

**OBJECTIVES STATEMENT  
FOR  
Lightweight Machine Gun - Medium**

**I. INTERNATIONAL TRAFFIC AND ARMS REGULATION:** The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), which controls the export and import of defense-related material and services. Offerors must disclose any proposed use of foreign nationals, their country of origin, and what tasks each would accomplish in the statement of work in accordance with the solicitation.

**II. BACKGROUND:** Lightweight Machine Gun-Medium in the .338NM caliber. The LMG-Medium (LMG-M) fills a capability gap for dismounted operations between the M2 HMG and M240 MMG. This capability will supplement but not replace the HMG chambered in .50 caliber and MMG chambered in 7.62 NATO.

**III. OVERALL OBJECTIVES:** The LMG-M will enhance the operator's capability to use direct line-of-sight light machine guns to employ greater success against personnel targets and light material at increased ranges with suppressive and terminal effects. **VENDORS ARE REQUIRED TO BRING A WORKING PROTOTYPE WEAPON TO THE SOFWERX ASSESMENT EVENT (FOR VERIFICATION PURPOSES NOT FOR FIRING)**

Please reference the attached (DRAFT) performance specification for the LMG-M threshold (T) and objective (O) requirements as well as supporting kit.

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## PERFORMANCE SPECIFICATION

### LIGHTWEIGHT MACHINE GUN – MEDIUM (LMG-M)

**DRAFT**

This specification is approved for use by all Departments and Agencies of the Department of Defense



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## 1 SCOPE

- 1.1 Introduction. This specification establishes the technical and performance requirements, and the associated quality assurance (QA) provision and verification procedures for the Lightweight Machine Gun – Medium (LMG-M). The LMG-M provides the required capabilities and associated performance attributes to improve United States Special Operations Command (USSOCOM) volume fire lethality, reliability, and standoff, mitigating current capability gaps experienced by Special Operations Forces (SOF).

The fundamental operational requirements for the LMG-M are described in the LMG Capabilities Development Document (CDD), approved 8 July, 2019. However, this LMG-M performance specification expands on that CDD to more clearly and technically define the LMG-M through detailed explanation and addition of derivative requirements.

The LMG-M fills a capability gap for dismounted operations between the M2 Heavy Machine Gun (HMG) and M240 Medium Machine Gun (MMG). This capability will supplement but not replace the HMG chambered in .50 caliber and MMG chambered in 7.62 NATO.

The LMG-M will utilize Special Operations Forces-peculiar (SOF-p) validated Miniature Aiming System requirements to fulfill laser and day/night optic requirements.

LMGs will be used by SOF units including Special Forces Groups, Operational Detachment-Alpha (OD-A), Operational Detachment-Bravo (OD-B), Operational Detachment-Charlie (OD-C), Special Operations Team-Alpha (SOT-A); 75th Ranger Regiment, Battalions, Companies, Squads and Teams; Marine Raider Battalions (MRB), Marine Special Operations Companies (MSOC), and Marine Special Operations Teams (MSOT); Naval Special Warfare Groups (NSWG), Sea Air and Land (SEAL) Teams, SEAL Delivery Vehicle (SDV) Teams, Special Boat Teams (SBT), Air Force Special Tactics Squadrons (STS); other Special Mission Units, and associated training units.

- 1.2 Requirement levels: Thresholds/Objectives/Guides. The original requirements documentation related to this performance specification lists Key Performance Parameters (KPPs), which are firm Go/No-Go criteria. If a product sample fails to meet any of these, it will not be tested further and is not eligible for contract award. Key System Attributes (KSAs) are also included, along with Additional Attributes. These both allow for two (2) levels of performance based on a Threshold level (T) as the minimum acceptable



performance, and the Objective level (O) as a desired level of performance or features that are goals to allow for an operationally significant increase in capabilities.

- 1.3 Test configuration. Unless otherwise specified, all testing will be done on ten (10) LMG-M product samples provided by vendors as outlined in Table I.
- 1.4 Test ammunition. Unless otherwise specified all testing will be conducted with DODIC TDP .338 Norma Magnum (NM) linked ammunition, further referred to as .338 NM; and 7.62 NATO, further referred to as 7.62mm.

2 APPLICABLE DOCUMENTS

- 2.1 General. The documents listed in this specification are cited in Section 3 (Requirements) and Section 4(Verification) of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in Section 3 and Section 4 of this specification, whether or not they are listed.
- 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. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS AND STANDARDS

- PC-111 - Carbon Removing Compound
- FED-STD-595C - Colors Used in Government Procurement

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-W-63150 - Weapons and Support Materiel Standard Quality Assurance Provisions for
- MIL-PRF-372 - Cleaner, Lubricant, and Preservative for Weapons
- and
- MIL-PRF-63460E - Weapons Systems
- w/AMD 4 - Lubricant, Cleaner, and Preservative for Weapons and Weapons Systems

DEPARTMENT OF DEFENSE STANDARDS

	MIL-STD-109	-	Quality Assurance
	MIL-STD-129	-	Military Marking for Storage and Shipment
	MIL-STD-130M	-	Identification Marking of U.S. Military Property
	MIL-STD-461F	-	Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment
Requirements	MIL-STD-464C	-	Electromagnetic Environmental Effects for Systems
	MIL-STD-810H	-	Environmental Engineering Considerations and Laboratory Tests
	MIL-STD-1472G	-	Human Engineering
	MIL-STD-1474	-	Noise Limits
	MIL-STD-1916	-	DOD Preferred Methods for Acceptance of Product
	MIL-STD-2073/1E	-	DOD Standard Practice for Military Packaging

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-759 - Human Engineering Design Guidelines

(Copies of these documents are available online at <http://quicksearch.dla.mil> or from the Standardization Documents Order Desk, 700 Robbins Avenue, Bldg. 4D, Philadelphia, PA 19111-5094).

2.2.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

U.S. ARMY DEVELOPMENTAL TEST COMMAND

Systems	TOP 1-2-511	-	Electromagnetic Compatibility Requirements, Testing
	TOP 3-2-045	-	Automatic Weapons, Machine Guns, and Hand and Shoulder Weapons
Used	TOP 3-2-609	-	Chemical Compatibility of Nonmetallic Materials In Small Arms Systems
	TOP 2-2-214	-	Toxic Hazards Tests for Vehicles and Other Equipment

TOP 3-2-826 - Kinematics Tests of Small Arms

(Copies of these documents may be ordered from the US Army Developmental Test Command, ATTN: Publications, 314 Longs Corner Road, Aberdeen Proving Ground, MD 21005-5005, or online at <http://www.atec.army.mil/publications/topsindex.aspx>).

OFFICE OF THE SECRETARY OF DEFENSE

ITOP 4-2-602 - Rough Handling Tests

NAVAL SEA SYSTEMS COMMAND

SSG800-AG-MAN- - System Certification Procedures and Criteria  
Manual for

010/P-9290 Deep Submergence Systems

2.3 Non-Government publications.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 1417 - Non-destructive Testing and Inspection

ASTM E 1444 - Standard Practice for Magnetic Particle Testing

ASTM D 3951 - Standard Practice for Commercial Packaging

(Copies of ASTM standards are available online from <http://www.astm.org/> or from the American Society for Testing and Materials, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959).

NORTH AMERICAN TREATY ORGANIZATION (NATO) STANDARDIZATION AGENCY

NATO STANAG 4694 - NAR NATO Accessory Rail

(Copies of NATO standards are available online from <http://nsa.nato.int/nsa>).

2.4 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 unless otherwise noted.

Nothing in this document supersedes applicable laws and regulations unless a specification exemption has been obtained.

3 REQUIREMENTS

3.1 Design verification. Sample(s) of LMG-M shall be subjected to design verification In Accordance With (IAW) Table I and respective table (Table V) and verification (section 4).

Table I. Weapon Assignments

Weapon No. 1	Weapon No. 2, 3,4	Weapon No. 5, 6, 7	Weapon No. 8, 9, 10
Recoil Impulse	Single Shot Precision	Coatings, Corrosion Resistance	Interoperability
Signature Reduction	Reliability	Stress Testing	Size & Weight
Signature Suppressor	Firing Rate	Unlubricated Weapon	Optics & Fire Control
Toxic Fume/Blowback	Barrel	External Material Finish	Barrel Swap
Cook-off	Training Conversion Kit	Operational Environments	Stabilization
	Safety Selector	Chemical handling	Spade Grip
	Belt Pull	Rough Handling	Feeding
	Trigger Pull		Buttstock
	Ammunition and Chambering		Modularity & Ancillaries
	Rang/Overmatch		Workmanship
	Attitudes		Charging Handle
	Parts Interchangeability		Firing Pin

3.2 First Article inspection/test. Sample(s) of LMG-M shall be subjected to First Article inspection when specified in Table V. First Article inspection criteria is defined in verification (see section 4).

3.3 Quality conformance inspection/test. Sample(s) of LMG-M shall be subjected to quality conformance inspection IAW respective table (see Table V) and verification (see section 4).

3.4 PHYSICAL REQUIREMENTS

3.4.1 Size and Weight.

- a. The LMG-M overall maximum weight with standard rail interface, carry handle, bipod attached, buttstock, and barrel (without suppressor) shall be less than or equal

- to 26.6 lbs. (T), 21 lbs. (O). Sights and other accessories will not be included in the weight requirement.
- b. The LMG-M overall maximum weight with standard rail interface, carry handle, bipod attached, buttstock, and barrel (with suppressor) shall be less than or equal to 30.6 lbs. (T), 23.2 lbs. (O). Sights and other accessories will not be included in the weight requirement.
- c. The LMG-M overall maximum length with collapsed but not folded buttstock, muzzle device, with unsuppressed barrel, ready to fire shall be less than or equal to 51 inches total overall length (T), less than or equal to 48 inches total overall length (O).
- d. LMG-M overall maximum length with collapsed but not folded buttstock, muzzle device, and barrel with suppressor, ready to fire shall be less than or equal to 60 inches total overall length (T), less than or equal to 56 inches total overall length (O).

