

PERFORMANCE SPECIFICATION
FOR THE
UNITED STATES MARINE CORPS
JOINT TERMINAL ATTACK CONTROLLER
LASER TARGET DESIGNATOR
(USMC JTAC LTD)

SUBMITTED BY:

Bruce Leaman
Targeting Project Officer
PM Fire Support Systems
Marine Corps Systems Command

DATE: _____

APPROVED FOR USE AS
FUNCTIONAL BASELINE BY:

Keith L. Davis
PM Fire Support Systems
Marine Corps Systems Command

DATE: _____

Comments, suggestions, or questions on this document should be addressed to: MARINE CORPS SYSTEMS COMMAND, ATTN PM FSS, 2200 Lester Street, Quantico, VA 22134 or emailed to bruce.leaman@usmc.mil. Since contact information can change, you may want to verify the currency of this address information by using the PM Fire Support Systems Web Site at <http://www.marcorsyscom.usmc.mil/sites/fss/>.

Table of Contents

1	SCOPE.....	2
1.1	SCOPE.....	2
1.2	SYSTEM DESCRIPTION	2
2	APPLICABLE DOCUMENTS.....	2
2.1	GENERAL.....	2
2.2	GOVERNMENT DOCUMENTS	2
2.3	ORDER OF PRECEDENCE	4
3	REQUIREMENTS	4
3.1	GENERAL.....	4
3.2	USMC JTAC LTD COMPONENTS	5
3.3	MISSION PERFORMANCE REQUIREMENTS	8
3.4	WEIGHT	12
3.5	SET-UP TIME	13
3.6	SYSTEM SIGNATURE	13
3.7	ENVIRONMENTAL REQUIREMENTS	14
3.8	RELIABILITY, AVAILABILITY, MAINTAINABILITY, DURABILITY	17
3.9	SAFETY.....	17
3.10	MARKING	18
3.11	WORKMANSHIP	18
4	VERIFICATION	18
4.1	FIRST ARTICLE TESTING	18
4.2	CLASSIFICATION OF INSPECTIONS.....	18
4.3	VERIFICATION METHODS.....	18
4.4	INSPECTION CONDITIONS.....	19
4.5	FIRST ARTICLE INSPECTION	19
4.6	CONFORMANCE INSPECTION	19
4.7	RESPONSIBILITY FOR CONFORMANCE.....	19
4.8	GOVERNMENT VERIFICATION OF CONFORMANCE	20
4.9	MISSION PERFORMANCE REQUIREMENTS	20
4.10	WEIGHT	21
4.11	SET UP TIME.....	21
4.12	SYSTEM SIGNATURE	21
4.13	ENVIRONMENTAL REQUIREMENTS	21
4.14	RELIABILITY, AVAILABILITY, MAINTAINABILITY, DURABILITY	23
4.15	SAFETY.....	23
4.16	MARKING	23
4.17	WORKMANSHIP	23
5	PACKAGING	23
6	NOTES.....	24
6.1	INTENDED USE	24
6.2	ORDERING DATA.....	24
6.3	FIRST ARTICLE	24
6.4	DEFINITIONS	24
6.5	SUBJECT TERM (KEY WORD) LISTING	25

PERFORMANCE SPECIFICATION

USMC JTAC LASER TARGET DESIGNATOR (USMC JTAC LTD)

1 SCOPE

1.1 Scope

This specification establishes performance requirements for the United States Marine Corps (USMC) Joint Terminal Attack Controller (JTAC) Laser Target Designator (LTD).

1.2 System Description

The USMC JTAC LTD is a lightweight, handheld, man-portable, state-of-the-art laser target designator/marker that permits warfighters to rapidly bring effective fires to bear on hostile targets. The USMC JTAC LTD is not intended to replace “full power” laser target designators, such as the currently fielded AN/PEQ-17 Portable Lightweight Designator Rangefinder (PLDR). The USMC JTAC LTD is intended to provide dismounted Marines with a designation and marking capability that is immediately accessible - i.e. can be worn in a MOLLE pouch on a flack jacket, or carried in a cargo pocket. The system design capitalizes on advances in laser generation, and battery power technologies.

2 APPLICABLE DOCUMENTS

2.1 General

The following specifications and standards form a part of this Performance Specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the Department of Defense Index of Specification and Standards (DODISS) as provided from the Defense Standardization Program (DSP) World Wide Web site at <http://www.dsp.dla.mil>.

While every effort has been made to ensure the completeness of this list, users of this document are cautioned that all requirements specified in this document must be met, whether a reference specification or standard is listed or not.

2.2 Government Documents

2.2.1 Specifications, Standards, and Handbooks

The following specifications, standards, and handbooks form a part of this document to the extent specified herein.

DEPARTMENT OF DEFENSE STANDARDS

MIL-PRF-49324(NVI)	Monocular Night Vision Device AN/PVS-14 Department Of Defense Standards
MIL-STD-130N	Identification Marking of U.S. Military Property
MIL-STD-461F	Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment
MIL-STD-810G	Environmental Engineering Considerations and Laboratory Tests

MIL-STD-882D	Standard Practice for System Safety
MIL-STD-1472F(1)	Human Engineering
MIL-STD-1474D(1)	Noise Limits
MIL-STD-1913	Dimensioning of Accessory Mounting Rail for Small Arms Weapons, Dated 03 Feb 1995, with Change Notice 1 dated 10 June 1999 and Notice of Validation dated 20 April 2004
MIL-STD-1916	DOD Preferred Methods for Acceptance of Product Safety Design Requirements for Military Lasers and Associated Support Equipment
MIL-STD-1425A	
MIL-STD-2073-1E	Standard Practice for Military Packaging
STANAG 3733	Pulse Repetition Frequency Codes

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-217F(2)	Reliability Prediction of Electronic Equipment
DOD-HDBK-178(1)	Quantitative Description of Obscuration Factors for Electro-Optical and Millimeter Wave Systems
DOD-HDBK-743A	Anthropometry of U S Military Personnel (Metric)
MIL-HDBK-783	Chemical and Biological (CB) Contamination Avoidance and Decontamination
MIL-HDBK-784	Design to Minimize Contamination and to Facilitate Decontamination of Military Vehicles and Other Equipment: Interiors and Exteriors
MIL-HDBK-1916	Companion Document to MIL-STD-1916

Copies of these documents are available online at <http://assist1.daps.dla.mil/quicksearch/>, <http://forms.daps.dla.mil/>, <http://dodssp.daps.dla.mil/>, or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.

2.2.2 Other Government Documents, Drawings, and Publications

The following other Government documents, drawings, and publications of the exact revision level shown form a part of this document to the extent specified herein.

