TB 11-6625-620-35-1

Change 1

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TELETYPEWRITER TINT SET TS-799/UGM-1

Headquarters, Depatment of the Army, Washington D.C.
13 August 1976

TB 11-6625-620-35-1, 14 May 1974, is changed as follows:

Page 1. Paragraph 1-2, line 7. Change "AMSEL-MA-DS" to read "DRSEL-MA-Q."

Paragraph 1-3a. Line 3 is changed to read:

National stock number 6625-00-965-0196

Page 4. Paragraph 4-2 *a* (7), line 2. Add If not, perform *b* below.

Subparagraph ***b*** is superseded as follows:

b. Adjustments.

(1) Set % DISTORT control to 30.

(2) Adjust R2 on board 2A2A1 for a frequency indication of 8666.64 microseconds.

(3) Perform a(6) and (7) above and readjust R2, if necessary, until all settings are within tolerances.

By Order of the Secretary of the Army:

FRED C. WEYAND
General, *United States Army*
Chief of Staff

Official

PAUL T. SMITH
Major General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-34A requirements for Calibration Procedures Publications.

This copy is a reprint which includes current pages from Change 1.

TB 11-6625-620-35-1

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TELETYPEWRITER TEST SET TS-799/UGM-l

Headquarters, Department of the Army, Washington, D.C.
14 May 1974

SECTION I
IDENTIFICATION AND DESCRIPTION

1-1. Purpose and Scope. This bulletin provides information for the ‘periodic calibration of Teletypewriter Test Set TS-799/UGM-1. It is to be used by personnel trained and qualified in the use of calibration equipment. Since calibration personnel are trained and qualified in the usage of test and measuring equipment, detailed instructions concerning the operation and use of these equipments are not contained in this bulletin.

1-2. Reporting of Technical Bulletin Improvements. The reporting of errors, omissions, and recommendations for improving this bulletin is authorized and encouraged. Submit reports on DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct Commander, US Army Electronics Command, ATTN: AMSEL-MA-DS, Fort Monmouth, NJ 07703.

1-3. Descriptive Data. Teletypewriter Test Set TS-799/UGM-l is a transistorized test set, consisting of three main functional circuits: the test message generation logic, the distortion generation logic, and the output circuits. Additional data is listed in ***a, b,*** and **c** as follows:

a. Identification.

Nomenclature ., ...Test Set, Teletypewriter TS-799/UGM-1
Federal stock number 6625-975-0196
Size . . . . 82 3/32 x 17 1/8 x 8 7/16 in.
Weight . . . .21 lbg
References . . . .TM 11-6625-620-12
TM 11-6625-620-45-1

b. Specifications.

Output signal pattern	Test message ("quick brown *fox" message); selected characters, reversal* (dot cycle)
Output signal reversal (dot cycle) speeds	100, 75, 37.5, 37, 23 Hz,
Test message, alternate R and Y characters selected characters	7unit code at 45 or 150 baud 7.6 unit code l t 45, 50, 74 or 75 bauds
Signal distortion available	Mark bias, space bias, space end mark end
Percent of signal distortion available	0 to 50%
Accuracy of signal distortion output	± 2%
Types of output current:	
Neutral operation, internal supply	20 milliamperes (mA); 60 mA
Neutral operation, external loop used	60 mA, maximum
Polar operation, external batteries required	30 mA
Power requirements:	
Voltage	115 or 230 volts ac ± 10%
Frequency	50 to 60 Hz
Power consumption	25.5 watts

c. Calibration.

Time required	
Technique	Dc-low frequency
Interval	In accordance with TB 43-180

1-4. General Instructions. *a.* Calibration Reporting. During the performance of this procedure, annotate DA Form 2416 (Calibration Data Card) in accordance with TM 38-750.

b. Test Instrument. Teletypewriter Test Set TS-799/UGM-1 will be referred to as the Test Instrument.

1-5. Difference Among Models. None

SECTION II
EQUIPMENT REQUIREMENTS

NOTE

Minimum use specifications are the principal parameters required for performance of the calibration, and are included to assist in the selection of alternate equipment, which maybe used at the discretion of the calibrating activity. Satisfactory performance of alternate items shall be verified prior to use. All applicable equipment must bear evidence of current calibration.

2-1. Equipment Required. Equipment required for calibration performance tests is listed in table 2-1.

2-2. Accessories Required. Accessories required for calibration performance tests are listed in table 2-2.