3.4.2 Barrel.

- a. The LMG-M shall have a primary and spare barrel that require no tools or special adjustment for fitment in .338 NM (SOCOM TDP) (T=O).
- b. The LMG-M barrel shall be capable of removal and replacement at the operator level (T=O).
- c. Caliber changes to the LMG-M, including barrel and caliber changes, shall be accomplished in such a way as to meet the manufacturer’s headspace requirements for each caliber (T=O).
- d. The LMG-M barrel change on a hot barrel shall be accomplished within 10 seconds without the use of any special tools or ancillary equipment and without injury to the end user. (T=O).
- e. The LMG-M barrel calibers shall include 7.62mm and .338 NM (T=O).
- f. The LMG-M shall have twist rates outlined in Table II (T=O):

Table II. Twist Rate Table

<b>Configuration</b>	<b>Twist Rate</b>
7.62 mm	1:8" ± 0.5" (T)
.338 NM	1:9.4" ± 0.5" (T)

- g. The LMG-M shall exceed the minimum muzzle velocities outlined in Table III (T=O):

Table III. Muzzle Velocity Table

<b>Configuration</b>	<b>Minimum Muzzle Velocity</b>
7.62 mm	2,550 feet per second
.338 NM	2,600 feet per second

- h. The LMG-M barrel changes of the same barrel shall have a shift that is repeatable within 3.5 MOA correction at 100 meters (109 yards) (T=O).
- i. The LMG-M shall demonstrate in developmental testing 8,000 mean round barrel service life (T), 15,000 (O).
- j. The LMG-M shall be equipped with a suppressor mounting device on the muzzle that is capable of being removed at the organizational level without special tools (T=O).

#### 3.4.3 Buttstock.

- a. The LMG-M buttstock shall be adjustable for length, collapsible, and capable of side folding (T).
  - i. The LMG-M folding buttstock shall securely attach to the LMG-M when folded and maintain rigidity when in deployed in the ready to fire configuration (T).
  - ii. The LMG-M shall be capable of being charged when the buttstock is folded (T).
  - iii. The safety/selector shall be able to be manipulated when the buttstock is folded (T).
- b. The LMG-M should be capable of firing with the buttstock in the folded position (O).
- c. The LMG-M buttstock shall have a folding shoulder stabilizer (T=O).
- d. The LMG-M buttstock shall last the life of the weapon without failure (T).
- e. The LMG-M buttstock shall have adjustable or ergonomic functionality that supports firing with both fixed and optical sights (T=O).

#### 3.4.4 Spade Grip.

- a. The LMG-M should be available in a spade grip configuration or a spade grip conversion kit should be available – aviation (T).

#### 3.4.5 Charging Handle.

- a. The charging handle shall be fully operable with the buttstock in the firing (deployed) position (T=O).
- b. The charging handle shall be of a non-reciprocating design (T=O).
- c. The charging handle shall not interfere with accessories (T=O).
- d. The charging handle shall be operable and moveable to both the left and right-hand side to accommodate left and right hand feed at the operator level (T).
- e. The charging handle shall have a two position design which allows for it to be stowed (folded) when not in use, in order to reduce snag hazards (T).

#### 3.4.6 Stabilization

- a. The LMG-M bipod shall be capable of being rapidly deployed and stowed, adjustable for height and stable enough to permit delivery of the firing rate throughout the effective range (T=O).
- b. The LMG-M bi-pod shall be replaceable at the operator level (T=O).
- c. The LMG-M with bipod deployed in any position, shall not allow weapon to tip during barrel changes, either with Feed Cover Assembly in open or closed position (T=O).
- d. The LMG-M bipod shall perform better than the M240L bipod (T=O).
- e. The LMG-M bipod; shall be stow-able with the right or left hand. (T=O).
- f. The LMG-M bipod, when in stowed position, shall not interfere with mounts or mounted accessories at the 3 o'clock and 9 o'clock position (T=O).

#### 3.4.7 Modularity and Ancillaries.

- a. The LMG-M shall have a carrying handle that securely attaches and does not interfere with clip-on optics or manual of arms of the LMG-M (T=O).
- b. The LMG-M shall have a modular sling that attaches via hard points (T=O).
- c. The LMG-M shall include removable and collapsible iron sights that attach to the 12 o'clock MIL-STD-1913 rail (T=O).
- d. The LMG-M shall include a hard carrying case large enough to accommodate a fully accessorized weapon and shall be air and water tight with a valve that automatically equalizes air pressure (T=O).
- e. The LMG-M shall include a delivery method for parachuting if existing bags and harnesses are not compatible (T=O).
- f. The LMG-M shall utilize forward rail and accessory attaching points via M-LOK method. (T=O).
- g. The LMG-M shall include an ammunition pouch mounting point and removable pouch that can secure a minimum of 25 linked .338NM rounds (T=O). The mounting point and pouch shall not interfere with any of the mounts listed in Section XXXX.
- h. The LMG-M shall be equipped with a cleaning kit that includes any tools needed to conduct routine maintenance, operator field repairs, operator field parts replacement, and weapons system setup (T=O).

#### 3.4.8 Sling.

- a. The LMG-M shall have a detachable, adjustable (micro and macro adjustments), and padded sling that is resistant to or insulated from excessive barrel temperatures (T=O).
- b. The sling shall be capable of slinging the weapon both right or left handed and shall not impede shouldering of the weapon from a slung position (T=O).
- c. The LMG-M shall balance with the top of the weapon up when it is slung (T=O).

### 3.4.9 External Material Finish.

- a. The LMG-M external color shall be a dull, non-reflective, Light Coyote 481 to Coyote 498 (#20150 not lighter than #20220) IAW FED-STD-595 (T=O).

## 3.5 WEAPON CONTROL REQUIREMENTS

### 3.5.1 Workmanship.

- a. Workmanship and finish shall be in accordance with the highest grade practice used in manufacturing military weapons. Finished items and parts shall not exhibit poor material and processing such as seams, laps, laminations, cracks, visible steps or irregularities, sharp edges, nicks, scratches, burrs, tool scores and gouges, deformations, unblended radii, surface defects, chips, and other defects which may affect serviceability, functioning, operation, appearance, performance, interchangeability or safety. Fins or other extraneous metal shall be removed from cast or forged parts. The parts shall be clean and free of dirt grease, oil (except where specifically required), rust, foreign matter that could render the system unsuitable for its intended purpose. The fabrication shall be processed in such a manner as to be uniform in quality (T=O).

### 3.5.2 Feeding/Ejection.

- a. The LMG-M shall support both left-hand and right-hand feeding (reversible feed), this shall be conducted at the operator level without special tools outside of the cleaning kit.(T=O).
- b. The LMG-M shall properly expel spent shell casings and links or have a deflector that will allow the LMG-M to feed without malfunction due to spent shells (T).
- c. The LMG-M should eject the last link of a belt (O).
- d. Ammunition shall be retained on the feed tray when the cover is open (T).

### 3.5.3 Safety/Selector.

- a. The LMG-M shall have a safety that prevents the weapon from being fired when the trigger is depressed and the weapon is on safe (T), capable of charging the weapon when the weapon is on safe (O).
  - a. The LMG-M shall be capable of being checked by sight or touch (T).
- b. The LMG-M shall have a selector allowing for automatic fire position, and semi-automatic firing position (T), have a three position safety selector with safe, auto, and semi-auto firing positions (O).
- c. The LMG-M safety selector should be ambidextrous (O).
- d. The LMG-M shall have clear indication of the fire position (T).

### 3.5.4 Recoil Impulse.



- a. The recoil impulse shall be sufficiently low enough to facilitate effective employment of the LMG-M to its max effective range day or night (T=O).

### 3.5.5 Identification Markings.

- a. The LMG-M receiver shall display identification markings addressing weapon nomenclature, caliber, and serial number (T=O).
- b. The LMG-M suppressor shall display identification markings addressing nomenclature and serial number (T=O).
- c. The LMG-M barrel shall display identification markings addressing nomenclature (T=O).
- d. Identification markings shall be engraved, cast, or stamped (impressed) on the receiver and suppressor in a manner easy to read and identify, not susceptible to being readily obliterated, altered, or removed (T=O).
- e. Identification markings should be visible without removing weapon accessories or disassembly (T=O).
- f. The weapon and suppressor shall be identified per MIL-STD-130N with a Unique Identifier (UID) (T=O).

### 3.5.6 Firing Pin.

- a. Firing pin design and operation shall not contribute to primer malfunctions including excessive deformation of the primer (e.g., pierced primers, loose primers, escape of gas around the primer cup, etc.) (T=O).

### 3.5.7 Belt Pull.

- a. The LMG-M shall be capable of functioning while pulling the equivalent weight of 100 linked .338NM rounds (T=O).

### 3.5.8 Trigger Pull.

- a. The LMG-M trigger pull shall range between 10 and 14 pounds. The trigger shall be free of creep. Creep is defined as any perceptible movement between the point where the trigger-slack is taken up and the sear is disengaged from the operating rod (T=O).

## 3.6 DESIGN REQUIREMENTS

### 3.6.1 Proof Testing.

- a. All LMG-M product samples shall be proof tested, inspected, and certified by the vendor prior to acceptance for test and evaluation (T=O).