CODE OF FEDERAL REGULATIONS

Title 21, Part 1040	Performance Standards for Light Emitting Products (Revised 4/1/05)
---------------------	--

(Copy of this document available online at <http://www.navsea.navy.mil/nswc/dahlgren/TIE/LASER/federal.aspx>)

DEPARTMENT OF THE ARMY

AR 70-38	Research, Development, Test and Evaluation of Materiel for Extreme Climatic Conditions (15 September 1979 Edition)
----------	--

(Copies of this document are available online at www.apd.army.mil)

DEPARTMENT OF THE NAVY

NAVSEA S9310-AQ-SAF-010 Technical Manual For Batteries, Navy
Lithium Safety Program Responsibilities
and Procedures (20 July 1988 Edition)

OPNAVINST 5100.27B/MCO 5104.1C Navy Laser Safety Hazards Program
Dated 02 May 2008

(Copies of these documents are available online at
<http://www.marcorsyscom.usmc.mil/sites/PMEPS/DOCUMENTS/s9310aqsaf010.pdf>)

2.2.3 Non-Government Documents

The following documents of the exact revision level shown form a part of this document to the extent specified herein.

Kollsman Document EICD48151000-1, Electrical Interface Control Document for the Thermal Laser Spot Imager (TLSI)

Kollsman Drawing MICD48151000-1, Mechanical Interface Control Drawing for the Thermal Laser Spot Imager (TLSI)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI Z136.1 Safe Use of Lasers, dated 2007

(Copies of this document can be ordered online at <http://www.ansi.org/> or
<http://www.laserinstitute.org/>.)

2.3 Order of Precedence

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3 REQUIREMENTS

3.1 General

3.1.1 System Functions

The function of the USMC JTAC LTD is to mark targets for laser handoff to Laser Spot Trackers (LSTs), and to designate targets by providing terminal guidance to laser-guided munitions employed by the US Department of Defense (DoD) and North Atlantic Treaty Organization (NATO) armed forces.

3.1.2 Operation

The USMC JTAC LTD shall be capable of being operated by a single 5th through 95th percentile Marine while wearing any of the full range of Marine Corps combat clothing to include camouflage utilities, cold and wet weather protective clothing, arctic clothing, and Mission Oriented Protective Posture (MOPP) Gear - Levels I through IV with no more than minimal degradation to the user's ability to accomplish the mission (Threshold).

3.1.3 Operating Environment

The USMC JTAC LTD shall be capable of operating in all types of climate and terrain where Marines deploy (Threshold).

3.1.4 Deployability

The USMC JTAC LTD shall be capable of being carried on all modes of air, land, and sea transportation and shall be capable of being carried by a Marine during parachute and swimming (including underwater) operations (Threshold).

3.1.5 Data Integrity

If the USMC JTAC LTD provides data export to meet the objective requirement in 3.3.7.2, it shall be designed to ensure that the integrity of the digital data generated, processed, and exported by the device is maintained (Threshold).

3.1.6 Design

The USMC JTAC LTD shall meet the Design Requirements of OPNAVINST 5100.27B/MCO 5104.1C Navy Laser Safety Hazards Program (Threshold).

3.1.7 Materials

3.1.7.1 Selection

The contractor shall select materials that meet all of the operational and environmental requirements specified herein (Threshold). The ability of the system to meet the applicable performance requirements shall be the governing acceptance standard (Threshold).

3.1.7.2 Toxic Chemicals, Hazardous Substances, and Ozone-Depleting Chemicals

The use of toxic chemicals, hazardous substances, or ozone depleting chemicals should be avoided.

3.1.7.3 Recycled, Recovered, or Environmentally Preferable Materials

Recycled, recovered, or environmentally preferable materials shall be used to the maximum extent possible, provided the materials meet or exceed the operational and maintenance requirements and promote economically advantageous life cycle costs (Threshold).

3.2 USMC JTAC LTD Components

3.2.1 Designator/Marker Unit

The USMC JTAC LTD shall emit the following three lasers:

- 1064 nm designator/marker (Threshold)
- IR Pointer (Threshold)
- Visible Boresight Laser (Threshold)

3.2.2 Tripod

A tripod shall be provided to give users additional support when the operational situation permits/requires and when used to provide terminal guidance to laser seeking ordnance (Threshold). The tripod shall weigh less than 3.0 lbs (Threshold), or less than 2.0 lbs (Objective). The tripod shall be capable of supporting the USMC JTAC LTD alone and while attached to the Thermal Laser Spot Imager (TLSI) AN/PAS-25 (approx 7.8 lbs) (Threshold). The tripod shall be adjustable from 16-23 inches in height (Threshold) or 8-30 inches in height (Objective), and suitable for use by Marines in prone, sitting, and kneeling positions (Threshold). It is desired that the tripod provide a means for fine adjustment of azimuth and elevation (pan and tilt) (Objective). The tripod shall not exceed 18 inches in any dimension when stowed (Threshold).

3.2.3 Remote Firing Cable

The USMC JTAC LTD shall include a Remote Fire Cable (Threshold). When connected to the USMC JTAC LTD, the Remote Fire Cable shall enable the laser to be fired remotely (Threshold). The fire button on the Remote Fire Cable shall be a dead-man button (Threshold). The fire button on the Remote Fire Cable shall be guarded (Threshold).

3.2.4 Mechanical Interfaces

3.2.4.1 The USMC JTAC LTD shall include at least one Picatinny rail to facilitate mounting day/night sighting optics/imagers (e.g. ACOG, low profile red dot) (Threshold). The rail shall be aligned with the emitted laser beams (Threshold).

3.2.4.2 The USMC JTAC LTD shall have the ability to mount to a standard 1/4-20 UNC threaded tripod (Threshold). The 1/4-20 UNC threaded hole shall be provided as an adapter that mounts without tools(Threshold), or it may be integrated into the device near the center of gravity (Objective).

3.2.4.3 A Picatinny rail grabber shall be provided (Threshold). The rail grabber shall be aligned with the optical path of the emitted lasers (Threshold). The rail grabber shall be provided as an adapter that mounts to the JTAC LTD without tools (Threshold), or it may be integrated into the device (Objective).

3.2.5 Protective Optics Covers

The USMC JTAC LTD shall include tethered or hinged covers to protect all lenses and fully block all emitted laser beams (Threshold).

