the quick-lock fasteners and open the door in the cover. Remove cables from cover storage space.

c. Remove the UUT from its case to provide access to internal circuitry and components.

d. Connect the UUT to a power source by means of the power cable, CX-10389/ASM-297, connected to receptcle J1 and a bench power outlet of 115 ± 1 vac, 3-phase, 4-wire, 400 ± 5 Hz, phase rotation A-B-C.

e. Turn VOLTS ADJ 0A T1, VOLTS ADJ 0B and VOLTS ADJ 0C fully counterclockwise and set XMTR1 EXC switch S4 to OFF.

f. Set INPUT POWER switch S1 to ON; the indicator lights POWER and ∅A-B-C should light indicating a normal condition.

g. If indicator light ∅A-C-B lights, set IN-PUT POWER switch S1 to OFF and recheck the bench power to equipment connections for proper phase rotation.

h. Repeat steps f and *g* until proper indication is obtained.

i. Connect voltmeter A4 (high terminal to red, low terminal to black) across unit under test ACVTVM terminals.

j. Turn ACVTVM switch S8 to 1, and adjust VOLTS ADJ ∅A T1 clockwise for an indication of 115 ±1 vac on the voltmeter.

. Turn ACVTVM switch S8 to 2, and adjust VOLTS ADJ ∅B T2 clockwise for an indication of 115 ±1 vac on the voltmeter.

1. Turn ACVTVM switch S8 to 3, and adjust VOLTS ADJ ∅C T3 clockwise for an indication of 115 +1 vac on the voltmeter.

m. Repeat steps *k* and 1 to above to eliminate errors caused by interaction of the phase adjustments.

n. Turn ACVTVM switch S8 to 4, and adjust VOLTS ADJ SIG T4 clockwise for an indication of 110.0 0.1 vac Signal Voltage on the voltmeter.

o. Disconnect the voltmeter A4 from the ACVTVM terminals and substitute the voltmeter Al, in its place.

p. Observe the signal voltage indication on the voltmeter Al, and use it to monitor the Signal Voltage so that it does not change during subsequent calibration procedures.

NOTE

The following paragraphs are divided into subparagraph a, performance check, and subparagraph b, adjustments. When the performance check is within tolerance, do not perform the corresponding adjustment. When the performance check is not within tolerance, perform the corresponding adjustment before continuing with the calibration procedure. When the performance check is not within tolerance and no adjustment is specified, the deficiency must be corrected before continuing with the procedure.

8. Signal Voltages. *a. Performance Check.*

(1) Set INPUT POWER switch S1 to ON and allow 15 minutes for equipment to warm up and stabilize.

(2) Connect the voltmeter A4 to the various terminals listed for each test in table 2, and check that the signal voltages are within limits specified.

NOTE

Observe the high and low polarities of the AC/DC voltmeter when connecting it to the test terminals.

Table 2. Calibration of Signal Voltages

Test No.	Points of measurement			Special voltage	
	High side		Low side	Minimum	Maximum
1	TB1-30	to	TB1-35	99	101 MV
2	TB1-32	to	TB1-35	49.5	50.5 MV
3	TB1-34	to	TB1-35	24.7	25.3 MV
4	TB1-42	to	TB1-35	99	101 MV
5	TB1-58	to	TB1-35	742	758 MV
6	TB1-40	to	TB1-35	1.78	1.82 Volts
7	TB1-38	to	TB1-35	4.45	4.55 Volts
8	TB1-26	to	TB1-27	49.5	50.5 MV

b. Adjustments.

(1) If the voltmeter reading for TEST *N*∅. is out of limits, readjust R4 until the reading is within limits. (R)

(2) If the voltmeter reading for TEST N∅. 5 is out of limits, readjust R10 until the reading is within limits. (R)

(3) If the voltmeter reading for TEST N∅. 7 is out of limits, readjust R8 until the reading is within limits. (R)

(4) If the voltmeter reading for TEST N∅. 8 is out of limits, readjust R12 until the reading is within limits. (R)

9. 800-Hz Signal Source. *a. Performance Check.*

(1) Verify the three-phase line voltages per paragraph 7*i* through *m.*

(2) Connect phase A of the 400 Hz line through the variable power transformer A3, to Channel A of the Oscilloscope, AN/USM-81.