### 3.6.2 Interoperability.

- a. The LMG-M shall be capable of functioning with current USSOCOM M240 mobility platform/vehicle mounting solutions (T=O).
- b. The LMG-M shall be capable of functioning with Miniature Aiming Systems (MAS) optics, clip-on night vision devices, aiming lasers, and/or fire control systems in accordance with appropriate eye relief standards (T=O).

### 3.6.3 Parts Interchangeability.

- a. All major components and assemblies shall be capable of being fully interchangeable with other like LMG-M components (T=O).
- b. The weapon shall be incapable of improper assembly at the fieldstrip level to the detriment of functioning or safety. At other tear down levels, the weapon shall be incapable of improper assembly to the detriment of safety (T=O).

### 3.6.4 .338 NM Signature Suppressor.

- a. The LMG-M shall include a detachable sound/signature suppressor (T=O).
  - a. Removal of the suppressor must be completed without the use of tools (T).
- b. The LMG-M suppressor shall not modify the rate of fire by more than 10% (T), more than 2% (O). While maintaining specified rates of fire in 3.7.4.
- c. The LMG-M suppressor shall not vibrate loose (T=O).
- d. The LMG-M suppressor diameter shall not impede optical bore sight of direct view optics and clip-on devices that are standardized at 1.53 inches in height over 12 o'clock MIL-STD-1913 rail (T).
- e. The LMG-M Signature Suppressor must not weigh more than 4lbs (T), 2.2 lbs (O).
- f. Suppressor Shift repeatability

### 3.6.5 .338 NM Visual Signature Reduction Device (VSRD)

- a. The LMG-M should have a visual signature (flash and ground disturbance) reduction device in addition to the flash hider (O).
  - a. This must utilize the same mounting device as Signature suppressor (T).
  - b. Must have same or smaller footprint as signature suppressor (T).
  - c. This would be a non-ATF item (T).

### 3.6.6 Signature Reduction.

- a. Flash Signature (Unsuppressed).
  - a. The LMG-M shall incorporate a muzzle device (e.g. flash hider/brake) that mitigates visual signature in the unsuppressed configuration to less than 50 mcd-s (O).
- b. Flash Signature (Suppressed).
  - a. The LMG-M shall incorporate a muzzle device (e.g. flash hider/brake) that mitigates visual signature in the suppressed configuration to less than 20 mcd-s (O).

- c. Noise Signature (Suppressed)
  - a. The LMG-M sound suppressor shall reduce noise signature of unsuppressed weapon by 20db (O).
- d. Ground Disturbance (Unsuppressed).
  - a. The LMG-M shall incorporate technology into the system to reduce ground disturbance when compared to the M2A1, LMG-M shall be equal to or less than the M2A1 in ground disturbance (T), ground disturbance should be equal to or less than the unsuppressed M240B (O).
- e. Ground Disturbance (Suppressed).
  - a. LMG-M shall incorporate technology into the system to reduce ground disturbance when compared the unsuppressed weapon (T=O).

### 3.6.7 Blowback.

- a. The blowback gases shall not inhibit the end-user from effectively employing the weapon system while suppressed (T).

### 3.6.8 Optics and Fire Control.

- a. The LMG-M shall utilize MIL-STD 1913 rail architecture for the 12 o'clock rail that is timed for height and alignment (T=O).
- b. The LMG-M shall incorporate a minimum of 8 inches of useable space aft of the feed tray cover, to include a continuous MIL-STD-1913 rail in the 12 o'clock position, to allow for attachment and utilization of DVO(feed tray cover-based rail not acceptable for DVO)- (T=O).
- c. Barrel changes shall not be impeded or delayed by DVO and/or SOF-p clip-on enabler (12"x3.5"x4" 5lbs) manipulation by more than 12.5 seconds to complete these actions (T).
- d. Forward optics/enablers shall return to alignment when articulated (T).
- e. The LMG-M must have 10 in of forward rail space, at the 12 o'clock position, to incorporate clip-on enablers and shall not impede barrel change (T). As measured from the forward edge of the top cover.

### 3.6.9 Training Conversion Kit.

- a. The LMG-M shall be supplied with a NATO 7.62x51mm conversion kit to safely fire the NATO 7.62x51mm suite of ammunition and training munitions (T=O).
- b. The LMG-M shall be capable of safely firing NATO 7.62x51mm Close Combat Blank System (CCBS) linked training ammunition when NATO 7.62x51mm compatible (T).
- c. The LMG-M training conversion kit shall be able to be converted from .338NM to NATO 7.62x51mm by the weapon operator (T).
- d. The LMG-M training conversion kit shall have a primary and spare barrel that require no tools or special adjustments for fitment in NATO 7.62x51mm (T=O).

- e. The LMG-M training conversion kit shall maintain the same weight, length, fit, and function of the base .338NM LMG-M (T=O).
- f. The LMG-M training conversion kit barrels shall be able to utilize the .338NM LMG-M suppressor (T=O).
- g. The LMG-M shall include any non-standard supplies necessary to clean the weapon (T). Common cleaning tools and expendables should be compatible with the LMG-M (O).
- h. The LMG-M with 7.62 NATO training kit installed shall have the same firing rate as the LMG-M in its .338 configuration (T).

#### 3.6.10 Training/Support Equipment.

- a. The LMG-M shall include any non-standard supplies necessary to clean the weapon (T). Common cleaning tools and expendables should be compatible with the LMG-M (O).
- b. The LMG-M shall include a ruptured cartridge case extractor for the 7.62 NATO configuration (T=O).
- c. The LMG-M shall include a ruptured cartridge case extractor for .338NM (SOCOM TDP) configuration (T=O).
- d. The LMG-M shall include a heat resistant barrel bag that can hold up to two barrels (T).

### 3.7 PERFORMANCE CHARACTERISTICS

#### 3.7.1 Single-Shot Precision. Note: Average Mean Radius (AMR) measured in Minute of Angle (MOA) at 100 meters. Average of 5 5-shot groups.

- a. The LMG-M shall have AMR not to exceed 6.0 MOA (T), 3.0 MOA (O) at 100 meters (109 yards) when firing USSOCOM TDP .338NM linked ammunition.

#### 3.7.2 Burst Dispersion. Note: Average Mean Radius (AMR) measured in Minute of Angle (MOA) at 100 meters. Average of 5 5-shot groups.

- b. The LMG-M shall have AMR not to exceed 6.0 MOA (T), 3.0 MOA (O) at 100 meters (109 yards) when firing USSOCOM TDP .338NM linked ammunition.

#### 3.7.3 Reliability. Note: The LMG-M reliability shall meet the standard listed in Table IV below, with .338 NM linked ammunition.

- a. The LMG-M shall demonstrate in developmental testing 2,750 mean rounds between Class I or II essential function failures and 4,500 mean rounds between Class III essential function failures. (T). Demonstrate in developmental testing 4,500 mean rounds between Class I or II essential function failure and 15,000 mean rounds between Class III essential function failures. (O)

- b. The LMG-M shall demonstrate in developmental testing 25,000 mean round receiver group service life (T). Demonstrate 30,000 mean round receiver group service life (O).

Table IV. Permissible Failure Table

Failure Class**	MRBS/MR BF	Maximum allowable failures permitted in 25,000 rounds***
I (MRBF)	2,750	9
II (MRBF)	2,750	9
III (MRBF)	4,500	5*
*The LMG-M can have no more than (1) broken part causing the weapon to cease function.		
**Failure classifications. <ul style="list-style-type: none"> <li>a. Class I: Failure (stoppage) that may be immediately clearable by the operator within 10 seconds or less, while following prescribed immediate-action procedures.</li> <li>b. Class II: Failure (stoppage) that may be operator clearable and requires more than 10 seconds but not more than 10 minutes. Only the equipment and tools issued with the weapon may be used to clear the weapon if any tools are supplied IAW tool requirements.</li> <li>c. Class III: Failure of a severe nature. The failure, 1) is operator correctable but requires more than 10 minutes; 2) operator cannot correct and requires assistance (no time limit); or 3) requires higher level of maintenance, otherwise authorized operator correction cannot be accomplished because of unavailability of necessary tools, equipment, or parts;</li> </ul>		
***Failure scoring. The maximum number of failures permissible is four (4). These failures may be in any combination of class I, II or III up to the maximum permitted as indicated in Table IV. Receivers, barrels, or bolt including rebuild-able components, becoming unserviceable after meeting their life requirements shall not be considered as chargeable failures. Unserviceable parts discovered after the reliability firing is completed shall not be scored as a reliability failure.		

3.7.4 Firing Rate.

- a. The LMG-M shall have a minimum cyclic rate of 450 rpm and a maximum cyclic rate of 550 rpm +/-50 rounds per minute (T), 550+/-25rpm (O).

3.7.5 Caliber and Chamber.

- a. The LMG-M shall be capable of safely firing SOCOM TDP .338 NM ammunition (T=O).

- b. The LMG-M shall successfully complete the TOP 3-2-045 Ammunition Compatibility section (T=O).

### 3.7.6 Weapon Maintenance/Lubrication.

- a. The LMG-M shall function reliably when cleaned and lubricated per the manufacturer's instructions for a duration of 300 rounds (T).
- b. The LMG-M should function reliably without lubrication for 1,000 rounds (O).

### 3.7.7 Stress Testing.

- a. The LMG-M with unsuppressed barrel shall withstand firing of a combat load of 600 rounds at maximum rate of fire without catastrophic failure (T=O).
- b. The LMG-M with suppressed barrel shall withstand 400 rounds at maximum rate of fire without catastrophic failure (T), 600 rounds (O).