Table 2.1. Equipment Required

Item	Minimum use specifications	Calibration equipment [a]
Frequency Meter	Range: 0 to 2 MHz Accuracy: ±1 count ± time base accuracy	AN/USM-207
Multimeter	Range: 15 to 250 Vdc Accuracy: ±3% fs	TS-352B/U (Phoastron B)
Oscilloscope	Range: 2 Hz to 50 MHz Accuracy: ±3%	OS-8C/U or AN/USM-281A

[a] The calibration equipment utilized in this procedure was selected from those known to be available at Department of Defense facilities, and the listing by make or model number carries no implication of preference, recommendation, or approval by the Department of Defense for use by other agencies. It is recognized that equivalent equipment produced by other manufacturers may be capable of equally satisfactory performance in the procedure.

Table 2-2. Accessories Required

Item	Description
1 Cable Assembly, Radio Frequency	36 in. RG-58/U BNC and double banana plug termination FSN 4931-739-4412
2 Adapter	Double banana jack to phone plug FSN 4931-739-4421
3 Adapter	BNC Tee UG-274B/U FSN 5935-683-7892
4 Cable Assembly, Radio Frequency	30 in. RG-58/U BNC plug termination FSN 4931-843-2792
5 Attenuator	Tektronix part No. 011-0069-01 50 ohms, 2X, 2 watt

SECTION III
PRELIMINARY OPERATIONS

NOTE

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

3-1. Precaution. Before individual test equipment is connected into the calibration system, the following precautions should be taken to prevent damage to equipment.

CAUTION

Make certain that the power cable is not connected to 230 volts ac when the power switch locking guard device indicated the power toggle switch to be into the 115 volt position.

a. Connect power cable to the Test Instrument connection AC POWER.

b. Connect the other end of power cable to the 115 or 230 volt source required for proper operation, observing POWER switch position.

3-2. Test Instrument Controls. *a.* Set BAUDS RATE switch to 75 BAUDS.

b. Set MESSAGE SELECT switch to DOT CY.

c. Loosen % DISTORT LOCK.

d. Turn % DISTORT to O.

e. Set DISTORT SELECT to BIAS SPACE.

f. Disregard all other switch positions.

g. Allow 5 minutes for equipment warmup.

SECTION IV
CALIBRATION PROCESS

4-1. Baud Bate Frequency Test. *a. Performance Check.*

{1) Connect the Test Instrument as shown in figure 1.

