HEADQUARTERS
PHILIPPINE ARMY
OFFICE OF THE ARMY CHIEF QUARTERMASTER
Fort Andres Bonifacio, Metro Manila

TEST AND EVALUATION PROCEDURE

PHILIPPINE ARMY BALLISTIC HELMET
QM SPEC NR IE-22PABH dtd 6 September 2017 with Amendment 1 dated 11 February 2019 (Interim)

A. POST QUALIFICATION PROCEDURES

SECTION 1 – GENERAL

1.1 **AUTHORITY:** The Test and Evaluation (T&E) is being conducted in line with the provisions of the RA 9184.

1.2 **OBJECTIVE:** The objective of this T&E is to determine the responsiveness of the Bidder with the Lowest Calculated Bid (LCB) as endorsed by the Bids and Awards Committee (BAC).

1.3 **SCOPE**: This T&E Procedures will be conducted only on the Ballistic Helmet (FPE) submitted by the Bidder with the LCB as part of the post qualification procedures by the BAC.

1.4 **METHODOLOGY**: The tests include physical inspection and laboratory tests for the FPE. Records check will also be conducted as appropriate including third party publications.

1.5 **POST QUALIFICATION CRITERIA**: The rating that will be applied for the Post Qualification Test is either Passed (P) or Failed (F) for samples submitted by the bidder.

1.6 **SAMPLES**: Refer to Table 1 – Allocation of Samples.

SECTION 2 – TEST PROPER

1. PHYSICAL INSPECTION

1.1. Purpose: To determine the conformance of the physical characteristics of the Ballistic Helmet to the required specification

1.2. Procedure:

1.2.1. Visually and manually inspect the components of the Ballistic Helmet *(Basic Shell, Retention System and Suspension pad system)*

1.2.2. Measure the dimensions, weight and protection coverage of the Ballistic Helmet.

1.2.3. Inspect the compatibility and interoperability of the Ballistic Helmet to the existing equipment of the Philippine Army.

1.2.4. Inspect the label permanency with the following procedure:

1.2.4.1. A representative area of the label markings shall be rubbed by hand for 15 seconds with a cotton cloth soaked with distilled water.

1.2.4.2. The same area shall then be rubbed by hand for 15 secs with a cotton cloth soaked with denatured alcohol (methylated spirit).

1.2.4.3. Finally, the same area shall then be rubbed by hand for 15 seconds with cotton cloth soaked with isopropyl alcohol.

1.3. Standard:

1.3.1. Weight:

Maximum Overall weight of the Ballistic Helmet	**Small**	**Medium**	**Large**	**X- Large**
	1.33 kgs	1.38 kgs	1.5 kgs	1.75
	• The Overall weight includes the basic shell, retention system and suspension pad system			

1.3.2. Basic Shell

1.3.2.1. Design and Construction

1.3.2.1.1. Shall be Advance Combat Helmet design with full cut design.

1.3.2.1.2. The outer and inner surfaces of the shell, including the bottom edge, shall be finished smooth and even.

1.3.2.1.3. Both the inside and outside surfaces of the shell shall be free from any hole, void, delamination, blister, cracking, crazing, and dry spot.

1.3.2.1.4. The finished shell shall also include the hook disk at the inner surface of the shell for attachment.

1.3.2.1.5. The edge of the shell shall be finished with rubber trim.

1.3.2.1.6. Color: Olive Drab

1.3.2.2. Head Protection Coverage: It shall cover the front, back, sides and crown/top of the head. It shall be measured using a 3D white light scanning device or its equivalent at the manufacturer's facility.

Sizes	Length, mm (minimum)	Width, mm (minimum)	Height, mm (minimum)	Circumference, mm (minimum)	Outer Shell Coverage Area (cm^2)
Small	228	210	157	530 – 550	1025 ± 50
Medium	237	217	157	550 – 570	1090 ± 50
Large	248	225	160	570 – 590	1150 ± 50
X-Large	262	237	168	590 – 610	1250 ± 50

1.3.2.3. Sizes

	Small (cm)	Medium (cm)	Large (cm)	X- Large (cm)
Sizes	53 – 55	55 – 57	57 – 59	59 – 61

1.3.3. Retention System

1.3.3.1. Design and Construction

1.3.3.1.1. It shall consist of a 4-point chinstrap, black in color, nape pad and ratchet system and designed for one-handed operation (closure and adjustment). The adjustment should be done in one direction. It shall have a provision for a quick release mechanism.