### 3.7.8 Cook Off.

- a. The LMG-M shall not present a cook-off hazard after firing .338 NM ammunition for 180 rounds at the cyclic rate of fire of the weapon (T), 200 rounds (O).

## 3.8 OPERATIONAL AND ENVIRONMENTAL REQUIREMENTS

### 3.8.1 Environmental.

- a. Operational Temperature: The LMG-M shall have zero stoppages when the weapon and ammunition are exposed to extreme temperatures ranging from -20°F to +165°F (T) upon completion of TOP 3-2-045 Extreme Temperatures, -60°F to +165°F (O).
- b. Rain: The LMG-M shall be able to operate in rain environments with no more than 1 Class I/II stoppages in 200 rounds fired and no Class III failures IAW TOP 3-2-045 4.5.3 Water Spray (rain) Test (T=O).
- c. Sand and dust: The LMG-M shall be able to operate after exposure to sand and dust environments with no more than 1 Class I/II stoppages in 200 rounds fired and no Class III failures upon completion of TOP 3-2-045 4.5.4 Sand and Dust (T=O).
- d. Mud: The LMG-M shall have no less than 50 mean rounds between Class I/II stoppages upon completion of TOP-3-2-045 Mud Test (T=O).
- e. Altitude (low air pressure): The LMG-M shall function without degradation after being exposed to altitudes up to 30,000 feet (9144 meters) above sea level (4.3 psi) upon completion of TOP-3-2-045 Altitude (low air pressure) (T=O).
- f. Deep Water Immersion: The LMG-M shall function without degradation after being exposed to depths of 66 feet (20.1 meters) in salt (202 psi) for 1 hours upon completion of TOP-3-2-045 Deep Water Immersion (T=O).
- g. Salt Water Immersion: The LMG-M shall function without degradation after being immersed in salt water and exposed to a high humidity environment upon completion of TOP-3-2-045 Immersion Tests –Salt Water Immersion Test (T=O).

- h. Salt Fog: The LMG-M shall function without degradation after being exposed to salt fog environment upon completion of TOP-3-2-045 Salt Fog Test (T=O).
- i. Freezing rain and ice: The LMG-M shall have no less than 50 mean rounds between stoppages upon completion of TOP 3-2-045 Icing Test (T=O).

### 3.8.2 Obstructed Bore

- a. The LMG-M shall not present a safety hazard to the operator if fired with bore and suppressor full of water (T=O). \*This requirement will only apply if the weapon operates in a closed bolt configuration.
- b. The LMG-M shall not present a safety hazard to the operator if fired with an obstruction in the bore (T=O).

### 3.8.3 Coatings, Corrosion Resistance and Immersion.

- a. The LMG-M should incorporate self-lubricating coatings and materials that do not require grease or lubricants for the operating components (O).

### 3.8.4 Chemical Resistance.

- a. The LMG-M shall demonstrate no adverse effects upon completion of TOP 3-2-045 Chemical Contamination section (T=O).
- b. The LMG-M shall not be adversely affected by common, approved armory cleaning tank solutions (T=O).

### 3.8.5 Rough Handling

- a. The LMG-M shall be tested in general accordance with TOP-2-3-045 Rough Handling-Drop Test. Drop testing consists of falls from eight different orientations, see Table X, from a height of five feet, measured to the lowest point on the machine gun, onto a concrete surface. An unintentional releasing of the bolt or movement of the safety when the gun is dropped while on safe would indicate a drop test failure (T=O). Limited movement of the safety is acceptable, if the trigger is depressed after drop and the weapon remains in a safe condition (bolt has not released).
- b. The LMG-M with Bipod shall withstand a Rough Handling-Loose Cargo Test in accordance with MIL-STD-810E Method 514.4. The weapon must function and show no change in accuracy (T=O).

### 3.8.6 Attitude Testing.

- a. The weapon will be tested IAW TOP-3-2-045 Attitudes Test; no Class II or Class III malfunctions per Table XI (T), no malfunctions (O).

#### 4 VERIFICATION

- 4.1 Design verification. When specified, a sample of the LMG-M system shall be subjected to design verification in this section. Specified design verifications are performed to ensure the system has the required features and performance capabilities designed into it. This assurance, when attained through the specified verification procedures, assumes that the samples tested represent the distribution of weapon systems that are producible across the full range of limits of the vendor's current technical data, processes, and materials. Any change made to the vendor's current technical data, processes and materials, without sufficient investigation, evaluation and government approval, invalidates this important assumption. It is very costly to repeat the design verification, and therefore the technical data, processes, and materials shall be locked for the systems submitted and all subsequent production, unless changes are approved by the Government of the baseline configuration. Conformance to the baseline configuration technical data alone does not guarantee Government acceptance of the product. Phase 1, 2 and 3 testing will be performed IAW Table V.



Table V. Requirement/Verification Cross-Reference Matrix

Requirement	Requirement Section	Design Verification <sup>2</sup>			First Article <sup>1</sup>	Conformance Inspection	Verification Method	Verification Section
		Phase 1	Phase 2	Phase 3				
Design Verification								
First Article Inspection								
Quality Conformance Inspection								
Size and Weight								
Size and Weight								
Size and Weight								
Size and Weight								
Size and Weight								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Barrel								
Buttstock								
Buttstock								
Buttstock								
Spade Grip								

Requirement	Requirement Section	Design Verification <sup>2</sup>			First Article <sup>1</sup>	Conformance Inspection	Verification Method	Verification Section
		Phase 1	Phase 2	Phase 3				
Charging Handle								
Charging Handle								
Charging Handle								
Charging Handle								
Stabilization								
Stabilization								
Stabilization								
Modularity and Ancillaries								
Modularity and Ancillaries								
Modularity and Ancillaries								
Modularity and Ancillaries								
Modularity and Ancillaries								
Modularity and Ancillaries								
Modularity and Ancillaries								
Modularity and Ancillaries								
Sling								
External Material Finish								
Workmanship								
Feeding								
Safety								
Safety								
Safety								

Requirement	Requirement Section	Design Verification <sup>2</sup>			First Article <sup>1</sup>	Conformance Inspection	Verification Method	Verification Section
		Phase 1	Phase 2	Phase 3				
Safety								
Safety								
Recoil Impulse								
Identification Markings								
Identification Markings								
Identification Markings								
Identification Markings								
Identification Markings								
Identification Markings								
Identification Markings								
Firing Pin								
Belt Pull								
Trigger Pull								
Interoperability								
Interoperability								
Interoperability								
Interoperability								
Interoperability								
Parts Interchangeability								
Signature Reduction								
Signature Reduction								
Signature Reduction								
Signature Reduction								
Sound/Signature Suppressor								
Sound/Signature Suppressor								

Requirement	Requirement Section	Design Verification <sup>2</sup>			First Article <sup>1</sup>	Conformance Inspection	Verification Method	Verification Section
		Phase 1	Phase 2	Phase 3				
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Sound/Signature Suppressor								
Optics and Fire Control								
Optics and Fire Control								
Optics and Fire Control								
Optics and Fire Control								
Optics and Fire Control								
Training Conversion Kit								
Training Conversion Kit								
Training Conversion Kit								
Training/Support Equipment								

Requirement	Requirement Section	Design Verification <sup>2</sup>			First Article <sup>1</sup>	Conformance Inspection	Verification Method	Verification Section
		Phase 1	Phase 2	Phase 3				
Single-Shot Precision								
Single-Shot Precision								
Reliability								
Reliability								
Reliability								
Reliability								
Firing Rate								
Caliber and Chamber								
Caliber and Chamber								
Caliber and Chamber								
Caliber and Chamber								
Range/Overmatch Capability								
Unlubricated Weapon								
Stress Testing								
Stress Testing								
Stress Testing								
Cook Off								
Environmental								
Operational Temperature								
Rain								
Sand and Dust								
Mud								
Altitude (low air pressure)								
Deep-Water Emersion								

Requirement	Requirement Section	Design Verification <sup>2</sup>			First Article <sup>1</sup>	Conformance Inspection	Verification Method	Verification Section
		Phase 1	Phase 2	Phase 3				
Salt Fog								
Freezing Rain and Ice								
Coatings, Corrosion Resistance								
Coatings, Corrosion Resistance								
Coatings, Corrosion Resistance								
Coatings, Corrosion Resistance								
Chemical Resistance								
Chemical Resistance								
Chemical Resistance								
Toxic Fume/Blowback								
Drop Test								
Rough Handling								
Attitude Testing								
<p>1. Requirements with 100% indicated for First Article or Conformance Inspection represents that all units of the test sample will be inspected.</p> <p>2. X-Y-Z, Test (X) weapons - Accept with (Y) failures - Reject with (Z) failures.</p>								

- 4.1.1 Design Verification Test Rejection. If any sample system fails to comply with any design verification requirement(s), the design shall be rejected. No change to the rejection decision shall be considered without a formally documented investigation into the cause and corrective/preventative actions needed to preclude reoccurrence
- 4.2 First Article Inspection
- 4.2.1 First Article Inspection. When specified, a sample of the system shall be subjected to First Article inspection when specified in Table V. First Article is based on the assumption that the above-verified design has not been changed. Some design features are re-verified in First Article, but the First Article's primary purpose is to provide confidence that the weapon systems conform to the approved, verified design and that all required performance levels are still attained.
- 4.2.2 First Article Rejection. If any system fails to comply with any of the applicable requirements, the First Article sample shall be rejected. No change to the rejection decision shall be considered without a formally documented investigation into the cause and corrective/preventative actions needed to preclude recurrence.
- 4.3 Quality Conformance Inspection. When specified, a sample of the system shall be subjected to quality conformance inspection IAW Table V. Quality conformance inspection assumes a verified design, conformance to the design, and that the producer has a sound quality control system in place. Any nonconformance indicates a flaw in those assumptions. Sampling Verification Levels (VL), when specified, pertain to sampling inspection plans IAW MIL-STD-1916.
- 4.3.1 Conformance Inspection Rejection. Failure to meet any of the requirements shall be cause for rejection of the sample. No change to the rejection decision shall be considered without a formally documented investigation into the cause and corrective/preventative actions needed to preclude recurrence.
- 4.3.2 Visual/Manual/Standard Measuring and Test Equipment. Visual/Manuals/Standard (V/M/S) is specified in Table V when requirement compliance can be readily determined through visual and manual examinations or simple measurement techniques, utilizing Standard Measuring and Test Equipment (SMTE) as defined in the Inspection Methods section of MIL-W-63150, Weapons and Support Materiel, Standard Quality Assurance Provisions For.
- 4.4 PHYSICAL REQUIREMENTS VERIFICATION
- 4.4.1 Size and Weight. LMG-M will be confirmed to meet the requirements for size and weight (see 3.4.1).

