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CLASSIFICATION _____

DOCUMENT NO.

ATP 600535

SHEET 1 OF 8

TITLE
ACCEPTANCE TEST PROCEDURE FOR LIGHT TABLE MLT-1540
WITH HIGH INTENSITY LIGHT SOURCE OPTIONAL FEATURES

USED ON

MLT-1540-HILS

DATE

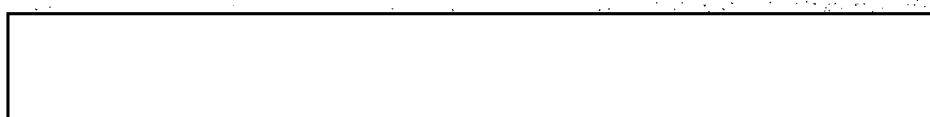
17 April 1972

REVISION
(See last sheet
for record)

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620191 DA

SERIAL NUMBER 001



25X1

DATE 28 Aug 72

TIME 13:00

*Final Acceptance -
Less color temp test.*

This item has successfully performed to all of the requirements as itemized and checked in the body of this procedure.



25X1

Declassification Review by NGA/DoD

PREPARED BY

DATE

AP

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1.0 PURPOSE

The purpose of the Acceptance Test Procedure is to verify that the Modular Light Table, MLT-1540, with the High Intensity Light Source (HILS) features meets its functional and performance objectives.

NOTE: This procedure covers the design changes directly related to HILS features only. Excepting for illumination tests on the left and right format surfaces, the reference document in Paragraph 2.0 below covers the basic table versions.

2.0 REFERENCE DOCUMENTS

Acceptance Test Procedure ATP 600000E for basic Light Table MLT-1540 configurations, dated 11 October 1971.

3.0 EQUIPMENT REQUIRED

- 3.1 MLT-1540 complete per drawings 600100 and 600300, excepting as modified by drawing cited in Paragraph 3.2.
- 3.2 Changes in accordance with drawings SK6937, 6938, 6939, and 6971.
- 3.3 Neutral density filters, 2.0 density
- 3.4 Stop watch
- 3.5 GFE foot lambert meter (Weston Model 759)
- 3.6 12 inch rule, to 1/16 inch divisions or better
- 3.7 Gamma Scientific Spectraradiometer (Government equipment at customer facility only)
- 3.8 Overlays, drawing SK6980
- 3.9 Thermocouple, Simpson Model 338.

4.0 ACCEPTANCE TEST

Completion and verification on each of the following items shall be noted in the space provided.

- 4.1 (a) Connect MLT Table to regulated 117VAC, 25 amp power source. *DR*
- (b) Connect HILS Control Cabinet to regulated 117VAC, 10 amp power source. *DR*

4.2 Mechanical and Visual Inspection

The HILS shall be carefully examined to determine conformance to the requirements of drawings SK6937, 6938, and 6939. Moving parts such as covers, latches and gear mechanisms shall be checked to assure proper fit and operation without sticking or binding. Quality of workmanship, proper materials and finishes, nameplate installation, etc. shall be verified.

- 4.3 Overlays A, B, and C of SK6980, used throughout this procedure, are used right side up on the right viewing surface and wrong side up for the left viewing surface. Place overlay A on left viewing surface.

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4.4 Maximum Illumination

(a) Turn on background lamps to maximum illumination for right and left format.

13:00
Time on

(b) Verify that 30 minutes have elapsed since ¶ 4.4(a)

OK

(c) Note illumination in left format at center of defined area A of overlay (≥ 2000 f.l.)

2200 fL OK
Max. illumination

(d) Place overlay A, SK6980, over top of right format area.

(e) Note illumination in right format at center of area A of overlay. (≥ 2000 f.l.)

2150 fL OK
Max. illumination

(f) Note difference between measurements in ¶ 4.4(c) and 4.4(e). (± 150 f.l.)