1.3.3.1.2. The chin strap shall have a Chinstrap anchorage capacity of 25kg to 40 kg when tested as per EN397 protocol.

1.3.3.1.3. The attachment of the retention system shall not require additional drill hole and bolt in order not to pose secondary hazard and maintain the ballistic integrity of the helmet.

1.3.3.1.4. Documentation shall be provided to verify that the retention system meets the health and safety requirements.

1.3.4. Suspension Pad System

1.3.4.1. Design and Construction

1.3.4.1.1. The helmet shall utilize a multi-layered pad suspension system consisting of seven (7) pads (minimum): One circular, two trapezoidal, and four oblong/oval pads.

1.3.4.1.2. The pads shall possess means of easy attachment, removal, and reattachment to the inside helmet shell. The pads shall remain firmly in place when attached.

1.3.5. NVG Mounting System

1.3.5.1. Design and Construction

1.3.5.1.1. The shroud/mounting system shall fit to any size of the helmet.

1.3.5.1.2. The attachment to the shell shall have a maximum of single bolt and shall not require any modification or additional drill holes.

1.3.5.1.3. No hole delamination shall be greater than 1/8 – inch from the edge of the hole or other damage of the shell material as a result of making the hole.

1.3.5.1.4. The bolt shall not pose secondary hazards /fragments to the user.

1.3.5.1.5. Color: Olive Drab

1.3.5.1.6. The bolt shall be rust resistant in accordance to ASTM B117.

1.3.5.2. Integration and Compatibility

1.3.5.2.1. The shroud shall be universal and fit to the existing NVG equipment of the Philippine Army (PVS – 7B and PVS – 14 Generation II and III) and shall provide a bracket/adapter for A100 monocular NVG model.

1.3.5.2.2. The NVG system shall have no unnecessary movement or displacement when attached to the helmet.

1.3.6. Ballistic Eyewear

1.3.6.1. The helmet shall have a Ballistic Eyewear. (Spectacle/Shade Type)

1.3.6.2. The eyewear shall have flexible strap end or retention strap for custom fit with the helmet or simply with the head.

1.3.6.3. The eyewear shall have a separate carrying case capable of carrying all components of the eyewear.

1.3.7. Helmet Cover

1.3.7.1. Design and Construction

1.3.7.1.1. The helmet cover shall be in ripstop design.

1.3.7.1.2. The helmet shall be fitted with various cover corresponding to each sizes.

1.3.7.1.3. The helmet cover shall be securely in place on the helmet.

1.3.7.1.4. It shall cover the entire surface of the outer coverage area of the helmet. The mounting system shall be placed or attached over the helmet cover.

1.3.7.1.5. Color and Design: PHILARPAT

1.3.8. Rail System

1.3.8.1. It shall consist of left and right rails that fit to all sizes.

1.3.8.2. It shall have entry points along upper and lower dovetails to enable multiple entry points that can accept widely used rail bases, such as swivel clips, picatinny and winged rail bases. It can also accommodate clips for oxygen mask or gas mask.

1.3.8.3. The design shall allow for easy one handed attachment for widely used rail bases.

1.3.8.4. The attachment of railing system shall not require additional drill hole and bolt in order not to pose secondary hazard and maintain the ballistic integrity of the helmet.

1.3.8.5. It shall match the helmet shell curvature ensuring secure helmet mounting for accessory stability.

1.3.8.6. Color: Olive Drab

1.3.9. Counter Weight System

1.3.9.1. The ballistic helmet shall be provided with counterweight that will counter the weight of the NVG of the Philippine Army and other front mounted devices.

1.3.9.2. The counterweight shall be detachable and can be removed by the user when not needed.

1.3.9.3. The counterweight system shall not use any additional drill holes in attaching the system.

1.3.9.4. The counterweight system shall not be attached primarily by a hook and loop tape. It shall be well fitted, stable and shall have no unnecessary displacement.

1.3.10. Other Requirements

1.3.10.1. It shall have a Helmet Bag with provision for name tag and PHILARPAT color/design.

1.3.10.2. The Helmet Bag shall have the same material as the helmet cover.

1.3.10.3. Label:

1.3.10.3.1. It shall be permanently mark and written in English language. It shall have the following minimum information:

i) Name, address, and logo of the manufacturer
ii) Rated level of protection: 9mm FMJ; .357 SIG FMJ & .45 FMJ; V50 = 720 m/s (min)
iii) Size
iv) Date Manufacture
v) Model Designation
vi Lot number or production batch number

1.3.10.3.2. Each set of Ballistic Helmet and eyewear shall have a manual or brochure on the equipment's proper use and maintenance (available in hard and e-copy).