- a. Perform examination of the LMG-M unit weight through V/M/S. Weight will be measured with standard rail interface, carry handle, bipod attached, buttstock, and unsuppressed barrel to determine conformance with 3.4.1.a.
  - b. Perform examination of the LMG-M unit weight through V/M/S. Weight will be measured with standard rail interface, carry handle, bipod attached, buttstock, and suppressed barrel to determine conformance with 3.4.1.b.
  - c. Perform examination of the LMG-M length along the major axis through V/M/S for length measurement. Length will be measured with collapsed but not folded buttstock, muzzle device, and with unsuppressed barrel to determine conformance with 3.4.1.c.
  - d. Perform examination of the LMG-M length along the major axis through V/M/S for length measurement. Length will be measured with collapsed but not folded buttstock, muzzle device, and with suppressed barrel to determine conformance with 3.4.1.d.
- 4.4.2 Barrel. LMG-M will be confirmed to meet the requirements for barrel (see 3.4.2).
- a. LMG-M primary and spare barrel will be removed and reinstalled according to manufacturer's instructions to determine conformance with 3.4.2.a.
  - b. LMG-M barrel will be removed and reinstalled IAW manufacturer's instructions to determine conformance with 3.4.2.b.
  - c. After caliber changes are completed IAW manufacturer's instructions, headspace gauging will be completed to determine conformance with 3.4.2.c.
  - d. Confirm by V/M/S that the barrel, to include hot barrel, can be changed in conformance with 3.4.2.d.
  - e. LMG-M will be inspected with V/M/S to verify barrel calibers provided to determine conformance with 3.4.2.e.
  - f. LMG-M will be inspected with V/M/S to verify barrel twist rate matches those specified in 3.4.2.f.
  - g. Record average muzzle velocity of both 7.62mm and .338 NM to determine conformance with 3.4.2.g.
  - h. The repeatability of impact shift when changing the same barrel will be determined using the following method to determine conformance with 3.4.2.j.
    - i. The following shall be conducted against 100 meter (109 yard) targets for each LMG-M configuration.
    - ii. Clean the weapon, fire twenty (20) rounds to foul the bore, settle the rifle action and zero the day optic sight.
    - iii. Establish an aimpoint on the target. This aimpoint shall be used for all targets and all configurations.
    - iv. Fire five (5) single shot rounds against the 100 meter (109 yard) target.
    - v. The mean point of impact is calculated and recorded for the group by taking the average of the X and Y coordinates of each shot.



- vi. Remove barrel completely, and then reinstall the same barrel; no additional settling shots are permitted.
- vii. Fire five (5) single shot rounds against the 100 meter (109 yard) target.
- viii. The mean point of impact is calculated and recorded for the group by taking the average of the X and Y coordinates of each shot.
- ix. Remove barrel completely, and then reinstall.
- x. Repeat steps (4) to (9) five times for a total of twelve (12) five-round groups.
- xi. The mean point of impact for all 12 groups must not exceed an AMR of 3.5 MOA in conformance with 3.4.2.h.
- xii. Performance of the LMG-M during single-shot precision and barrel life testing will be recorded. Required cleaning to maintain performance of the weapon in accordance with instructions provided by the manufacturer will be documented and reviewed to determine conformance with 3.4.2.h.
- i. Confirm during reliability testing, as outlined in 3.7.3, the LMG-M has a quick change barrel with a minimum service life of 8,000 rounds. Barrel service life is determined by four standards, 1) Velocity drop is more than 200 feet per second (61 m/s), 2) barrel no longer meets accuracy standards, 3) barrel fails gauging; headspace, barrel straightness, bore erosion 4) or barrel develops cracks. Accuracy degradation is defined, as the weapon/barrel can no longer meet the dispersion and targeting requirement.
- j. Confirm by V/M/S that LMG-M is equipped with a suppressor mounting device in conformance with 3.4.2.j.

4.4.3 Buttstock. LMG-M will be confirmed to meet the requirements for buttstock (see 3.4.3).

- a. Confirm by V/M/S that the LMG-M buttstock is in conformance with 3.4.3.a.
- b. Confirm during reliability testing, as outlined in 3.7.3, the buttstock is in conformance with 3.4.3.b.
- c. Confirm by V/M/S that the LMG-M buttstock is in conformance with 3.4.3.c.
- d. Confirm during reliability testing, as outlined in 3.7.3, the buttstock is in conformance with 3.4.3.d.
- e. Confirm by V/M/S that the LMG-M buttstock is in conformance with 3.4.3.e.

4.4.4 Spade Grip. LMG-M will be confirmed to meet the requirements for spade grip (see 3.4.4).

- a. Confirm by V/M/S that the LMG-M spade grip is in conformance with 3.4.4.a.

4.4.5 Charging Handle. LMG-M will be confirmed to meet the requirements for charging handle (see 3.4.5).

- a. Confirm by V/M/S that the LMG-M charging handle is in conformance with 3.4.5.a.
- b. Confirm by V/M/S that the LMG-M charging handle is in conformance with 3.4.5.b.

- c. Confirm by V/M/S that the LMG-M charging handle is in conformance with 3.4.5.c.
  - d. Confirm by V/M/S that the LMG-M charging handle is in conformance with 3.4.5.d.
  - e. Confirm by V/M/S that the LMG-M charging handle is in conformance with 3.4.5.e.
- 4.4.6 Stabilization. LMG-M will be confirmed to meet the requirements for stabilization (see 3.4.6).
- a. Confirm by V/M/S that the LMG-M bipod is in conformance with 3.4.6.a. Confirm LMG-M bipod provides stability during non-operational use as well as provides stability to permit delivery of the firing rate throughout the effective range during Reliability (4.7.3) and Single-Shot Precision testing (4.7.1).
  - b. Confirm by V/M/S that the LMG-M bipod is in conformance with 3.4.6.b.
  - c. Confirm by V/M/S that the LMG-M bipod is in conformance with 3.4.6.c.
  - d. Confirm during reliability testing (4.7.3) that the LMG-M is in conformance with 3.4.6.d.
  - e. Confirm by V/M/S that the LMG-M bipod is in conformance with 3.4.6.e.
  - f. Confirm by V/M/S that the LMG-M bipod is in conformance with 3.4.6.f.
- 4.4.7 Modularity and Ancillaries. LMG-M will be confirmed to meet the requirements for modularity and ancillaries (see 3.4.7).
- a. Confirm by V/M/S that the LMG-M carrying handle is in conformance with 3.4.7.a.
  - b. Confirm by V/M/S that the LMG-M modular sling is in conformance with 3.4.7.b.
  - c. Confirm by V/M/S that the LMG-M iron sights are in conformance with 3.4.7.c.
  - d. Confirm by V/M/S that the LMG-M carrying case is in conformance with 3.4.7.d.
  - e. Confirm by V/M/S that the LMG-M delivery method for parachuting exists and is in conformance with 3.4.7.e.
  - f. Confirm by V/M/S that the LMG-M forward rail is in conformance with 3.4.7.f.
  - g. Confirm by V/M/S that the LMG-M ammunition pouch mounting point is in conformance with 3.4.7.g.
  - h. Confirm by V/M/S that the LMG-M cleaning kit is in conformance with 3.4.7.h.
- 4.4.8 Sling. LMG-M will be confirmed to meet the requirements for sling (see 3.4.8).
- a. Confirm by V/M/S that the LMG-M sling is in conformance with 3.4.8.a.
  - b. Confirm by V/M/S that the LMG-M sling is in conformance with 3.4.8.b.
  - c. Confirm by V/M/S that the LMG-M sling is in conformance with 3.4.8.c.
- 4.4.9 External Material Finish. LMG-M will be confirmed to meet the requirements for external material finish (see 3.4.9).
- a. Confirm by V/M/S the LMG-M exterior material finish is in conformance with 3.4.9.a.