3.2.6 Battery

The USMC JTAC LTD shall be capable of operating without damage or degradation over all environments specified within this document when power is provided in accordance with the following requirements (Threshold):

- 3.2.6.1 The USMC JTAC LTD shall use CR123 batteries, AA batteries, or a rechargeable battery pack (Threshold). Batteries must be able to be quickly removed and replaced by users in an operational environment (Threshold). It is desired that the battery compartment be able to accept a rechargeable battery pack, or a cartridge loaded with CR123 batteries, or a cartridge loaded with AA batteries (Objective). Any two of the three will satisfy this objective, although the ability to operate from all three battery types is desired (Objective). If the USMC JTAC LTD can be powered by a rechargeable battery pack, three rechargeable battery packs shall be provided with each system (Threshold). One set of batteries (or one rechargeable battery pack) shall be capable of meeting the Laser Operational Duty Cycle, Continuous, and Cumulative Lasing requirements for both the 1064nm and 810-870nm lasers listed in paragraphs 3.3.4.8 - 3.3.4.10 and 3.3.5 (Threshold). If the system is capable of operating from multiple types of internal batteries/rechargeable battery packs, the vendor may specify different battery types to be utilized for extreme hot and extreme cold operating temperatures. It is desired that the device be capable of meeting the full operational temperature range with one battery type (Objective).
- 3.2.6.2 The USMC JTAC LTD shall provide an external connection and cable(s) for the purpose of powering the USMC JTAC LTD (and simultaneously recharging the rechargeable battery pack if so equipped) from the following electrical sources: BA-5590, BB-2590, 110 VAC and 220 VAC (Threshold), and 12 and/or 24 VDC Vehicular Power (Objective). The remote fire switch shall be able to be used while the external power cable is powering the unit (Threshold).
- 3.2.6.3 If the USMC JTAC LTD is powered by a rechargeable battery pack, that rechargeable battery pack shall be able to recharge with 1 each BA-5590 or BB-2590 battery (Threshold). A rechargeable battery pack shall be able to be 80% charged from these battery types in less than 2 hours at 20 degrees Celsius, plus or minus 5 degrees, using the external connection and cable discussed in paragraph 3.2.6.2 above (Threshold).
- 3.2.7 Transit Case
The USMC JTAC LTD System shall include a transit case that is capable of holding the complete system (Threshold). It shall be designed to protect all system components from shock, vibration, abrasion, dust, rain, snow, sleet, and salt spray while the system components are being transported or stored (Threshold).
- 3.2.8 Field-Carry Pouch
The USMC JTAC LTD is intended to be a handheld device that is easily carried by a Marine in combat in such a manner that it is immediately accessible when needed, i.e. in a Troops-in-Contact situation. A rugged, durable, MOLLE compatible, soft material, field carry pouch shall be provided (Threshold). The field carry pouch shall fit the USMC JTAC LTD and one extra set of batteries (or rechargeable battery pack, if so equipped) (Threshold). The field carry pouch shall fit the USMC JTAC LTD with any detachable sights that may be provided as part of the system (Threshold). The field carry pouch shall retain the USMC JTAC LTD securely to the Marine's body/equipment while walking, running, and jumping (Threshold).
- 3.2.9 Tripod Soft Carry Pouch

It is desired that a rugged, durable, MOLLE compatible, soft material, field carry pouch be provided to carry the tripod (Objective). If provided, it is desired that the tripod field carry pouch also be able to carry any cables and adapters that are provided with the system (Objective).

3.3 Mission Performance Requirements

3.3.1 Modes of Operation

The USMC JTAC LTD shall have the following modes of operation:

- 1064 nm designation/marker laser only (Threshold)
- IR Pointer laser only (Threshold)
- Visible boresight laser only (Threshold)
- 1064 nm designation/marker laser and IR Pointer laser simultaneously (Threshold)

3.3.2 Boresight Error

The boresight error between the center of the 1064 nm laser beam and the aimpoint of the internal direct or indirect view optic, if so equipped, shall not exceed 0.25 mRad at 20 degrees Celsius, ± 5 degrees Celsius (Threshold). The boresight error between the center of the 1064 nm laser beam and the center of the IR Pointer laser beam shall not exceed 0.25 mRad at 20 degrees Celsius, ± 5 degrees Celsius (Threshold). The boresight error between the center of the 1064 nm laser beam and the center of the visible laser beam shall not exceed 0.25 mRad at 20 degrees Celsius, ± 5 degrees Celsius (Threshold).

The boresight error between the center of the 1064 nm laser beam and the aimpoint of the internal direct or indirect view optic, if so equipped, shall not exceed 0.5 mRad when measured over the operational temperature range (Threshold). The boresight error between the center of the 1064 nm laser beam and the center of the visible laser beam shall not exceed 0.5 mRad when measured over the operational temperature range (Threshold). The boresight error between the center of the 1064 nm laser beam and the center of the IR Pointer laser beam shall not exceed 1.0 mRad (Threshold) or 0.75 mRad (Objective) when measured over the operational temperature range.

3.3.3 Over-Temperature Shutdown

The USMC JTAC LTD shall detect when an over temperature condition occurs (a condition that can cause permanent damage to the unit if lasing continues) and warn the user to override or else lasing will be terminated (Threshold). The over temperature warning shall be displayed as long as the over temperature condition exists (Threshold). While in an override state, the USMC JTAC LTD shall continue to lase until the battery is depleted or until the over-temperature condition causes damage to the device and it is no longer able to operate (Threshold). It is desired that users be able to enter the override state without interruption to lasing (Objective).

3.3.4 1064 nm Designation/Marker Laser

The USMC JTAC LTD shall meet all requirements of STANAG 3733 throughout the temperature range and duty cycle requirements unless specified differently in this document (Threshold). The emitted 1064 nm laser energy shall be greater than or equal to 30 milliJoules (mJ) (Threshold), or 50 mJ (Objective).

3.3.4.1 Target Designation and Marking

The target shall be a stationary 1.4 x 1.7 meter target (e.g. the front view of a Toyota Hilux pickup truck) which is placed normal to the laser beam and has a reflectance of 20% at 1064 nm on a standard clear atmospheric day (Threshold). The USMC JTAC LTD system shall be capable of designating (providing terminal guidance to laser-guided munitions) a target for all US DoD and NATO laser-seeking precision guided munitions at 2,000 meters, and marking (effecting a laser hand-off to any US DoD airborne Laser Spot Tracker (LST)) a target at 3,000 meters (Threshold).

3.3.4.2 Pulse Stability

Within a maximum of 5 seconds after activation, and for the entire Laser Operational Duty Cycle as defined in paragraph 3.3.4.8, the USMC JTAC LTD shall have an energy amplitude within +/- 15 percent of the average pulse output energy (Threshold). The average pulse output energy shall be determined using the arithmetic mean of 120 consecutive pulses.

3.3.4.3 Missed Pulses

The USMC JTAC LTD, operating at any of the pulse repetition rates, shall not miss any 2 pulses in succession (Threshold). The total number of missed pulses shall not exceed 2 over a 60 second period (Threshold). A missed pulse is defined as any pulse that fails to meet the energy or pulse coding requirements of this specification.