1.3.10.3.3. There shall be an appropriate tool kit to be provided in detaching the NVG mounting system, if applicable.

2. LABORATORY TEST

2.1. Purpose: To determine the conformance of the submitted sample of Ballistic Helmet on the required specification for non-ballistic test compliance.

2.2. Procedure: Subject the submitted sample to laboratory test from any third party testing facility and manufacturer's facility as specified herein:

PARAMETERS	REQUIREMENTS	LABORATORY	TEST METHOD
BASIC SHELL			
Flame Resistance	The flame shall self-extinguished within 5 seconds. There shall be no melting or dripping of the materials of the shell body	Third Party testing laboratory	BS EN 397; ASTM D6413;
Compression Resistance	a) Lateral deformation ≤ **40mm** b) Residual lateral deformation ≤ **15mm**	Third Party testing laboratory	BS EN397; AR/PD 10 – 02
Seawater Resistance	a) Increase in weight ≤ **3%** b) Increase in thickness ≤ **2.5%** c) No evidence of softening, peeling, blistering, cracking & delamination	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.14.12
High Temperature	a) visually no degradation in shell and no degradation in paint b) Change in thickness ≤ **2.5%**	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.14.5
Cold Temperature	a) visually no degradation in shell and no degradation in paint b) Change in thickness ≤ **2.5%**	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.14.6
Blunt Impact Protection	a) Individual acceleration ≤ 150G b) No physical damage and indentation is ≤ 4 mm	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.13; FMVSS 218
RETENTION SYSTEM			
Chinstrap Anchorage / load bearing capacity	a) No less than 25 kg b) Not more than 40 kg	Third Party testing laboratory or Manufacturer's facility	BS EN397
Webbing Breaking Strength	1000 N (minimum)	Third Party testing laboratory or Manufacturer's facility	ASTM D 6775-13
SUSPENSION PAD SYSTEM			
Pad Compression durability	No signs of deterioration which includes: a) loss of resiliency b) not returning to its original shape and thickness c) physical damage	Third Party testing laboratory or Manufacturer's facility	AR/PD 10-02, clause 4.9.8.3

Water absorbency	Increase in weight: **≤ 3%**	Third Party testing laboratory or Manufacturer's facility	AR/PD 10-02, clause 4.9.8.4 / AATCC 79 – 2010
Moisture Wicking Test	Inner material shall wick moisture away.	Third Party testing laboratory or Manufacturer's facility	AR/PD 10-02, clause 4.9.8.5 / AATCC TM 198 – 2010
The hook disk and fastener	shall be durable and shall meet the requirements stated in Para 2.3.3.2.4 (Amendment 1)	Third Party testing laboratory or Manufacturer's facility	BS EN 13780; BS EN1414; BS EN 12242
NVG MOUNTING SYSTEM			
Bolt	Rust resistant	Third Party testing laboratory or Manufacturer's facility	ASTM B117
HELMET COVER			
Material	Polyester	Third Party testing laboratory or Manufacturer's facility	AATCC TM 20 – 2011
Abrasion Resistant	2000 (minimum)	Third Party testing laboratory or Manufacturer's facility	ASTM D3884 – 01: 2007
Colorfastness:			
Laundering (5 cycles)	4 (minimum)	Third Party testing laboratory or Manufacturer's facility	BS EN ISO 105 – C06
Daylight (Xenon Arc)	4 (minimum)	Third Party testing laboratory or Manufacturer's facility	BS EN ISO 105 – B02

3. DOCUMENTATION

3.1. Purpose: To determine the conformance of the submitted ballistic eyewear to the required specifications and the toxicity of the retention system.

3.2. Procedure:

3.2.1. The submitted sample shall be subjected to physical inspection as to indicative markings *(i.e "Z87+", CE etc)* to determine compliance to the required standards set forth in the specification.

3.2.2. The ballistic eyewear shall be accompanied with Certificate of conformity and ballistic test reports that it is compliant to the required standards from an internationally recognized third party testing laboratory as per para 2.3.5.2.1 of the specification (Amendment 1).

3.2.3. The manufacturer shall furnish information which certifies that the Retention system is composed of materials which have been safely used commercially or provide sufficient toxicity data to show compatibility with prolonged skin contact.