#### 4.5 WEAPON CONTROL REQUIREMENTS VERIFICATION

- 4.5.1 Workmanship. LMG-M will be confirmed to meet the requirements for workmanship (see 3.5.1).
- a. Confirm by V/M/S that the LMG-M workmanship is in conformance with 3.5.1.a.
- 4.5.2 Feeding. LMG-M will be confirmed to meet the requirements for feeding (see 3.5.2).
- a. Confirm by V/M/S that the LMG-M reversible feeding is in conformance with 3.5.2.a.
  - b. Confirm during Reliability testing (4.7.3) that the LMG-M properly expels spent shells in conformance with 3.5.2.b.
  - c. Confirm during Reliability testing (4.7.3) that the LMG-M ejects last link in conformance with 3.5.2.c.
  - d. Confirm during Reliability testing (4.7.3) that the LMG-M ammo is retain on the feed tray when cover is open and is in conformance with 3.5.2.d.
- 4.5.3 Safety/Selector. LMG-M will be confirmed to meet the requirements for safety (see 3.5.3).
- a. Confirm by V/M/S that the LMG-M safety is in conformance with 3.5.3.a.
  - b. Confirm by V/M/S that the LMG-M selector is in conformance with 3.5.3.b.
  - c. Confirm by V/M/S that the LMG-M selector is in conformance with 3.5.3.c.
  - d. Confirm by V/M/S that the LMG-M fire position indication is in conformance with 3.5.3.d.
- 4.5.4 Recoil Impulse. LMG-M will be confirmed to meet the requirements for recoil impulse (see 3.5.4).
- a. Confirm during Operational Testing that the LMG-M recoil energy is sufficiently low enough to facilitate effective employment of LMG-M to its max effective range day or night to determine conformance with 3.5.4.a.
- 4.5.5 Identification Markings. LMG-M will be confirmed to meet the requirements for identification markings (see 3.5.5).
- a. Confirm by V/M/S that the LMG-M is in conformance with 3.5.5.a.
  - b. Confirm by V/M/S that the LMG-M is in conformance with 3.5.5.b.
  - c. Confirm by V/M/S that the LMG-M is in conformance with 3.5.5.c.
  - d. Confirm by V/M/S that the LMG-M is in conformance with 3.5.5.d.
  - e. Confirm by V/M/S that the LMG-M is in conformance with 3.5.5.e.
  - f. Confirm by V/M/S that the LMG-M is in conformance with 3.5.5.f.
- 4.5.6 Firing Pin. LMG-M will be confirmed to meet the requirements for firing pin (see 3.5.6).

- a. Testing for LMG-M primer malfunctions shall be done concurrently with other forms of testing throughout verification. Spent casings will be sampled and inspected for pierced primers, loose primers, escape of gas around the primer cup, and any other primer-related malfunctions caused by the weapon system to determine conformance with 3.5.6.a.
- 4.5.7 Belt Pull. LMG-M will be confirmed to meet the requirements for belt pull (see 3.5.7).
- a. The LMG-M will be tested IAW TOP-3-2-045 Belt Pull section to determine conformance with 3.5.7.a.
- 4.5.8 Trigger Pull. LMG-M will be confirmed to meet the requirements for trigger pull (see 3.5.8).
- a. Confirm by V/M/S as well as testing in general accordance with TOP-3-2-045 Trigger Pull section that the LMG-M is in conformance with 3.5.8.a.

4.6 DESIGN REQUIREMENTS VERIFICATION

- 4.6.1 Proof Testing. LMG-M will be confirmed to meet the requirements for proof testing (see 3.6.1).
- a. Verify proof testing documentation of LMG-M is provided. All testing must be conducted IAW TOP 3-2-045 Proof Testing Section.
- 4.6.2 Interoperability. LMG-M will be confirmed to meet the requirements for interoperability (see 3.6.2)
- a. Confirm the LMG-M is compatible with current mobility platform/vehicle mounting solutions. Demonstrate that LMG-M weapon features all function per intent with each mobility platform/vehicle mounting solutions identified in Table VI. Confirm that there are no interference issues with the weapon and the mounts.

Table VI. Platform Interoperability Table

<b>Platform</b>
M125
M192
MK93 MOD 4
Swing Arm Mounts
MK99 MOD 1
M153 (CROWS II)

- b. Confirm the LMG-M is compatible with current Miniature Aiming Systems (MAS) optics, clip-on night vision devices, aiming lasers, and/or fire control systems in accordance with appropriate eye relief standards. Demonstrate that LMG-M weapon features all function per intent with each Miniature Aiming Systems (MAS) optics, clip-on night vision devices, aiming lasers, and/or fire control systems identified in Table VII.

Table VII. Accessory Interoperability Table

<b>Accessory</b>
ELCAN-SU230B
Trijicon 6x48 MGO
8.5” optic on a cantilever mount
LA-5

4.6.3 Parts Interchangeability. LMG-M will be confirmed to meet the requirement for parts interchangeability (see 3.6.3).

- a. The LMG-M will be field stripped into its major assemblies. The major assemblies will be placed into groups of parts. Interchange will be accomplished by systematically distributing the groups of parts into trays until each tray contains a complete weapon, in general accordance with the TOP 03-2-045.

Table VIII. Weapon Interchangeability Matrix

	Weapon 1	Weapon 2	Weapon 3	Weapon 4	Weapon 5
Bin 1	Group 1	Group 2	Group 3	Group 4	Group 5
Bin 2	Group 2	Group 3	Group 4	Group 5	Group 1
Bin 3	Group 3	Group 4	Group 5	Group 1	Group 2
Bin 4	Group 4	Group 5	Group 1	Group 2	Group 3
Bin 5	Group 5	Group 1	Group 2	Group 3	Group 4

- b. Upon completion of the interchange, each LMG-M will be subjected to safety function check, trigger pull, cyclic rate of fire of 200 rounds, belt pull and accuracy.

4.6.4 .338NM Signature Suppressor. LMG-M will be confirmed to meet the requirements for .338NM signature suppressor (see 3.6.4).

- a. Confirm by V/M/S that the LMG-M is in conformance with 3.6.4.a.
- b. Record rate of fire during Firing Rate testing (4.7.4) of both suppressed and unsuppressed weapons to determine conformance with 3.6.4.b.
- c. Confirm by V/M/S during Reliability Testing (4.7.4) that the LMG-M is in conformance with 3.6.4.c.
- d. Confirm by V/M/S that the LMG-M suppressor is in conformance with 3.6.4.d.

- e. Confirm by V/M/S that the LMG-M suppressor is in conformance with 3.6.4.e.
  - f. Confirm by V/M/S that the LMG-M is in conformance with 3.6.4.f.
- 4.6.5 .338 NM Visual Signature Reduction Device (VSDR). LMG-M will be confirmed to meet the requirements for VSDR (see 3.6.5)
- a. Confirm by V/M/S that the LMG-M VSDR is in conformance with 3.6.5.a.
- 4.6.6 Signature Reduction. LMG-M will be confirmed to meet the requirements for signature reduction (see 3.6.6).
- a. Flash Signature (Unsuppressed).

The average of each barrel tested (unsuppressed and suppressed configurations) will be measured. The purpose of the flash test is to determine the muzzle flash of a weapon. The test is conducted per the following steps and with supplied NSWCCrane test report.

- a. Visible flash duration and intensity validation of unsuppressed barrel will be evaluated by the following procedure.
  - i. Conduct testing in a dark environment. Fire weapon from fixture or repeatable bench position within 0.25 inch in left/right and forward/rear orientations to ensure repeatable measurements.
  - ii. Set up testing equipment per supplied test report.
    - (1) Place front edge of lens 10 feet from approximate center of the flash event, downrange, at 5° left or right of bullet path. Ensure unimpeded line of sight between flash measurement equipment and muzzle of weapon.
    - (2) Configure test equipment per supplied test report.
  - iii. Fire 10 shots, using .338 NM ammunition. Fire 1 round every 3 seconds after the first round is fired.
  - iv. Allow weapon to cool 30 minutes after completion of 10 rounds fired.
  - v. Repeat steps ii and iii for three groups of 10 rounds fired.
  - vi. Collect and analyze data, using Flash Measurement equipment:
    - (1) 2-inch diameter lens of 150 mm focal length.
    - (2) Unfiltered photodiode; model SED033, International Light Inc.
    - (3) Transimpedance Amplifier; TTI Inc.
    - (4) National Instruments cDAQ set to 100 kHz sampling rate.
    - (5) 1000 °C blackbody source (1-inch cavity) using a variable aperture wheel.
    - (6) Five (5) apertures ranging from 1.6 mm to 12.7 mm for three (3) order of magnitude radiant intensity calibrations.

Confirm LMG-M is in conformance with 3.6.6.a.

- b. Flash Signature (Suppressed).
  - a. Verify performance of suppressed configuration using steps outlined in 4.6.6.a.  
Confirm LMG-M is in conformance with 3.6.6.b.
- c. Noise Signature (Unsuppressed).
  - a. A noise test shall be conducted outdoors using one LMG-M of each caliber, with and without suppressor. The peak sound pressure levels shall be measured IAW TOP 3-2-045, section 4.7.2. Noise, at the locations given below, with microphones and the horizontally oriented weapon at a height of 5 feet – 3 inches (1.6 meters):
    - a. Right-handed shooter's left ear position.
    - b. 5 meters to the right front of the weapon, at 45°.
    - c. 5 meters to the right and parallel to the weapon muzzle, at 90°.
    - d. 5 meters to the right rear of the weapon, at 135°.
    - e. 5 meters directly to the rear of the weapon, at 180°.
    - f. 5 meters to the left rear of the weapon muzzle, at 225°.
    - g. 5 meters to the left and parallel to the weapon muzzle, at 270°.
    - h. 5 meters to the left front of the weapon, at 315°.

Confirm LMG-M is in conformance with 3.6.6.c.