OK

4.5 Illumination ^{Right} ~~Left~~ Format

(a) Set center of left format to 2,000f.l. (Overlay A)

^{Left} Set right format to minimum

(b) Note deviation from previous reading. (± 150 f.l.)
Reference 4.5(a).

-50 fL OK
Deviation

^{Left} Return right format to maximum

(c) Note minimum illumination over area A (Overlay A, all points)

1200 fL OK
Area A

(d) Note minimum illumination in area B (Overlay B, all points).

800 OK
Area B

^{Right} Set left illumination at minimum.

(e) Note reading at format center. (Overlay A) (≤ 200 f.l.)

-50 fL OK
Min. Illumination

^{Left} Set right illumination at minimum.

(f) Note deviation from previous minimum (≤ 150 f.l.)
Ref. 4.5(d)

0 OK
Deviation

Return illumination, both sides, to maximum.

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4.6 ^{Left} Illumination on ~~Right~~ Format Surface

(a) Set center of right format to 2,000 f.l. (Overlay A)

^{Right} Set left format to minimum

DPK

(b) Note deviation from previous reading. (± 150 fl)

Ref. 4.6(a)

^{Right}

0

DPK

Deviation

Return left format to maximum.

(c) Note minimum illumination over area A. (Overlay A)

1200 fL
Area A

DPK

(d) Note minimum illumination over area B. (Overlay B)

1000 fL
Area B

DPK

Set illumination at minimum.

(e) Note reading at format center (≤ 200 f.l.)

(Overlay A)

^{Right}

100 fL
Min. Illumination

DPK

Set ~~left~~ illumination at minimum.

(f) Note deviation from previous minimum (≤ 150 f.l.)

Ref. 4.6(c)

0

DPK

Deviation

4.7 Observe light sources for evidence of flicker.

(a) Set both at maximum. Verify no objectional flicker

DPK

(b) Set both at minimum. Verify no objectional flicker

DPK

4.8 Film Masking System

(a) Insure lamps extinguish in proper sequence.

DPK

4.10 Film Temperature Measurements

(a) Cover 66% of viewing surfaces (right and left) with 2.0 density film.

(b) Turn on background lighting, right and left at maximum illumination.

(c) Turn on HILS, right and left, at maximum illumination and position spots under film center

Left

(d) At least 30 minutes after completion of 4.10(c), measure temperature at film plane (110°F or 30°F above ambient whichever is higher)

right

left

4.11 High Intensity Luminance Measurements, Right HILS

Turn on right HILS and have iris full open. Verify that cooling fan is on. (Use Overlay E)

- (a) Measure diameter of lighted spot (2-3/4" diameter)

BOE

BOE

Note: Cover spot with a 1.0 neutral density filter when making the following measurements

- (b) Measure illumination at center of spot ($\geq 25,000$ f.l.) 26,000 fL

BOE

- (c) Measure illumination at 1 radius on 3 spots 120° apart on circle average three readings (c) average - (b) 27,700 fL

BOE

- (d) Determine uniformity ($\geq 20,000$ f.l.)

BOE

- (e) Operate iris for dimming (≤ 1500 f.l.) 1,600

BOE

4.12 High Intensity Luminance Measurements, Left HILS

Turn on left HILS and have iris full open. (Use Overlay E)

- (a) Measure diameter of lighted spot (2-3/4" diameter).

BOE

Note: Cover area with a 1.0 neutral density filter when making the following measurements.

- (b) Measure illumination at center of spot ($> 25,000$ f.l.) 26,000 fL

BOE

- (c) Measure illumination at 1 radius on 3 spots 120° apart on circle average three readings (c) average - (b) 27,600

BOE

- (d) Determine uniformity ($\geq 20,000$ f.l.)

BOE

- (e) Operate iris for dimming ($\leq 1,500$ f.l.) 1,200

BOE

4.13 Color Characteristics

Review laboratory notebook data and computer program regarding measurements and calculations pertaining to:

- (a) Color temperature
- (b) Color rendering index (CRI)
- (c) Chromaticity aim points reviewed.
- (d) Verify by measurements at customer facility.