3.3. Standards:

3.3.1. The eyewear shall indicate anti-fogging performance and scratch resistance.

3.3.2. It shall be compliant to either of the following standards:

a. ANSI Z87.1 – 2010
b. MCEPS GL – PD 10 – 12
c. EN 166
d. STANAG 2920/MIL-PRF-32432 or MIL STD 662 with a minimum V50 of 150 m/s (5.8 gr/17 gr; .15 Cal/.22 Cal)

3.3.3. It shall indicate a minimum of UVA protection in accordance with MCEPS/MIL-PRF-32432/ ANSI Z87.1 – 2010.

3.3.4. Materials used in the retention system shall be suitable for use, including prolonged skin contact, and be comfortable to use. The components of the retention system shall not pose any health hazard or skin irritation and allergies.

4. BALLISTIC TEST

4.1. Purpose: To determine the conformance of the submitted sample to the required ballistic protection.

4.2. Procedure:

4.2.1. Subject the Ballistic Helmet to ballistic test at any NIJ accredited test facility.

4.2.2. Subject the Ballistic Helmet for a bolt shot at any NIJ accredited test facility.

4.3. Standard

4.3.1. The Ballistic Helmet shall have a minimum level of protection in accordance to NIJ Standard 0106.01 test standard and AR/PD 10-02. There shall be no penetration on the helmet when the following ammunitions are used:

Bullet type	Specified Mass	Velocity
9mm FMJ RN	8g/124 gr	426 m/s ± 15 m/sec
.357 SIG FMJ FN	8.1g/125 gr	430 m/s ± 15m/s
.45x23mm, Ball FMJ (M1911)	14.9g/230 gr	282 m/s ± 15m/s

4.3.2. The Ballistic Helmet shall be compliant to MIL STD 662-F or STANAG 2920 (17-grain, 22 Cal Fragment Simulating Projectile; V50-720 m/s).

4.3.3. There shall be no deformation on the ballistic helmet in excess of the required Ballistic Transient Deformation specified herein and tested under the NIJ Std 0106.01 protocol:

Bullet type	Crown & sides	Front & Back
9mmx19mm FMJ RN	16.0mm	16.0 mm
.357 SIG FMJ FN	16.0mm	16.0 mm
.45 cal x 23mm, Ball FMJ (M1911)	16.0mm	16.0 mm

4.3.4 The helmet shall be tested for a bolt shot on the required ammunition aforementioned, if applicable. There shall be no penetration and no excess on the required Ballistic Transient Deformation of 25.0 mm.

Table 1 – ALLOCATION OF SAMPLES

Parameter				
1. Physical Inspection	All helmets that will be subjected to ballistic and other laboratory test			
2. Laboratory Test:				
Flame Resistance	Any One (1) helmet			
Compression Resistance	Any two (2) helmets			
Seawater Resistance	Any One (1) helmet			
High Temperature	Any One (1) helmet			
Cold Temperature	Any One (1) helmet			
Blunt Impact Protection	Any One (1) helmet			
Chinstrap Anchorage	Any One (1) helmet			
Webbing breaking strength	2 meters Swatch Sample			
Pad Compression durability	Two (2) complete sets of suspension pad			
Water Absorbency	One (1) complete sets of suspension pad			
Moisture Wicking Test	One (1) complete sets of suspension pad			
Helmet Cover	2 meters fabric Swatch Sample			
3. Ballistic Test:	**Small**	**Medium**	**Large**	**X - large**
a. Resistance to penetration (wet & dry)	1 helmet	2 helmets	2 helmets	1 helmets
b. Ballistic Transient Deformation (wet & dry)	1 helmet	2 helmets	2 helmets	1 helmets
c. Frag Test per MIL STD 662-F/STANAG 2920 (ambient, high temp & cold temp)	3 helmets	3 helmets	3 helmets	3 helmets
d. Bolt Shot (after immersion in seawater)	Any 3 helmets			

B. PRE – DELIVERY INSPECTION

SECTION 1 – INTRODUCTION

1.1 **AUTHORITY**: The Test and Evaluation (T&E) is being conducted in line with the provisions of the RA 9184.

1.2 **OBJECTIVES**: The objective of this T&E is to determine the compliance to the contract of the items to be delivered by the winning bidder.

1.3 **SCOPE**: This T&E Procedures will be conducted only on samples of Ballistic Helmet taken at random during the Pre – Delivery Inspection.

1.4 **METHODOLOGY**: The tests include visual, manual, dimensional, laboratory, documentation and ballistics test of the FPE. Records check will also be conducted as appropriate including third party publications.

1.5 **ACCEPTANCE CRITERIA**: The rating that will be applied for this test will be based on Sampling Procedures and Tables for Inspection by Attributes - MIL STD 105E.