- d. Noise Signature (Suppressed).
    - a. Verify performance of suppressed configuration using steps outlined in 4.6.6.c.  
Confirm LMG-M is in conformance with 3.6.6.d.
  - e. Ground Disturbance (Unsuppressed).
    - a. Test LMG-M IAW NATO D14 Handbook, section 2.7.4 test methodology for Sand Cloud. Confirm LMG-M is in conformance with 3.6.6.e.
  - f. Ground Disturbance (Suppressed).
    - a. Verify performance of suppressed configuration using steps outlined in 4.6.6.e.  
Confirm LMG-M is in conformance with 3.6.6.f.
- 4.6.7 Blowback. LMG-M will be confirmed to meet the requirements for blowback (see 3.6.7).
- a. Confirm during Operational Testing that the LMG-M blowback does not inhibit the end-user from effectively employing the LMG-M while suppressed to meet conformance with 3.6.7.a.

- 4.6.8 Optics and Fire Control. LMG-M will be confirmed to meet the requirements for optics and fire control (see 3.6.8).
- a. Confirm by V/M/S that the LMG-M rail is in conformance with 3.6.8.a.
  - b. Confirm by V/M/S that the LMG-M rail is in conformance with 3.6.8.b.
  - c. Confirm barrel changes are not delayed by more than 12.5 seconds by DVO and/or SOF-p clip-on enabler interference by timing a barrel change to determine conformance with 3.6.8.c.
  - d. Confirm by V/M/S that the LMG-M alignment is in conformance with 3.6.8.d.
  - e. Confirm by V/M/S that the LMG-M rail is in conformance with 3.6.8.e.
- 4.6.9 Training Conversion Kit. LMG-M will be confirmed to meet the requirements for training conversion kit (see 3.6.9).
- a. Confirm LMG-M 7.62mm conversion kit meets Physical (3.4), Weapon Control (3.5), Design (3.6) and Operational (3.8) requirements, and can utilize the full 7.62mm suite of ammunition and training munitions to meet conformance with 3.6.9.a.
  - b. Verify by reliability testing that the LMG-M with 7.62mm training bolt is capable of safely firing 7.62mm CCBS linked training ammunition to determine conformance with 3.6.9.b.
  - c. Confirm by V/M/S that the LMG-M conversion kit is in conformance with 3.6.9.c.
  - d. Confirm by V/M/S that the LMG-M conversion kit is in conformance with 3.6.9.d.
  - e. Confirm by V/M/S that the LMG-M conversion kit is in conformance with 3.6.9.e.
  - f. Confirm by V/M/S that the LMG-M conversion kit is in conformance with 3.6.9.f.
  - g. Confirm by V/M/S that the LMG-M conversion kit is in conformance with 3.6.9.g.
  - h. Record rate of fire during Firing Rate testing (4.7.4) of both suppressed and unsuppressed weapons to determine conformance with 3.6.9.h.
- 4.6.10 Training/Support Equipment. LMG-M will be confirmed to meet the requirements for training/support equipment (see 3.6.10).
- a. Confirm by V/M/S that the LMG-M is in conformance with 3.6.10.a.
  - b. Confirm by V/M/S that the LMG-M is in conformance with 3.6.10.b.
  - c. Confirm by V/M/S that the LMG-M is in conformance with 3.6.10.c.
  - d. Confirm by V/M/S that the LMG-M is in conformance with 3.6.10.d.

#### 4.7 PERFORMANCE CHARACTERISTICS VERIFICATION

- 4.7.1 Single-Shot Precision. LMG-M will be confirmed to meet the requirements for single-shot precision (see 3.7.1).
- a. LMG-M will be tested from a fixture, semi automatically firing a quantity of 5 5-shot groups each to determine system precision capabilities using .338 NM ammunition at 100 meters. Mean Radii will be recorded for each 5 shot group. A minimum of ten



- (10) zeroing / settling shots will be fired for each fixture installation of LMG-M. Precision testing will be done in an indoor testing facility to remove additional variables in precision testing. Results will be analyzed to determine conformance with 3.7.1.a.
- 4.7.2 Burst Dispersion. LMG-M will be confirmed to meet the requirements for burst dispersion (see 3.7.2).
- a. LMG-M will be tested from a fixture, automatically firing a quantity of 5 5-shot bursts each to determine system precision capabilities using .338 NM ammunition at 100 meters. Mean Radii will be recorded for each 5 shot burst. A minimum of ten (10) zeroing / settling shots will be fired for each fixture installation of LMG-M. Dispersion testing will be done in an indoor testing facility to remove additional variables in precision testing. Results will be analyzed to determine conformance with 3.7.2.a.
- 4.7.3 Reliability. LMG-M will be confirmed to meet the requirements for reliability (see 3.7.3).
- a. Test LMG-M IAW TOP 3-2-045 Reliability and Durability Machine Gun method. Weapon will be cleaned using a standard schedule of cleaning and lubrication, without disassembly (wipe and lubricate), at 2000 rounds followed by a complete disassembly, inspection, cleaning and lubrication at 4000 rounds. Results will be analyzed to determine conformance with 3.7.3.a.
- b. Test LMG-M IAW TOP 3-2-045 Reliability and Durability method, to determine receiver service life. It may not be economically feasible to fire such weapons to their expected service life. In such cases requirement documents and statistical decisions should be factors in determining the number of test rounds. Results will be analyzed to determine conformance with 3.7.3.b.
- 4.7.4 Firing Rate. LMG-M will be confirmed to meet the requirements for firing rate (see 3.7.4).
- a. Confirm LMG-M cyclic is between 450-650 rounds per minute. By loading and firing 20 warming rounds of .338 NM ammunition. Measure the cyclic rate using a shot timer. Take the measurements over five (5) twenty (20) round bursts for 100 rounds per weapon. The average of the five twenty round bursts will be recorded as the average cyclic rate for the weapon. Maintain round count records on all barrels and receivers. Record results for each weapon on the test data sheet to determine conformance with 3.7.4.a.
- 4.7.5 Caliber and Chamber. LMG-M will be confirmed to meet the requirements for caliber and chamber (see 3.7.5).
- a. Verify during reliability testing, outlined in 4.7.3, that the LMG-M is capable of safely firing .338 NM ammunition to determine conformance with 3.7.5.a.

- b. Confirm LMG-M successfully completes the TOP 3-2-045 Ammunition Compatibility section with all known .338NM ammunitions to determine conformance with 3.7.5.b.
- 4.7.6 Weapon Maintenance/Lubrication. LMG-M will be confirmed to meet the requirements for unlubricated weapon (see 3.7.6).
- a. Verify during reliability testing, outlined in 4.7.3, that the LMG-M is capable of functioning reliably when cleaned and lubricated for a duration of 300 rounds to determine conformance with 3.7.6.a.
  - b. The LMG-M will be tested IAW TOP-3-2-045 Supplemental Tests - Unlubricated section to determine conformance with 3.7.6.b.
- 4.7.7 Stress Testing. LMG-M will be confirmed to meet the requirements for stress testing (see 3.7.7).
- a. The LMG-M with unsuppressed barrel will be subjected to continuous rapid, automatic fire of 600 rounds. Once complete LMG-M will be inspected by V/M/S to determine conformance with 3.7.7.a.
  - b. The LMG-M with suppressed barrel will be subjected to continuous rapid, automatic fire of 400 rounds. Once complete LMG-M will be inspected by V/M/S to determine conformance with 3.7.7.b.
- 4.7.8 Cook Off. LMG-M will be confirmed to meet the requirements for cook off (see 3.7.8).
- a. The LMG-M will be subject to cook-off testing IAW TOP 3-2-045 Cook-Off Section to determine conformance with 3.7.8.a.

#### 4.8 OPERATIONAL AND ENVIRONMENTAL VERIFICATION

- 4.8.1 Environmental. LMG-M will be confirmed to meet the requirements for environmental (see 3.8.1).
- a. Operational Temperature: LMG-M will be subject to testing IAW TOP 3-2-045 Extreme Temperatures Test to determine conformance with 3.8.1.a.
  - b. Rain: LMG-M will be subject to testing IAW TOP 3-2-045 4.5.3 Water Spray (rain) Test to determine conformance with 3.8.1.b.
  - c. Sand and dust: LMG-M will be subject to testing IAW TOP 3-2-045 4.5.4 Sand and Dust Test to determine conformance with 3.8.1.c.
  - d. Mud: LMG-M will be subject to testing IAW TOP-3-2-045 Mud Test to determine conformance with 3.8.1.d.
  - e. Altitude (low air pressure): LMG-M will be subject to testing IAW TOP-3-2-045 Attitudes Test to determine conformance with 3.8.1.e.
  - f. Deep Water Immersion: LMG-M will be subject to testing IAW TOP-3-2-045 Deep Water Immersion Test to determine conformance with 3.8.1.f.

- g. Salt Water Immersion: LMG-M will be subject to testing IAW TOP-3-2-045 Salt Water Immersion Test to determine conformance with 3.8.1.g.
- h. Salt Fog: LMG-M will be subject to testing IAW TOP-3-2-045 Salt Fog Test to determine conformance with 3.8.1.h.
- i. Freezing rain and ice: LMG-M will be subject to testing IAW TOP 3-2-045 Icing Test to determine conformance with 3.8.1.i.
- 4.8.2 Obstructed Bore. LMG-M will be confirmed to meet the requirements for obstructed bore (see 3.8.2).
- a. The LMG-M will be subject to water-filled bore testing IAW TOP 3-2-045 Blocked Barrel section to determine conformance with 3.8.2.a.
- b. The LMG-M will be subject to bullet obstruction testing IAW TOP 3-2-045 Blocked Barrel section to determine conformance with 3.8.2.b.
- 4.8.3 Coatings, Corrosion Resistance and Immersion. LMG-M will be confirmed to meet the requirements for coatings, corrosion resistance and immersion (see 3.8.3).
- a. Confirm by V/M/S that LMG-M is in conformance with 3.8.3.a.
- 4.8.4 Chemical Resistance. LMG-M will be confirmed to meet the requirements for chemical resistance (see 3.8.4).
- a. All components of the LMG-M will be tested based on TOP 3-2-045 and TOP-3-2-609 to the chemicals listed in Table IX to determine conformance with 3.8.4.a.