3.3.4.4 Laser Containment

Within 5 seconds after activation, 85 percent (Threshold); 90 percent (Objective) of the laser energy shall be contained within a stationary 1.4 x 1.7 meter target out to 2,000 meters (Threshold). NOTE: meeting the beam divergence and boresight error threshold requirements listed elsewhere in this document will not necessarily meet this laser containment threshold requirement.

3.3.4.5 Beam Divergence

Beam divergence is to be measured as the full angle (in mRad) of a circle that contains 95% of the laser energy. Within 5 seconds after activation, the beam divergence shall be less than or equal to 0.5 mRad (Threshold). It is desired that the USMC JTAC LTD have a method whereby the user can quickly adjust the beam divergence from less than or equal to 0.5 mRad to a value between 0.6 and 1 mRad (Objective).

3.3.4.6 PRF Coding

The USMC JTAC LTD shall transmit at tri-service Band I and Band II PRF codes (Threshold). The pulse coding and interpulse tolerances shall follow the requirements described in STANAG 3733 (Threshold). The inter-pulse period specified is the time increment between the leading edges of successive laser pulses.

3.3.4.7 Pulse Width

The laser output pulse width shall be between 8-25 nanoseconds, measured full width half maximum (Threshold).

3.3.4.8 Laser Operational Duty Cycle

The USMC JTAC LTD shall be capable of being operated at 20 Hz with a duty cycle of 40 seconds on, 30 seconds off (Threshold), 60 seconds on, 10 seconds off (Objective) over the entire operational temperature range (Threshold). The USMC JTAC LTD shall be able to sustain this duty cycle continuously until reaching 10 minutes of cumulative lasing (Threshold), or 20 minutes (Objective). If the system is capable of operating from multiple types of internal batteries/rechargeable battery packs, the vendor may specify different battery types to be utilized for extreme hot and extreme cold operating temperatures. It is desired that the device be capable of meeting the full operational temperature range with one battery type (Objective).

3.3.4.9 Continuous Lasing

The USMC JTAC LTD, at 20 Hz, shall be capable of 2 minutes of continuous lasing (Threshold), 5 minutes (Objective) at an ambient air temperature of 20 degrees Celsius.

3.3.4.10 Cumulative Lasing

The USMC JTAC LTD, at 20 Hz, shall be capable of 10 minutes of cumulative lasing (Threshold), 20 minutes (Objective) per set of batteries (or per one charge of a rechargeable battery pack, if so equipped) (Threshold).

3.3.5 IR Pointer Laser

The USMC JTAC LTD shall emit an 810-870 nm, 1 Watt laser intended for use as an infrared (IR) pointer (Threshold). The IR pointer shall be capable of continuous and pulsed operation with a non-adjustable pinpoint focus only - no "flood" or illuminator capability (Threshold). The frequency of pulsed operation shall be 1 Hz (Threshold) or 4 Hz (Objective). The USMC JTAC LTD shall be capable of at least 15 minutes of cumulative IR Pointer lasing per set of batteries (or per one charge of a rechargeable battery pack, if so equipped) at -10 degrees Celsius (Threshold). It is desired that the USMC JTAC LTD be capable of 60 minutes of cumulative IR Pointer lasing per set of batteries (or per one charge of a rechargeable battery pack) at -15 degrees Celsius (Objective).

3.3.6 Visible Boresight Laser

The USMC JTAC LTD shall emit a visible laser intended for use as an aid in boresighting the other two lasers to any of a variety of attachable sights (Threshold). The visible boresighting laser shall not be a Class 4 laser (Threshold). It is desired that the visible boresighting laser be a Class 1 laser (Objective). The visible laser shall be viewable by the operator in bright sunlight at a distance of 10 meters (Threshold).

3.3.7 Sights

3.3.7.1 Mechanical Day Sights

It is desired that if the USMC JTAC LTD does not contain an integrated direct or indirect view optic that the device have, as a minimum, mechanical sights, commonly referred to as "iron sights," integrated into the body of the device (Objective).

3.3.7.2 Attachable/Removable Sights

If the JTAC LTD does not contain an integrated direct or indirect view optic, an attachable day optic shall be provided (Threshold). It is desired that the magnification of such optic be of four times magnification or greater (Objective). It is desired that the reticle be of the mil-scale variety to allow trained users to estimate ranges (Objective). It is desired that the center of the reticle be an open aiming circle sized to indicate the beam size of the 1064 nm designation laser at the device's effective operational ranges (Objective). The USMC JTAC LTD shall be useable in conjunction with the currently fielded USMC TLSI AN/PAS-25 for its laser spot imaging, as well as observation capabilities (Threshold). The USMC JTAC LTD shall interface to the Picatinny rail on the top of the TLSI (Threshold). It is desired that the USMC JTAC LTD communicate electrically with the TLSI for the purpose of exporting USMC JTAC LTD data for display by the TLSI (Objective). The type of USMC JTAC LTD information desired to be displayed by the TLSI is: fault indicators, operational mode, PRF code currently selected, over temperature warning, low battery warning, etc.

3.3.7.3 Laser Eye Protection

Two sets of DoN approved wearable Laser Eye Protection shall be provided with each system which are capable of, at a minimum, attenuating laser radiation levels below the Class I Accessible Emission Limit (AEL) at the aperture for the 1064 nm laser and the IR Pointer laser contained in the system (Threshold). The Laser Eye Protection shall also be capable of attenuating laser radiation levels from an 80 mJ 1064 nm laser below the Class I AEL at the aperture (Threshold).

It is desired that any optics (internal or attachable) provided with the system contain Laser Eye Protection capable of, at a minimum, attenuating laser radiation levels below the Class I AEL at the aperture for the 1064 nm laser and the IR Pointer laser contained in the system (Objective). It is also desired that Laser Eye Protection in the provided optics also be capable of attenuating laser radiation levels from an 80 mJ 1064 nm laser below the Class I AEL at the aperture (Objective).

3.3.7.4 Glint Protection

It is desired that the USMC JTAC LTD provide suitable glint protection (Objective). Any glint protection provided shall not be of a honeycomb type, and shall not obstruct the path of the emitted lasers (Threshold).

3.3.7.5 Internal Direct or Indirect View Sight

It is desired that the USMC JTAC LTD provide an internal direct or indirect view sight (Objective). The objective may be met with direct view optics or an indirect view camera/sensor. If provided, it is desired that the magnification of such sight be of four times magnification or greater (Objective). It is desired that the reticle be of the mil-scale variety to allow trained users to estimate ranges (Objective). It is desired that the center of the reticle be an open aiming circle sized to indicate the beam size of the 1064 nm designation laser at the device's effective operational ranges (Objective). It is desired that if an internal direct or indirect view sight is provided, that it be factory boresighted and not require periodic re-alignment by the users (Objective).