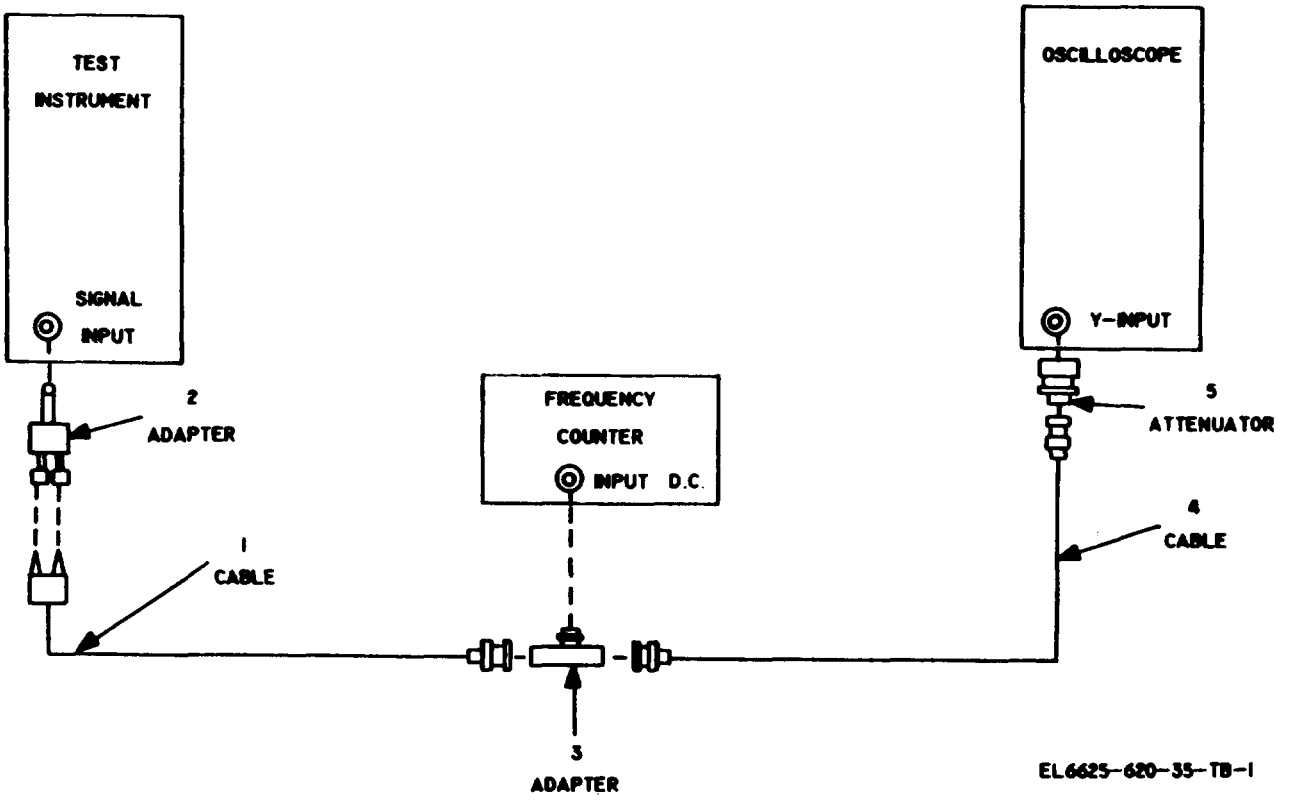

Figure 1. Teletypewriter Test Set TS-799/UGM-1, distortion and baud rate test equipment setup.

(2) Set MESSAGE SELECT switch to SELECTED PULSES.
(3) Set all five MARK SPACE toggle switches to SPACE.
(4) Set MESSAGE TRANSMIT switch to ON.
(5) Set CURRENT SELECT switch to 60.
(6) Set DISTORT SELECT switch to OFF.
(7) Adjust % DISTORT control to 0 settings.
(8) Turn BAUD RATE control to settings listed in table 4-1.
(9) Frequency counter indications in time interval shall be shown in table 4-1.
b. Adjustments. No adjustments can be made.

4-2. Distortion Generation Test. a. *Performance Check.*
(1) Using the same equipment setup, set MESSAGE SELECT switch to DOT CY.
(2) Set DISTORT SELECT switch to BIAS SPACE.
(3) Set MESSAGE TRANSMIT to ON.
(4) Set BAUDS RATE switch to 75 DOT CYCLES.
(5) On oscilloscope shall appear a series of mark and space pulses of equal width.
(6) Adjust % DISTORT control to settings as listed in table 4-2
(7) Frequency counter indications shall be as shown in table 4-2.
(8) Set DOT CYCLES switch to 22.
(9) Set the controls of the oscilloscope so that a pulse of 10 cm is displayed.
(10) Set the DOT CYCLES switch to 97.
(11) Observe that the oscilloscope displays a pulse of approx 6.2 cm.
(12) Set the DOT CYCLES switch to 37.5.
(13) observe that the oscilloscope displays a pulse of approx 6.2 cm.
(14) Set the DOT CYCLES switch to 75.
(15) Observe that the oscilloscope displays a pulse of approximately 3 cm.
(16) Set the DOT CYCLES switch to 100.
(17) Observe that the oscilloscope displays a puke of approximately 24 cm.
b. Adjustments. No adjustment can be made.

4-3. Power Supply Test

WARNING

HIGH VOLTAGE is used during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions.

Table 4.1. Baud Rate Frequencies

Test instrument	Frequency counter	
BAUDS RATE setting	Indication (milliseconds)	
	Minimum	Maximum
7.0/45.5	131.42	132.21
7.5/45.5	131.42	132.21
7.5/50	119.64	120.36
7.5/74.2	80.64	81.12
7.5/75	79.76	81.24
7.0/150	39.6	40.4

Table 4-2. Distortion Generation

Test instrument	Frequency counter	
% DISTORT control settings	Indications (usec)	
	Minimum	Maximum
0	6533.34	6799.98
10	7266.66	7399.98
20	7933.32	8066.64
30	8599.98	8733.30
40	9266.64	9899.96
50	9933.50	10066.62

a. Performance Check.
(1) Turn off Test Instrument, remove power cord and remove from protective case.
(2) Reconnect power cord and set POWER switch on Teat Instrument to 115V ON or 230V ON, depending on source of AC power. All other controls may be in any position.

(3) Position MESSAGE TRANSMIT switch to OFF.
(4) Teat Instrument connectors (lower rear chassis test points) measurements shall show the multimeter indications listed in table 4-3.
b. Adjustments. No adjustments can he made.

4-4. Final Procedure. ***a.*** Deenergize and disconnect all equipment.
b. Replace protective cover on Test Instrument.
c. In accordance with TM 38-750, annotate and affix DA Label 80 (US Army Calibration System). When the Teat Instrument cannot be adjusted-within tolerance, annotate and affix red tag, DA Form 2417 (Unserviceable or Limited Use Tag).

Table 4-3. Power Supply Measurements

Test instrument connections	Multimeter indications (dc volts)	
	Minimum	Maximum
J1 and GRD	+14.25	+15.75
J3 and GRD	-14.25	-15.75
J4 and J5	+123.50	+136.50

By Order of the Secretary of the Army:

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Distribution:
To be distributed in accordance with DA Form 12-34 (qty rqr block no. 75) requirements for Calibration Procedures Publications.

* U.S.. GOVERNMENT PRINTING OFFICE: 1992 - 311-831 (44508)

PIN: 014378-000