1.6 **SAMPLES**: Refer to Table 2 - Allocation of Samples.

SECTION 2 – TEST PROPER

1. PHYSICAL INSPECTION

1.1. Purpose: To determine the conformance of the physical characteristics of the Ballistic Helmet to the required specification

1.2. Procedure:

1.2.1. Visually and manually inspect the components of the Ballistic Helmet *(Basic Shell, Retention System and Suspension pad system)*

1.2.2. Measure the dimensions, weight and protection coverage area of the Ballistic Helmet.

1.2.3. Inspect the compatibility and interoperability of the Ballistic Helmet to the existing equipment of the Philippine Army.

1.2.4. Inspect the label permanency with the following procedure:

1.2.4.1. A representative area of the label markings shall be rubbed by hand for 15 seconds with a cotton cloth soaked with distilled water.

1.2.4.2. The same area shall then be rubbed by hand for 15 secs with a cotton cloth soaked with denatured alcohol (methylated spirit).

1.2.4.3. Finally, the same area shall then be rubbed by hand for 15 seconds with cotton cloth soaked with isopropyl alcohol.

1.3. Standard:

1.3.1. Weight:

Maximum Overall weight of the Ballistic Helmet	**Small**	**Medium**	**Large**	**X- Large**
	1.33 kgs	1.38 kgs	1.5 kgs	1.75
	• The Overall weight includes the basic shell, retention system and suspension pad system			

1.3.2. Basic Shell

1.3.2.1. Design and Construction

1.3.2.1.1. Shall be Advance Combat Helmet design with full cut design.

1.3.2.1.2. The outer and inner surfaces of the shell, including the bottom edge, shall be finished smooth and even.

1.3.2.1.3. Both the inside and outside surfaces of the shell shall be free from any hole, void, delamination, blister, cracking, crazing, and dry spot.

1.3.2.1.4. The finished shell shall also include the hook disk at the inner surface of the shell for attachment.

1.3.2.1.5. The edge of the shell shall be finished with rubber trim.

1.3.2.1.6. Color: Olive Drab

1.3.2.2. Head Protection Coverage: It shall cover the front, back, sides and crown/top of the head. It shall be measured using a 3D white light scanning device or its equivalent at the manufacturer's facility.

Sizes	Length, mm (minimum)	Width mm (minimum)	Height, Mm (minimum)	Circumference, mm, (minimum)	Outer Shell Coverage Area (sq. cm)
Small	228	210	157	530 – 550	1025 ± 50
Medium	237	217	157	550 – 570	1090 ± 50
Large	248	225	160	570 – 590	1150 ± 50
X-Large	262	237	168	590 – 610	1250 ± 50

1.3.2.3. Sizes

	Small (cm)	**Medium (cm)**	**Large (cm)**	**X- Large (cm)**
Sizes	53 – 55	55 – 57	57 – 59	59 – 61
Quantity	10%	30%	40%	20%

1.3.3. Retention System

1.3.3.1. Design and Construction

1.3.3.1.1. It shall consist of 4-point chinstrap, black in color, nape pad and ratchet system and designed for one-handed operation (closure and adjustment). The adjustment should be done in one direction. It shall have a provision for a quick release mechanism.

1.3.3.1.2. The chin strap shall have an Open Chin Cup and Side Release Buckle.

1.3.3.1.3. The attachment of the retention system shall not require additional drill hole and bolt in order not to pose secondary hazard and maintain the ballistic integrity of the helmet.

1.3.3.1.4. Documentation shall be provided to verify that the retention system meets the health and safety requirements.

1.3.4. Suspension Pad System

1.3.4.1. Design and Construction

1.3.4.1.1. The helmet shall utilize a multi-layered pad suspension system consisting of minimum seven (7) pads (minimum): One circular, two trapezoidal, and four oblong/oval pads.

1.3.4.1.2. The pads shall possess means of easy attachment, removal, and reattachment to the inside helmet shell. The pads shall remain firmly in place when attached as read in para 2.3.3.1.2 of the specification.

1.3.5. NVG Mounting System

1.3.5.1. Design and Construction

1.3.5.1.1. The shroud/mounting system shall fit to any size of the helmet.

1.3.5.1.2. The attachment to the shell shall have a maximum of single bolt and shall not require any modification or additional drill holes.

1.3.5.1.3. No hole delamination shall be greater than 1/8 – inch from the edge of the hole or other damage of the shell material as a result of making a hole.