3.3.8 System Controls

All system controls shall be easily distinguishable and readily accessible when the system is in any of its operational configurations including, but not limited to, being mounted on a tripod and while mounted to an AN/PAS-25 TLSI, for Marines wearing combat clothing identified in 3.1.2 during daylight and night (Threshold).

3.3.8.1 The user shall be able to quickly select any STANAG 3733 PRF code (Threshold).

3.3.9 Display/Visual Indicators

3.3.9.1 Indicators

The USMC JTAC LTD shall provide visual display indicators and all alphanumeric indicators shall be of sufficient size to be legible by the operator (Threshold). It is desired that all visual display indicators be evenly illuminated and of a color and intensity such that they are clearly visible in bright sunlight but do not cause loss of an operator's night vision during periods of low light or darkness (Objective).

3.3.9.1.1 Battery Status

A battery status indicator shall be provided (Threshold). It is desired that the USMC JTAC LTD provide a battery status indicator to alert the user to a low battery condition while the user is still able to perform 40 additional seconds of 1064 nm lasing after receiving the low battery condition alert before being required to change batteries or connect to an external power source (Objective).

3.3.9.1.2 Fault Indicator

A fault indicator(s) shall be provided that shall illuminate when a condition that can cause permanent damage to the laser is detected (Threshold). The indicator(s) shall remain illuminated as long as the fault condition exists (Threshold).

3.3.9.1.3 Information Display

The USMC JTAC LTD shall be capable of displaying information, including PRF codes, USMC JTAC LTD states, and other information such as fault codes (Threshold).

3.3.9.1.4 Over Temperature

An over temperature indicator shall be provided which will illuminate when the designator reaches the threshold of potential high temperature damage (Threshold). It is desired that the indicator remain illuminated as long as the over temperature condition exists (Objective).

3.3.9.1.5 BIT/Display Test

It is desired that the USMC JTAC LTD have a test capability of the display segments and a Built-In-Test capability (Objective).

3.4 Weight

If the USMC JTAC LTD does not contain an integrated direct or indirect view optic, the device shall not weigh more than 3.5 lbs (Threshold); 2.5 lbs (Objective). If the USMC JTAC LTD does contain an integrated direct or indirect view optic, the device shall not weigh more than 4.0 lbs (Threshold), 3.5 lbs (Objective). These weights include the

USMC JTAC LTD, one set of batteries (or rechargeable battery pack if so equipped), lens covers, and anything that is permanently attached to the USMC JTAC LTD (i.e. rails, rail grabber, connectors, caps, and similar items). The weight of other system components is not included (i.e. external power cable, field carry pouch, tripod, any removable sights which may be provided, additional batteries, etc).

3.5 Set-Up Time

The desired total time from removal from field carry pouch to begin designation or marking is 12 seconds (Objective).

3.6 System Signature

3.6.1 Audible Detection

It is desired that the USMC JTAC LTD not emit noise detectable to the unaided ear at a range greater than or equal to 20 meters during operation (Objective).

3.6.2 Stray Light Security – Displays and Indicators

A method shall be provided that allows the operator to adjust the brightness of all illuminated indicators to minimize detection (Threshold). It is desired that the USMC JTAC LTD not be visible (displays, indicators) at ranges greater than 20 meters to unaided viewing or when viewing with 3rd generation NVGs (Objective).

3.6.3 Stray Light Security – Emissions

As an objective for night time use, the USMC JTAC LTD stray light emissions should not be visible to the naked eye at a distance of 25 meters or greater with any external displays disabled, and with the system operating in any mode and at any PRF code (Objective). When using night vision goggles, stray light emissions shall not be visible (excluding the IR pointer laser) at radial distances that are greater than or equal to 25 meters from the USMC JTAC LTD and that are outside a 5 degree (Threshold), 2 degree (Objective), cone that is centered on the optical axis of the transmitter (see Figures 1 and 2) and outside a 5 degree (Threshold), 2 degree (Objective), cone that is centered on the optical axis of the sighting telescope (if so equipped) (Threshold). Using Figures 1 and 2 as a guide, this means that no stray light emissions shall be visible in the crosshatched areas (Threshold).

The following conditions apply to this requirement:

- Night Vision Goggles: unity magnification goggle
- Illumination: 1×10^{-4} lux (overcast starlight)
- Visibility: visual range shall be 20 kilometers

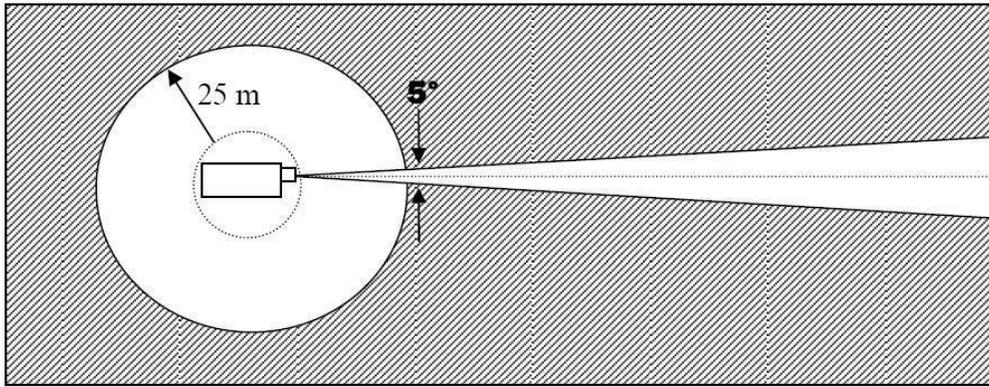


Figure 1. Stray Light Emissions Side View

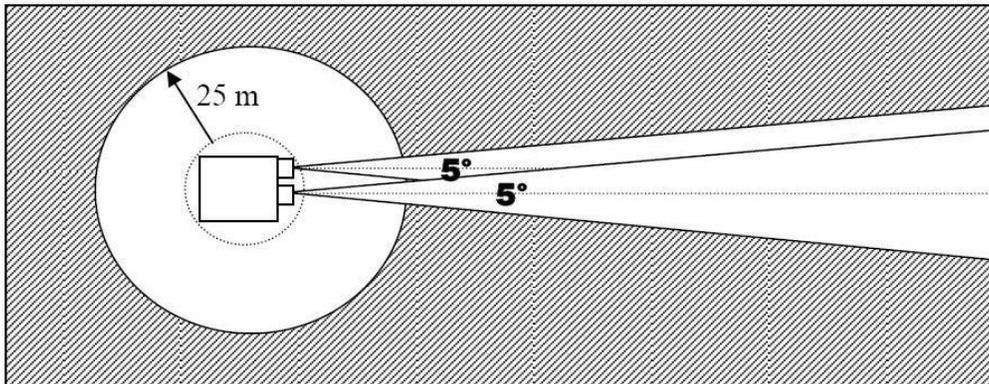


Figure 2. Stray Light Emissions Top View

3.7 Environmental Requirements

3.7.1 Chemical, Biological, Radiological, and Nuclear (CBRN) Decontamination

It is desired that the USMC JTAC LTD be able to withstand, with limited operational degradation, at least 4 exposures to the material-damaging effects of NBC contaminants, decontaminants, and decontaminating procedures in a 72-hour period (Objective). MIL-HDBK-783 and MIL-HDBK-784 may be referred to for guidance. NOTE: Removing and discarding external covering materials to meet this requirement is acceptable provided the procedure to do so can be performed by the operator in a tactical environment and that the functionality of the USMC JTAC LTD is not degraded by the removal of the covering material.