Table IX. Conditioning Chemicals Table

	Compound Name	Details
1	Cleaning compound, solvent	MIL-L-372B Bore cleaner
2	Dry cleaning solvent	P-D-680, type I or equivalent (naphtha solvent)
3	Engine oil	MIL-L-2104
4	Lubricant, semi-fluid, automatic weapon	MIL-L-46000B (LSA)
5	Lubricating oil, general purpose	VV-L-800 (PL-S)
6	Lubricant, cleaner, and preservative	MIL-L-63460A (CLP)
7	Gasoline, commercial, or combat	ASTM D 910
8	Turbine fuel (JP-8)	MIL-T-83133
9	Fuel oil diesel (DL-2)	ASTM D 975 Grade Low Sulfur No. 2
10	Insect repellent	0-I-503E
11	Dexron VI	Transmission fluid

12	Antifreeze, ethylene glycols	MIL-A-46153
13	Carbon-removing compound	P-C-111B, type II
14	Water	Water (distilled)
15	Simulated sea water or 5% Sodium chloride	ASTM D1141
16	Decontaminating agent DS2	MIL-D-50030
17	Lubricating oil, weapons	MIL-L-14107 (LAW)
18	Hydraulic fluid, petroleum base	MIL-H-5606
19	Hydraulic fluid, fire-resistant	MIL-H-46170

- b. The LMG-M will be tested for adverse effects due to cleaning in common, authorized armory cleaning tanks. The LMG-M and other ancillary ideas, will be cleaned in various approved armorer-level cleaning tanks. Weapons will be monitored for degradations to surface finish(s) or substrate over the course of repeated cleanings to determine conformance with 3.8.4.b.

4.8.5 Rough Handling. LMG-M will be confirmed to meet the requirements for rough handling (see 3.8.5).

- a. The LMG-M with stowed bipod will be dropped in the five orientations specified in TOP-3-2-045 Rough Handling – 5’ Drop section plus three additional orientations with the bipod deployed as indicated in Table X to determine conformance with 3.8.5.a.

Table X. Drop Test Results

Drop #	Orientation	Pass/Fail
1	Major Axis horizontal, normal firing position, bipod stowed	
2	Major Axis vertical, butt down, bipod stowed	
3	Major Axis vertical, muzzle down, bipod stowed	
4	Major Axis 45 degrees from vertical, butt down, bipod stowed	
5	Major Axis 45 degrees from vertical, muzzle down, bipod stowed	
6	Major Axis horizontal, normal firing position, bipod deployed	
7	Major Axis 45 degrees from vertical, butt down, bipod deployed	
8	Major Axis 45 degrees from vertical, muzzle down, bipod deployed	

- b. Confirm LMG-M with Bipod shall withstands a loose cargo vibration test in accordance with MIL-STD-810E Method 514.4. Confirm the weapon functions and shows no change in accuracy to determine conformance with 3.8.5.b.

4.8.6 Attitude Testing. LMG-M will be confirmed to meet the requirements for attitude testing (see 3.8.6).

LMG-M will be subjected to testing IAW TOP 3-2-045 Attitudes Test to meet requirements in 3.8.6 and Table XI to determine conformance with 3.8.6.a.

Table XI. Test Sequence for Attitudes Testing

<b>Weapon Elevation</b>	<b>Weapon Orientation</b>
0°	Normal
0°	Upside Down
0°	Right Side Up
0°	Left Side Up
Maximum depression (-80° to -85°)	Normal
Maximum elevation (80° to 85°)	Normal

## 5 TECHNOLOGY READINESS

Each manufacturer that responds to the solicitation will be evaluated during the full and open competitive process and selected based on the criteria of this performance specification document. Each capability will be evaluated and selected based on this requirement's criteria, formal solicitations, early user evaluations, and formal developmental and operational test criteria.

## 6 PACKAGING

For acquisition purposes, the packaging requirements shall be as specified in the contract or order. Production items shall be packaged per MIL-STD-2073/1E, while product samples may be packaged per ASTM D 3951. Packaging marking shall be IAW MIL-STD-129. When packaging of material is to be performed by DoD or in-house vendor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the inventory control point's packaging activity within the military service or defense agency, or within the military service's system command. Packaging data retrieval is available from the managing military department or defense agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity. To include packaging deliverable drawing

## 7 NOTES

7.1 MOA references. All references to MOA are true MOA values unless notated otherwise.

7.2 Definitions.

Table XII. Definitions

Term	Definition
Analysis	An element of verification that uses 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.
Common tools	Refers to Small Arms tool kit NSN 5180-01-559-5981 and/or Multi-tool (NSN 5110-01-394-6252)
CLP	Cleaner, Lubricant and Preservative
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 items may be instrumented and performance monitored.
Deployed position	Folding buttstock in the position used to interface with the operators shoulder is referred to as the Deployed position.
MOA	An angular measurement called minute of angle that is 1/60 of a degree, which is considered to be 1.047 inches at 100 yards, 3.14 inches at 300 yards, 5.24 inches at 500 yards. All references to MOA are true MOA unless notated otherwise.
Non-destructive testing	Use of analysis techniques to examine an object, material or system without causing damage.
Outside tools	Any tool outside of Multi-tool (NSN 5110-01-394-6252) capability.
Repair	The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correction specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
ROF	Rate of fire in shots per minute when fired in full-automatic mode.
Special tool	A unique and/or new tool/device needed by the soldier for the weapon's field-level maintenance. Field-level maintenance tools shall be common with the Multi-tool (NSN 5110-01-394-6252) and/or Small Arms Repairer Tool Kit (NSN 5180-01-559-5981) for operator- and unit-level tasks. Field-level direct support tasks include the use of the above-mentioned tool kits and the Small Arms Shop Set (NSN 4933-00-754-0664).

Test	An element of verification in which scientific principles and procedures are applied to determine the properties or functional capabilities of items.
Stowed position	Folding buttstock in the position used to decrease over all length of the weapon is referred to as the Stowed position.

### 7.3 Abbreviations and acronyms.

Table XIII. Abbreviations/Acronyms

Abbreviation/Acronym	Definition
AES	Average Extreme Spread
CDD	Capabilities Development Document
DoD	Department of Defense
DVO	Direct View Optics
F	Fahrenheit
HMG	Heavy Machine Gun
IAW	In Accordance With
LMG-M	Lightweight Machine Gun - Medium
KPP	Key Performance Parameter
KSA	Key System Attributes
M-Lok	Modular Lock
MAS	Miniature Aiming Systems
MMG	Medium Machine Gun
MIL-STD	Military Standard
MOA	Minute of Angle
MRB	Marine Raider Battalion
MSOT	Marine Special Operations Teams
NM	Norma Magnum
NATO	North Atlantic Treaty Organization
NSWC	Naval Surface Warfare Center
NSWG	Naval Surface Warfare Groups
O	Objective
OD-A	Operational Detachment - Alpha
OD-B	Operational Detachment - Bravo
OD-C	Operational Detachment - Charlie
QA	Quality Assurance
SBT	Special Boat Teams
SDV	SEAL Delivery Vehicle
SEAL	Sea Air and Land
SMTE	Standard Measurement and Test Equipment
SOF	Special Operation Forces

SOF-p	Special Operations Forces - peculiar
SOT-A	Special Operations Team - Alpha
STS	Special Tactics Squadrons
T	Threshold
USSOCOM	United States Special Operations Command
VL	Verification Level
V/M/S	Visual/Manual/Standard



\*This document is provided for informational purposes only at this time. These tiered objectives will not be considered part of the evaluation criteria regarding quads, white papers, or briefings associated with the upcoming Assessment Event. However, this information will be part of evaluation criteria for Industry partners who are selected for post-Assessment Event competition at a future date. This document will be described in greater detail for industry partners invited to the in-person Assessment Event.

Once threshold (T) requirements have been met in accordance with the DRAFT LMG-M P-spec (also part of this announcement), the government prioritizes the objective (O) requirements below based on their respective tier. Tier 1 will be "scored" higher than Tier 2, and so on. There is no prioritization within the tiers.

Objectives	Requirement
<b>TIER 1</b>	
Reliability	3.7.2.a
Burst Dispersion Precision	3.7.1*
Weapon Maintenance and Lubrication	3.7.5.b
Cook-Off	3.7.7.b
Single Shot Precision	3.7.1
Visual Signature Reduction Device	3.6.5
Receiver Life	3.7.2.b
Barrel Service Life	3.4.2.d
<b>TIER 2</b>	
Flash	3.6.6.2
Rate of Fire	3.7.3
Stress Testing	3.7.6.b
Flash	3.6.6.1
Ground Disturbance	3.6.6.4
Coatings, Corrosion Resistance and Immersion.	3.8.3

Highest Priority

\* Objectives are not prioritized within the Tiers

Length	3.4.1.c
<b>TIER 3</b>	
Blowback	3.6.7
Weight	3.4.1.a
Weight	3.4.1.b
Length	3.4.1.d
Safety/Selector	3.5.3
Rate of Fire	3.6.4
Operational Temperature	3.8.1.a
<b>TIER 4</b>	
Safety/Selector	3.5.3
Safety/Selector	3.5.3
Feeding/Ejection	3.5.2.c
Safety/Selector	3.5.3
Signature Suppressor	3.6.4
Sound	3.6.6.3
Buttstock	3.4.3.b
Training and Support Equipment	3.6.10
Attitude testing	3.8.6

Lowest Priority