NOTE

Low side of the line connects to the low side of the oscilloscope input

(3) Connect the low side of input Channel B of the oscilloscope A2, to TB2 terminal 109 and the high side to TB1 terminal 110.

(4) Turn COMP SLAVE switch S12 to 1.

(5) Connect the voltmeter Al, in parallel with the oscilloscope A2, channel B input.

NOTE

The terminals of the voltmeter Al, must be isolated from ground.

(6) Position the controls on the oscilloscope, and its preamplifier, as indicated in tables 3 *and* 4.

Table 3. Oscilloscope Control Settings

Function	*Control*	*Position*
Time Base Controls	Stability	0
	Trig. Level	0
	Trig. Mode	Auto
	Trig. Slope	Int. +
	Time/Cm	1 Millisec.
	Variable	Ma. CW
Horizontal display A	5X magnifier	off
Time Base B	Stability-	0
	Trig. Level	0
	Trig. Mode	Auto
	Trig. Slope	Int +
	Time /Cm	1 sec
	Time Delay	
	Multiplier	0
	Ampi. Cal.	Off
	Horiz. Position	Midscale
	Vernier	Midscale

Table 4. Preamplifier Control Settings

Channel	*Control*	*Position*
A	*VoltCm*	*20*
	AAC Polarity	*Normal (+)*
	Variable	*Max. CW*
B	*Volt/Cm*	*0.1*
	AC Polarity	*Normal (+)*
	Variable	*Max. CW*
	Mode Selector	*Chopped*

(7) The correct phasing of the 800-Hz signal shall occur when the 800-Hz sine wave crosses through zero magnitude at the same instant that the reference 400-Hz phase A sine wave does. The 800-Hz and 400-Hz cross-over points shall be within ±5 degrees on the 400-Hz reference scale. Refer to figure 2 for typical sine waves display.

(8) Positive polarity of the 800 Hz signal shall be such that the low-side to high-side voltage (TB1 terminal 109 to TBI terminal 110) increases positively from zero at the same time that the neutral-to-phase A 400-Hz reference voltage increases positively from zero.

(9) Connect the voltmeter A4 to the various terminals listed for each test in table 5 and check the signal voltages are within limits specified.

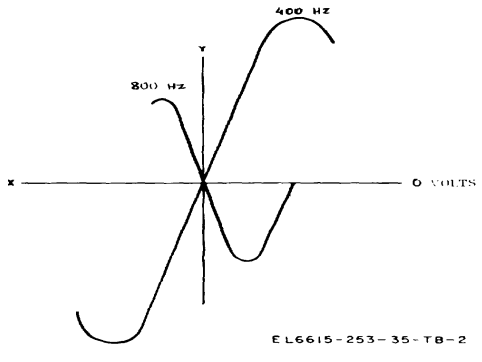

Figure 2. Sine waves display.

Table 5. Calibration of Signal Voltages

Test No.	Point of measurement			Signal voltage	
	Low side		High side	Minimum	Maximum
1	TB1-109	to	TB1-110	25	50 MV
2	TB1-109	to	TB1-1	8.9	9.1 MV
3	TB1-109	to	TB1-5	1.95	2.05 MV

b. Adjustments.

(1) If the voltmeter reading for TEST N∅). 1 is out of limits, readjust R21 until the reading is within limits. (R)

(2) If the voltmeter reading for TEST N∅. 2 is out of limits, readjust R22 until the reading is within limits. (R).

(3) If the voltmeter reading for TEST N∅.3 is out of limits, readjust R23 until the reading is within limits. (R)

10. Final Procedure. *a.* Set INPUT POWER switch S1 to OFF and return the UUT to its case.

b. In accordance with TM 38-750, annotate and affix DA Label (U.S. Army Calibration System} When the UUT cannot be adjusted within tolerance, annotate and affix DA Form 2417 (Unserviceable Test Instrument or Limited Use Tag) (red tag).

By Order of the Secretary **of the Army:**

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:
VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-36A, Section II (qty rqr block no. 931) Calibration requirements for AN/ASM-297.

768116/1W0

U.S. GOVERNMENT PRINTING OFFICE: 1974-

825-950

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER	SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 012840-000