3.7.2 Military Free Fall Operations – Altitude (Non-operational)

It is desired that the USMC JTAC LTD not suffer any damage or degradation in performance (as a result of atmospheric pressure related effects) after being subjected to a military free fall operation conducted from 7,620 m (25,000 ft) Mean Sea Level (MSL) at an altitude change rate of 8 m/s to 10 m/s (26 ft/s to 33 ft/s) for a period of 1 hour (Objective). [NOTE: The USMC JTAC LTD shall not require a protective/storage case to meet this objective requirement; however, use of a field-carry pack is acceptable.]

3.7.3 Immersion (10.0 m)

The USMC JTAC LTD shall not suffer any damage or degradation in performance following a 30-minute submersion in water at a depth of 10.0 m (32.8 ft) while sealed in a waterproof bag after being conditioned for 2 hours at 10 degrees Celsius above the water temperature (Threshold).

3.7.4 Immersion (1.0 m)

The USMC JTAC LTD shall not suffer any damage or degradation in performance following a 10-minute submersion unprotected in fresh or salt water at a depth of 1.0 m (3.3 ft) after being conditioned for 2 hours at 10 degrees Celsius above the water temperature (Threshold).

3.7.5 Humidity

The USMC JTAC LTD shall be able to survive up to 100% humidity in accordance with MIL-STD-810G, Method 507.5, Procedure II (Threshold).

3.7.6 Operating Temperature

The USMC JTAC LTD shall be capable of operating in air temperatures ranging from negative 10 degrees Celsius to positive 50 degrees Celsius without the benefit of protective cover or sheltering enclosure for 60 minutes at each temperature (Threshold). It is desired that the USMC JTAC LTD operate without damage or degradation during exposure to temperatures of negative 40 degrees Celsius to positive 50 degrees Celsius without the benefit of protective cover or sheltering enclosure for 60 minutes at each temperature (Objective).

3.7.7 Storage Temperature

The USMC JTAC LTD shall be capable of being stored in temperatures ranging from negative 40 degrees Celsius to positive 70 degrees Celsius without the benefit of protective cover or sheltering enclosure for 60 minutes at each temperature (Threshold).

3.7.8 Temperature Shock

The USMC JTAC LTD shall not suffer any damage or degradation in performance following sudden changes in ambient air temperature of up to 2 degrees Celsius per minute (Threshold), or 10 degrees Celsius per minute (Objective), between ambient air temperatures of -10°C and + 50°C for a period of two hours at each temperature.

3.7.9 Fungus

It is desired that the USMC JTAC LTD (free of all salt residues) neither support fungal growth nor suffer damage or degradation of performance caused by the presence of fungus spores or adjacent fungal growth (Objective).

3.7.10 Mechanical Vibration

The USMC JTAC LTD, within its transit case, shall be able to withstand the vibration effects experienced during transport in military aircraft (to include helicopter), cross-country (off-road) vehicular movement, and maritime transport (Threshold). The USMC JTAC LTD shall be subjected to MIL-STD-810G, Method 514.6, Procedure I, General Vibration (Threshold). Random vibration levels shall be as identified in figure 514.5C-17 of Annex C (General Minimum Integrity Exposure), with a test duration of one hour

for each of three orthogonal axes (Threshold). Inspect for damage and verify system operation after completion of testing.

3.7.11 Transportation Vibration (Loose Cargo)

The USMC JTAC LTD shall operate without damage or degradation following exposure, while in its transit case, to transportation vibration in accordance with MIL-STD-810G, Method 514.6, Procedure II, Category 5 (Threshold). The total test time shall be three hours (Threshold).

3.7.12 Transit Drop

The USMC JTAC LTD shall not be damaged or degraded in performance after experiencing mechanical shocks commonly induced during operations such as entering and exiting vehicles, running and jumping (Threshold). The USMC JTAC LTD in its Field Carry Pouch should undergo a drop test on all axes from a height of 30 inches on a 1/4 inch polyethylene foam covered 3/4 inch plywood sheet laying flat on concrete. The device does not have to be “on” during the test and optics can have a lens cover attached. The device should be fully operational following this test.

3.7.13 Sand and Dust

The USMC JTAC LTD shall operate without damage or degradation after exposure to blowing dust as specified in MIL-STD-810G, Method 510.4, Procedure I (Threshold). The duration for steps 3 and 7 shall be 6 hours, and the air velocity shall be 1,750 feet per minute (Threshold). Optical surfaces and connectors are to be covered (Threshold). A degraded finish is permissible. Markings shall still be legible (Threshold).

3.7.14 Salt Fog

The USMC JTAC LTD shall operate without leakage, damage or degradation after exposure to a salt fog environment as specified in MIL-STD-810G, Method 509.4 (Threshold). The USMC JTAC LTD shall be exposed for two 24-hour periods with a 24-hour drying time between each exposure (Threshold). Optical surfaces and connectors shall be covered (Threshold). Equipment shall not be operating during exposure (Threshold).

3.7.15 Explosive Atmosphere

Authorized operator actions including but not limited to USMC JTAC LTD operation, system assembly/disassembly, and operator maintenance, checks, and services, shall not cause ignition of an atmosphere that is heavily laden with fumes from ground vehicles or aircraft fuels (Threshold).

3.7.16 Electromagnetic Interference/Electromagnetic Vulnerability (EMI/EMV)

In the operational configuration, the USMC JTAC LTD shall be characterized for the emission requirement of RE102 of MIL-STD-461E (Threshold). It is desired that the electric field emissions from the USMC JTAC LTD and its associated cabling conform to the performance requirements specified for RE101, RE102 (2 MHz - 1 GHz, limit for ground applications), RS101, and RS103 (2 MHz - 18GHz) when tested in accordance with the test methodology of MIL-STD-461F (Objective). It is desired that the USMC JTAC LTD and associated cabling be able to withstand electric fields (Objective).