1.3.5.1.4. The bolt shall not pose secondary hazards/fragments to the user.

1.3.5.1.5. Color: Olive Drab

1.3.5.1.6. The bolt shall be rust resistant in accordance to ASTM B117.

1.3.5.2. Integration and Compatibility

1.3.5.2.1. The shroud shall be universal and fit to the existing NVG equipment of the Philippine Army (PVS – 7B and PVS – 14 Generation II and III) and shall provide a bracket/adapter for A100 monocular NVG model. The quantity of the bracket/adopter is as specified in the contract.

1.3.5.2.2. The NVG system shall have no unnecessary movement or displacement when attached to the helmet.

1.3.6. Ballistic Eyewear

1.3.6.1. The helmet shall have a Ballistic Eyewear.(Spectacle/Shades Type)

1.3.6.2. The eyewear shall have flexible strap end or retention strap for custom fit with the helmet or simply with the head.

1.3.7. Helmet Cover

1.3.7.1. Design and Construction

1.3.7.1.1. The helmet cover shall be in ripstop design.

1.3.7.1.2. The helmet shall be fitted with various cover corresponding to each sizes.

1.3.7.1.3. The helmet cover shall be securely in place on the helmet.

1.3.7.1.4. It shall cover the entire surface of the outer coverage area of the helmet. The mounting system shall be placed or attached over the helmet cover.

1.3.7.1.5. Color and Design: PHILARPAT

1.3.8. Rail System

1.3.8.1. It shall consist of left and right rails that fit to all sizes.

1.3.8.2. It shall have entry points along upper and lower dovetails to enable multiple entry points that can accept widely used rail bases, such as swivel clips, picatinny and winged rail bases. It can also accommodate clips for oxygen mask or gas mask.

1.3.8.3. The design shall allow for easy one handed attachment for widely used rail bases.

1.3.8.4. The attachment of railing system shall not require additional drill hole and bolt in order not to pose secondary hazard and maintain the ballistic integrity of the helmet.

1.3.8.5. It shall match helmet shell curvature ensuring secure helmet mounting for accessory stability.

1.3.8.6. Color: Olive Drab

1.3.9. Counter Weight System

1.3.9.1. The ballistic helmet shall be provided with counterweight that will counter the weight of the NVG of the Philippine Army and other front mounted devices.

1.3.9.2. The counterweight shall be detachable and can be removed by the user when not needed.

1.3.9.3. The counterweight system shall not use any additional drill holes in attaching the system.

1.3.9.4. The counterweight system shall not be attached primarily by a hook and loop tape. It shall be well fitted, stable and shall have no unnecessary displacement.

1.3.10. Other Requirements

1.3.10.1. It shall have a Helmet Bag with provision for name tag and PHILARPAT color/design.

1.3.10.2. The Helmet Bag shall have the same material as the helmet cover.

1.3.10.3. Label:

1.3.10.3.1. It shall be permanently mark and written in English language. It shall have the following minimum information:

i) Name, address, and logo of the manufacturer
ii) Rated level of protection: 9mm FMJ; .357 SIG FMJ & .45 FMJ; V50 = 720 m/s (min)
iii) Size
iv) Date Manufacture
v) Model Designation
vi Lot number or production batch number

1.3.10.3.2. Each set of Ballistic Helmet and eyewear shall have a manual or brochure on the equipment's proper use and maintenance (available in hard and e-copy).

1.3.10.3.3. There shall be an appropriate tool kit to be provided in detaching the NVG mounting system, if applicable.

2. LABORATORY TEST

2.1. Purpose: To determine the conformance of the submitted sample of Ballistic Helmet on the required specification for non-ballistic test compliance.

2.2. Procedure:

2.2.1. Subject the submitted sample to laboratory test from any third party testing facility and manufacturer's facility as specified herein:

PARAMETERS	REQUIREMENTS	LABORATORY	TEST METHOD
BASIC SHELL			
Flame Resistance	The flame shall self-extinguished within 5 seconds. There shall be no melting or dripping of the materials of the shell body	Third Party testing laboratory	BS EN 397; ASTM D6413;
Compression Resistance	a) Lateral deformation ≤ **40mm** b) Residual lateral deformation ≤ **15mm**	Third Party testing laboratory	BS EN397; AR/PD 10 – 02
Seawater Resistance	a) Increase in weight ≤ **3%** b) Increase in thickness ≤ **2.5%** c) No evidence of softening, peeling, blistering, cracking & delamination	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.14.12