Deleted

4.14 HILS Operation - Manual Right Half

- (a) Test HILS Track/Park switch for right format. Parked position is at rear center of viewing surface.

BOE

- (b) On Track, test initial positioning function for X (without microscope)

BOE

For Y (without microscope)

BOE

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- (c) Verify format coverage 8" x 13 $\frac{1}{2}$ " (Overlay C) DRB
- 4.15 HILS Operation - Manual Left Half
- (a) Test HILS Track/Park switch for right format. Parked position is at rear center of viewing surface. DRB
- (b) On Track, test initial positioning function for X (without microscope)
For Y (without microscope) DRB
DRB
- (c) Verify format coverage 8" x 13 $\frac{1}{2}$ " (Overlay C) DRB
- 4.16 HILS Operation - Automatic Right Half Table Level
- (a) After initial positioning of HILS under microscope rhomboid leg, generally test automatic tracking function as microscope leg is moved within 8" x 13 $\frac{1}{2}$ " area in X and Y. (Overlay C) DRB
- (b) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in X direction, left and right. DRB
- (c) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in Y direction, forward and reverse. DRB
- (d)* Verify in X that positioning of HILS to microscope leg is within $\pm 1/4$ inch. DRB
- (e)* Verify in Y that positioning of HILS to microscope leg is within $\pm 1/4$ inch. DRB
- * Procedure 4.21 may be used to verify positional accuracy when stopped.
- 4.17 HILS Operation - Automatic Left Half Table Level
- (a) After initial positioning of HILS under microscope rhomboid leg, generally test automatic tracking function as microscope leg is moved within 8" x 13 $\frac{1}{2}$ " area in X and Y (Overlay C) DRB
- (b) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in Y direction, forward and aft. DRB
- (c) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in Y direction, left and right. DRB
- (d)* Verify in X that positioning of HILS to microscope leg is within $\pm 1/4$ " DRB
- (e)* Verify in Y that positioning of HILS to microscope leg is within $\pm 1/4$ " DRB

4.18 HILS Operation - Automatic Table Tilted 15° Right Half

- (a) After initial positioning of HILS under microscope rhomboid leg, generally test automatic tracking function as microscope leg is moved within 8" x 13" area in X and Y. (Overlay C) DRK
- (b) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in X direction, left and right. DRK
- (c) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in Y direction, forward and reverse. DRK
- (d)* Verify in X that positioning of HILS to microscope leg is within ±1/4" DRK
- (e)* Verify in Y that positioning of HILS to microscope leg is within ±1/4". DRK

4.19 HILS Operation - Automatic Table Tilted 15°, Left Half

- (a) After initial positioning of HILS under microscope rhomboid leg, generally test automatic tracking function as microscope leg is moved within 8" x 13" area in X and Y (Overlay C) DRK
- (b) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in X direction, left and right DRK
- (c) With increments marked on Overlay C, verify that tracking speed of HILS is a minimum of 5 in/sec in Y direction, forward & reverse. DRK
- (d)* Verify in X that positioning of HILS to microscope leg is within ±1/4". DRK
- (e)* Verify in Y that positioning of HILS to microscope leg is within ±1/4". DRK

4.20 Uniformity of Illumination

The maximum linear brightness gradient for each of the illumination sources shall not exceed 45% between any two measurements taken within the area A on SK 6971. In addition, the brightness gradient shall be no greater than 65% over the entire A + B illuminated area. DRK

4.21 HILS Position Procedure (For Reference Only)

- (a) Position the HILS in approximately the center of area A, see SK6971.
- (b) Place Overlay D over the HILS lighted area and adjust the respective iris control for the same diameter of the overlay.
- (c) While observing the overlay through microscope, adjust microscope and bridge to position the center of the overlay (Initial position) within center of microscope view.
- (d) Manually position bridge to a new position (X or Y direction)
- (e) Reposition overlay over the HILS area.
- (f) Center of overlay as viewed in microscope should be within ±1/4 inch of initial position.

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