3.7.17 Solar Radiation

The USMC JTAC LTD shall not suffer any damage when exposed to solar radiation of up to 1120 Watts per square meter (Threshold). It is desired that the USMC JTAC LTD shall be capable of operating in ambient temperature fluctuations from -10 degrees Celsius to 50 degrees Celsius with exposure to solar radiation of up to 1120 Watts per square meter (Objective).

3.8 Reliability, Availability, Maintainability, Durability

3.8.1 Mean Time Between Failures (MTBF)

The desired MTBF for the USMC JTAC LTD, is 13 hours of laser on time when subjected to the laser operational duty cycle listed above (Objective).

3.8.2 Operational Availability

The USMC JTAC LTD shall have an A_o of 0.95 (threshold) where A_o is defined as $MTBM/(MTBM+MDT)$. Mean Time Between Maintenance (MTBM) is the meantime between maintenance actions (both preventive and corrective); a measure of the reliability taking into account maintenance policy. Mean Down Time (MDT) is the average time a system is unavailable for use due to either corrective or preventive maintenance. Time includes actual repair time and all delay times.

3.8.3 Preventive Maintenance (PM)

The USMC JTAC LTD shall not require PM to be performed more frequently than once per week while in storage (Threshold). It shall not require more than 15 minutes to perform PM (Threshold).

3.8.4 Shot Counter/System Use Meter

It is desired that the USMC JTAC LTD provide a method to track usage (Objective). For example, a shot counter, elapsed time operated log, or other usage indicator.

3.8.5 Boresight and Calibration

It is desired that the USMC JTAC LTD not require a periodic boresight or calibration (Objective).

3.9 Safety

3.9.1 Navy Lithium Battery Review Board

If the USMC JTAC LTD battery contains Lithium, the system and the battery shall be capable of meeting all requirements needed for approval by the Navy Lithium Battery Review Board (Threshold); is already approved (Objective).

3.9.2 Navy Laser Safety Review Board (LSRB)

The USMC JTAC LTD shall be capable of complying with all requirements identified in OPNAVINST 5100.27B/MCO 5104.1C needed for approval by the LSRB (Threshold); is already approved (Objective).

3.9.3 Safety Assessment

The operation, maintenance, storage, transportation, or disposal of the USMC JTAC LTD shall not present any hazards that are assessed as more severe than Serious risks as specified in MIL-STD-882D (Threshold). It is desired that the operation, maintenance, storage, transportation, or disposal of the USMC JTAC LTD does not present any hazards that are assessed as more severe than Low risks as specified in MIL-STD-882D (Objective).

3.10 Marking

3.10.1 Identification and UID

The USMC JTAC LTD shall have a UID-compliant identification plate of corrosion-resistant material permanently attached to the outside of the system (Threshold). The identification plate shall be marked in accordance with MIL-STD-130N and shall include as a minimum human-readable nomenclature and serial number (Threshold). The USMC JTAC LTD UID shall include warranty information (Threshold). It is desired that the USMC JTAC LTD also have a human-readable warranty label providing pertinent warranty information affixed to the unit (Objective).

3.11 Workmanship

Workmanship in the fabrication and assembly of USMC JTAC LTD components shall comply with best commercial practices (Threshold). The components shall be clean and free of burrs, sharp edges, unblended radii, surface defects, cracks, chips, dirt, grease (except where specifically required), rust, foreign matter or any evidence of poor workmanship that could render the system unsuitable for its intended purpose or that would affect life, serviceability or appearance (Threshold).

4 VERIFICATION

4.1 First Article Testing

The contractor is responsible for conducting First Article Testing to show compliance with sections 4.9 through 4.16 of this performance specification. Proof of previous testing, with government oversight, which satisfies a first article test requirement may be submitted in lieu of current testing.

4.2 Classification of Inspections

The inspection requirements specified herein are classified as follows:

First article inspection (see 4.5)

Conformance inspection (see 4.6)

4.3 Verification Methods

Methods utilized to accomplish verification include:

4.3.1 Analysis

An element of verification that utilizes established technical or mathematical models or simulations, algorithms, charts, graphs, circuit diagrams, or other scientific principles and procedures to provide evidence that stated requirements were met.

4.3.2 Demonstration

An element of verification that involves the actual operation of an item to provide evidence that the required functions were accomplished under specific scenarios. The item may be instrumented and performance monitored.

4.3.3 Examination

An element of verification that is generally nondestructive and typically includes the use of sight, hearing, smell, touch, and taste; simple physical manipulation; and mechanical and electrical gauging and measurement.

4.3.4 Test

An element of verification in which scientific principles and procedures are applied to determine the properties or functional capabilities of items.

4.4 Inspection Conditions

Unless otherwise specified, all inspections shall be performed in accordance with the conditions specified in the applicable paragraphs in this specification or applicable verification methods (Threshold). If inspection conditions are not specified, the inspection may be performed at any temperature between 18°C (64°F) and 30°C (86°F) and at 1.0±0.1 atmosphere of pressure.

4.5 First Article Inspection

The first article inspection shall be performed on a minimum of two systems (Threshold). The use of a single system as the test articles for the fungus, sand and dust, salt fog, explosive atmosphere, and electromagnetic interference tests is acceptable. The first article inspection shall be performed in a sequential order acceptable to the Government and shall provide objective evidence regarding the fulfillment of the requirements (Threshold). Disposition of first article sample systems shall be as specified in the contract or purchase order (Threshold).

4.6 Conformance Inspection

Unless otherwise specified in this document or in the contract or purchase order, the contractor shall subject all USMC JTAC LTD systems to inspection for conformance to this specification in accordance with MIL-STD-1916 (Threshold). Contractors that have an acceptable quality system and proven process controls relevant to the products being procured using this specification are encouraged to consider submitting an alternate acceptance method for verifying conformance to this specification. The acceptability of alternate acceptance methods is dependent upon the existence of a quality system, the demonstration of its process focus, and the availability of objective evidence of effectiveness. The contractor developed Acceptance Test Procedure shall be approved by the Government and revised as necessary (Threshold).

4.7 Responsibility for Conformance

Contractors are required to deliver USMC JTAC LTDs that conform to the requirements of this specification and the applicable contract or purchase order, and to generate and maintain sufficient evidence of conformance. Contractors are responsible for establishing their own manufacturing and process controls to produce results in accordance with the requirements. Contractors are expected to use recognized prevention practices such as

process controls and statistical techniques to reduce or eliminate manufacturing defects. Absence of any inspection or process control requirement in this specification or in the contract does not relieve the contractor of responsibility for assuring that all products submitted to the Government for acceptance conform to all requirements of the contract and this specification.