High Temperature	a) visually no degradation in shell and no degradation in paint b) Change in thickness ≤ **2.5%**	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.14.5
Cold Temperature	a) visually no degradation in shell and no degradation in paint b) Change in thickness ≤ **2.5%**	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.14.6
Blunt Impact Protection	a) Individual acceleration ≤ 150G b) No physical damage and indentation is ≤ 4 mm	Third Party testing laboratory	AR/PD 10 – 02 clause 4.9.13; FMVSS 218
RETENTION SYSTEM			
Chinstrap Anchorage / load bearing capacity	a) No less than 25 kg b) Not more than 40 kg	Third Party testing laboratory or Manufacturer's facility	BS EN397
Webbing Breaking Strength	1000 N (minimum)	Third Party testing laboratory or Manufacturer's facility	ASTM D 6775-13
SUSPENSION PAD SYSTEM			
Pad Compression durability	No signs of deterioration which includes: a) loss of resiliency b) not returning to its original shape and thickness c) physical damage	Third Party testing laboratory or Manufacturer's facility	AR/PD 10-02, clause 4.9.8.3
Water absorbency	Increase in weight: **≤ 3%**	Third Party testing laboratory or Manufacturer's facility	AR/PD 10-02, clause 4.9.8.4 / AATCC 79 – 2010
Moisture Wicking Test	Inner material shall wick moisture away.	Third Party testing laboratory or Manufacturer's facility	AR/PD 10-02, clause 4.9.8.5 / AATCC TM 198 – 2010
The hook disk and fastener	shall be durable and shall meet the requirements stated in Para 2.3.3.2.4 of the specification (Amendment 1)	Third Party testing laboratory or Manufacturer's facility	BS EN 13780; BS EN1414; BS EN 12242
NVG MOUNTING SYSTEM			
Bolt	Rust resistant	Third Party testing laboratory or Manufacturer's facility	ASTM B117
HELMET COVER			
Material	Polyester	Third Party testing laboratory or Manufacturer's facility	AATCC TM 20 – 2011
Abrasion Resistant	2000 (minimum)	Third Party testing laboratory or Manufacturer's facility	ASTM D3884 – 01: 2007

Colorfastness:			
Laundering (5 cycles)	4 (minimum)	Third Party testing laboratory or Manufacturer's facility	BS EN ISO 105 – C06
Daylight (Xenon Arc)	4 (minimum)	Third Party testing laboratory or Manufacturer's facility	BS EN ISO 105 – B02

3. DOCUMENTATION

3.1. Purpose: To determine the conformance of the submitted ballistic eyewear to the required specifications and the toxicity of the retention system.

3.2 Procedure:

3.2.1 The submitted sample shall be subjected to physical inspection as to indicative markings *(i.e "Z87+", CE etc)* to determine compliance to the required standards set forth in the specification.

3.2.2 The ballistic eyewear shall be accompanied with Certificate of conformity and ballistic test reports that it is compliant to the required standards from an internationally recognized third party testing laboratory as per para 2.3.5.2.1 of the specification (Amendment 1).

3.2.3 The manufacturer shall furnish information which certifies that the retention system is composed of materials which have been safely used commercially or provide sufficient toxicity data to show compatibility with prolonged skin contact.

3.3 Standards:

3.3.1 The eyewear shall indicate anti-fogging performance and scratch resistance.

3.3.2 It shall be compliant to either of the following standards:

a. ANSI Z87.1 – 2010
b. MCEPS GL – PD 10 – 12
c. EN 166
d. STANAG 2920/MIL-PRF-32432 or MIL STD 662 with a minimum V50 of 150 m/s (5.8 gr/17 gr; .15 Cal/.22 Cal)

3.3.3 It shall indicate a minimum of UVA protection in accordance with MCEPS/MIL-PRF-32432/ ANSI Z87.1 – 2010.

3.3.4 Materials used in the retention system shall be suitable for use, including prolonged skin contact, and be comfortable. The components of the retention system shall not pose any health hazard or skin irritation and allergies.