4.8 Government Verification of Conformance

The Government reserves the right to verify the conformance of any system offered for delivery to the requirements of this specification through independent analyses, inspections, testing, or demonstrations. Deficiencies found by the Government shall be a cause for rejection of the USMC JTAC LTD until the manufacturer has provided evidence that the deficiencies have been corrected (Threshold). The manufacturer shall correct all such deficiencies at no additional cost to the Government (Threshold). The Government also reserves the right to verify the contractor's implementation of, and adherence to, their manufacturing and process controls and to witness the contractor's performance of conformance inspection procedures.

4.9 Mission Performance Requirements

4.9.1 Modes of Operation

The contractor shall verify, through demonstration, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.1 (Threshold).

4.9.2 Boresight Error

The contractor shall verify, through testing, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.2 (Threshold).

4.9.3 Over Temperature Shutdown

The contractor shall verify, through testing, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.3 (Threshold).

4.9.4 1064 nm Designation/Marker Laser

The contractor shall verify, through testing, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.4. through 3.3.4.10 (Threshold).

4.9.5 IR Pointer Laser

The contractor shall verify, through testing, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.5 (Threshold).

4.9.6 Visible Boresight Laser

The contractor shall verify, through testing, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.6 (Threshold).

4.9.7 Sights

The contractor shall verify, through testing and examination, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.7 through 3.3.7.5 (Threshold).

4.9.8 System Controls

The contractor shall verify, through demonstration or examination, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.8 through 3.3.8.1 (Threshold).

4.9.9 Display/Visual Indicators

The contractor shall verify, through demonstration or examination, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.3.9 through 3.3.9.1.5 (Threshold).

4.10 Weight

The contractor shall verify, through examination, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.4 (Threshold).

4.11 Set Up Time

The contractor shall verify, through demonstration, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.5 (Threshold).

4.12 System Signature

4.12.1 Audible Detection

The contractor shall verify, through demonstration and testing in accordance with requirement 2, Table 2-II of MIL-STD-1474D, the ability of the USMC JTAC LTD to conform to the requirements of 3.6.1 (Threshold).

4.12.2 Stray Light Security

The contractor shall verify, through demonstration or examination, the ability of the USMC JTAC LTD to conform to the requirements in 3.6.2 and 3.6.3 (Threshold).

4.13 Environmental Requirements

4.13.1 Chemical, Biological, Radiological, and Nuclear (CBRN) Decontamination

The contractor shall verify, through analysis, demonstration or testing, the ability for the USMC JTAC LTD to conform to the requirements specified in 3.7.1 (Threshold).

4.13.2 Military Free Fall Operations – Altitude (Non-operational)

To determine conformance to 3.7.2, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 500.5, Procedure I (Threshold).

4.13.3 Immersion (10.0 m)

To determine conformance to 3.7.3, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 512.5, Procedure I (Threshold).

4.13.4 Immersion (1.0 m)

To determine conformance to 3.7.4, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 512.5, Procedure I (Threshold).

4.13.5 Humidity

To determine conformance to 3.7.5, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 507.5, Procedure 2 (Threshold).

4.13.6 Operating Temperature

To determine conformance to 3.7.6, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 501.5, Procedure II (high temperature), and Method 502.5, Procedure II (low temperature) (Threshold).

4.13.7 Storage Temperature

To determine conformance to 3.7.7, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 501.5, Procedure I (high temperature), and Method 502.5, Procedure I (low temperature) (Threshold).

4.13.8 Temperature Shock

To determine conformance to 3.7.8, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 503.5, Procedure I-B (Threshold).

4.13.9 Fungus

Conformance of the USMC JTAC LTD to paragraph 3.7.9, shall be proven through analysis in accordance with MIL-STD-810G, Method 508.6 (Threshold).

4.13.10 Mechanical Vibration

To determine conformance to 3.7.10, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 514.6, Procedure I (Threshold).

4.13.11 Transportation vibration (Loose Cargo)

To determine conformance to 3.7.11, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 514.6, Procedure II, Category 5 (Threshold).

4.13.12 Transit Drop

To determine conformance to 3.7.12, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 516.6, Procedure IV, with the exception that the drop height shall be 30 inches vice 48 inches (Threshold).

4.13.13 Sand and Dust

To determine conformance to 3.7.13, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 510.5, Procedure I (Threshold).

4.13.14 Salt Fog

To determine conformance with 3.7.14, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 509.5 (Threshold).

4.13.15 Explosive Atmosphere

To determine conformance with 3.7.15, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 511.5, Procedure I (Threshold).

4.13.16 Electromagnetic Interference (EMI)

To determine conformance with 3.7.16, the USMC JTAC LTD shall be tested in accordance with RE102 of MIL-STD-461F (Threshold).

4.13.17 Solar Radiation

To determine conformance with 3.7.17, the USMC JTAC LTD shall be tested in accordance with MIL-STD-810G, Method 505.5, Procedure I (Threshold).

4.14 Reliability, Availability, Maintainability, Durability

4.14.1 Mean Time Between Failures (MTBF)

The contractor shall verify, through testing or analysis, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.8.1 (Threshold).

4.14.2 Operational Availability

The contractor shall verify, through analysis and demonstration, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.8.2 (Threshold).

4.14.3 Preventive Maintenance

The contractor shall verify, through demonstration, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.8.3 (Threshold).

4.14.4 Shot Counter/System Use Meter

The contractor shall verify, through demonstration, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.8.4 (Threshold).

4.14.5 Boresight and Calibration

The contractor shall verify, through testing, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.8.5 (Threshold).

4.15 Safety

The contractor shall verify through a combination of testing, analysis, demonstration and examination, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.9 through 3.9.3 (Threshold).

4.16 Marking

The contractor shall verify by examination the ability for the USMC JTAC LTD to conform to the requirements specified in 3.10 through 3.10.1 (Threshold).

4.17 Workmanship

The contractor shall verify, by examination, the ability of the USMC JTAC LTD to conform to the requirements specified in 3.11 (Threshold).

5 PACKAGING

Material shall be packaged for entry into the military distribution system in accordance with MIL-STD-2073-1E (Threshold).

6.4.3 Picatinny Rail

Picatinny Rail, as used in this document, refers to the small arms accessory mounting rail as defined by MIL-STD-1913, listed in the reference documents above.

6.5 Subject Term (key word) Listing

Laser Target Designator
Laser Designator
Laser Marker
Infrared Pointer
IR Pointer
Laser Pointer
Lightweight
Handheld

CUSTODIAN:
USMC – MCSC PM FSS

PREPARING ACTIVITY:
USMC – MCSC PM FSS

DRAFT