4. BALLISTIC TEST

4.1 Purpose: To determine the conformance of the submitted sample to the required ballistic protection.

4.2 Procedure:

4.2.1 Subject the Ballistic Helmet to ballistic test at any NIJ accredited test facility.

4.2.2 Subject the Ballistic Helmet to a bolt shot at any NIJ accredited test facility if applicable.

4.3 Standard

4.3.1 The Ballistic Helmet shall have a minimum level of protection as required in accordance to NIJ Standard 0106.01 test standard and AR/PD 10-02. There shall be no penetration on the helmet when the following ammunitions are used:

Bullet type	Specified Mass	Velocity
9mm FMJ RN	8g/124 gr	426 m/s ± 15 m/sec
.357 SIG FMJ FN	8.1g/125 gr	430 m/s ± 15m/s
.45x23mm, Ball FMJ (M1911)	14.9g/230 gr	282 m/s ± 15m/s

4.3.2 The Ballistic Helmet shall be compliant to MIL STD 662-F or STANAG 2920 (17-grain, 22 Cal Fragment Simulating Projectile; V50-720 m/s).

4.3.3 There shall be no deformation on the ballistic helmet in excess of required Ballistic Transient Deformation specified herein and tested under the NIJ Std 0106.01 protocol:

Bullet type	Crown & sides	Front & Back
9mmx19mm FMJ RN	16.0mm	16.0 mm
.357 SIG FMJ FN	16.0mm	16.0 mm
.45 cal x 23mm, Ball FMJ (M1911)	16.0mm	16.0 mm

4.3.4 The helmet shall be tested for a bolt shot on the required ammunition aforementioned if applicable. There shall be no penetration and no excess on the required Ballistic Transient Deformation of 25.0 mm.

Table 2 – ALLOCATION OF SAMPLES

Parameters	Size			
	Small	**Medium**	**Large**	**X - large**
1. Physical Inspection	In accordance with Mil Standard 105E			
2. Laboratory Test:				
Flame Resistance	Any One (1) helmet			

Compression Resistance	Any two (2) helmets			
Seawater Resistance	Any One (1) helmet			
High Temperature	Any One (1) helmet			
Cold Temperature	Any One (1) helmet			
Blunt Impact Protection	Any One (1) helmet			
Chinstrap Anchorage	Any One (1) helmet			
Webbing breaking strength	2 meters Swatch Sample			
Pad Compression durability	Two (2) complete sets of suspension pad			
Water Absorbency	One (1) complete sets of suspension pad			
Moisture Wicking Test	One (1) complete sets of suspension pad			
Helmet Cover	2 meters fabric Swatch Sample			
3. Ballistic Test:	**Small**	**Medium**	**Large**	**X - large**
a. Resistance to penetration (wet & dry)	1 helmet	2 helmets	2 helmets	1 helmets
b. Ballistic Transient Deformation (wet & dry)	1 helmet	2 helmets	2 helmets	1 helmets
c. Frag Test per MIL STD 662-F/STANAG 2920 (ambient, high temp & cold temp)	3 helmets	3 helmets	3 helmets	3 helmets
d. Bolt Shot (after immersion in seawater)	Any 3 helmets			

Table 3 - ACCEPTANCE CRITERIA

SAMPLE SIZE	GENERAL INSPECTION LEVEL		ACCEPTABLE QUALITY LEVEL
	Critical	Major	Minor
In accordance to Military Standard 105E			

C. FINAL INSPECTION PROCEDURE

SECTION 1 – INTRODUCTION

1.1 AUTHORITY: This procedure is being conducted in line with the provisions of the RA 9184.

1.2 OBJECTIVES: The objective of this procedure is for the Final Inspection of the items delivered by the winning bidder.

1.3 SCOPE: This procedure will be conducted on the Force Protection Equipment (FPE) – Ballistic helmet by the Technical Inspection and Acceptance Committee (TIAC) upon arrival in-country.

1.4 METHODOLOGY: The procedure will involve visual inspection and accounting.

1.5 SAMPLES: 100% of items delivered

SECTION 2 – INSPECTION PROPER

2.1 Purpose: To determine the completeness of the items delivered, its consistency in terms of items inspected during Pre-Delivery Inspection vis-à-vis the actual Ballistic Helmet delivered, and physical state of the items.

2.2 Procedure:

2.2.1 Account for the completeness of the Ballistic Helmet delivered.

2.2.2 Visually inspect the Ballistic Helmet for the completeness of components including the serial numbers and accessories.

2.2.3 Visually inspect the selected samples for the physical state of the delivered items.

2.3 Standard:

2.3.1 The total Ballistic Helmet delivered shall be complete in quantity based on the schedule of requirements.

2.3.2 The total delivered Ballistic Helmet shall be complete including its accessories.

2.3.3 The serial numbers of the randomly selected samples shall be in accordance with the specifications and similar to the serial numbers inspected during the Pre-Delivery Inspection.

2.3.4 There shall be no damage that could affect the functionality and appearance of the Ballistic Helmet.

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Chief