



Republic of the Philippines  
NATIONAL POLICE COMMISSION  
NATIONAL HEADQUARTERS PHILIPPINE NATIONAL POLICE  
OFFICE OF THE CHIEF, PNP  
Camp BGen Rafael T Crame, Quezon City

JAN 26 2021

PNP MEMORANDUM CIRCULAR  
NO.: 2021-009

**PROCEDURES IN THE CONDUCT OF TEST AND EVALUATION  
FOR BALLISTIC EYEWEAR**

**1. REFERENCES:**

- a. Republic Act (RA) No. 9184 entitled, "An Act Providing for the Modernization, Standardization and Regulation of the Procurement Activities of the Government and for other Purposes and its Revised Implementing Rules and Regulations (RIRR)";
- b. NAPOLCOM Resolution No. 2018-429 entitled, "Approving the PNP UESB Resolution No. 2018-034 that Prescribed the Minimum Standard Specifications for Ballistic Eyewear;
- c. Performance Specification Military Combat Eye Protection (MCEP) System, MIL-PRF-32432A 11 September 2018; and
- d. Memorandum from TCDS/Chairman, NHQ BAC dated May 4, 2018 with subject: Protocol in the Conduct of the Pre-Delivery Inspection (PDI).

**2. RATIONALE:**

The Directorate for Research and Development (DRD), as an independent research facility of the PNP, shall conduct test of clothing, materiel, weapons, vehicles, and equipment required by the PNP.

**3. SITUATION:**

The recent development in Military Combat Eye Protection (MCEP) system has evolved to provide protection from dust, flying debris, and ballistic hazards both in training and in the battlefield while maintaining compatibility with existing Internal Security Operation equipment. Thus, testing of ballistic eyewear product has to be conducted to evaluate its quality and technical acceptability to ensure that the product meets or exceeds the protective standard and the other MCEP requirements and shall provide its users maximum protection from eye hazards.

Ballistic Eyewear candidates must conform with NAPOLCOM Technical Specifications to ensure that the ballistic eyewear issued to PNP operational units passed the safety standard.

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#### 4. PURPOSE:

This PNP Memorandum Circular (MC) sets forth the policy guidelines, procedures and test parameters for the conduct of functional test of Ballistic Eyewear during post-qualification and acceptance that will serve as reference in the procurement of ballistic eye protection.

#### 5. DEFINITION OF TERMS:

For purposes of this MC, the following terms shall mean:

- a. **Adjustment** – refers to the means to adjust the eyewear for proper fit/comfort.
- b. **Acceptance Testing** – refers to a test conducted for evaluation of properties of one or more items to determine if the requirements or specifications included in the contract are met. It may involve physical tests (visual and dimensional), chemical tests (laboratory tests), and/or performance tests.
- c. **Ballistic** - refers to the science of mechanics that deals with the launching, flight, behavior, and effects of projectiles, especially bullets, gravity bombs, rockets, or the like; the science or art of designing and accelerating projectiles so as to achieve a desired performance.
- d. **Ballistic Eyewear** – refers to a form of glasses or goggles that protect the eyes from small projectiles and fragments.
- e. **Ballistic Fragmentation Characteristics** – the eyewear shall provide ballistics fragmentation protection in all configurations.
- f. **Bids and Awards Committee (BAC)** – refers to Bids and Awards Committee established in accordance with Article V of RA No. 9184.
- g. **Cavitation** – refers to the formation of an empty space within a solid object or body.
- h. **Carrying case** – shall be provided for each class of eyewear. Separately sized/designed carrying cases may be used for each class, as necessary. The carrying case shall be capable of carrying one MCEP system (eyewear, retaining strap, instruction booklet, cleaning cloth). The carrying case can be easily attached/detached to/from the wearer's equipment belt and load bearing equipment.
- i. **Class 1 spectacles** – are defined as eyewear that protects the wearer's eyes from hazards/threats associated with fragmentation and light energy; additional wind/dust protection in the form of a seal around the eye socket or spectacle/frame perimeter is optional.

- j. **Critical area** – is defined as a circle having a 20 mm radius centered on the horizontal centerline and 32 mm from the vertical centerline.
- k. **Defect** – refers to any nonconformance of the unit of product with the specified requirement.
- l. **Fair Hit** – A shot shall be considered valid if the projectile hits within the critical area, if the velocity requirements have been met for the shot, if obliquity requirements have been met for the shot, if the impact location is at least two projectile diameters (.76 cm) away from the edge of a lens, and the projectile does not impact the frame.
- m. **Feet per Second (FPS)** – refers to a unit measurement of velocity of an object.
- n. **Functional Testing** – primarily focuses on ensuring that the particular equipment work as designed, and that the design and quality sufficiently meet the requirements of the end – user.
- o. **Laboratory** – refers to a facility that provides controlled conditions in which scientific or technological research, experiments, measurement and/or services may be performed.
- p. **Major Defect** – refers to a defect, other than critical, that is likely to result in failure, or to reduce materially/significantly the usability or performance of the unit or product of its intended purpose.
- q. **Penetration** – refers to the perforation of a witness plate by any part of the test specimen or test bullet, as determined by the passage of light when the witness plate is held up to a 60-W light bulb.
- r. **Perforation** – refers to any impact that creates a hole passing through the lenses. This may be evidenced by any of the following: (1) a hole that passes through the projectile, a projectile fragment, or an armor fragment on the lenses; (2) a hole that passes through on critical portion of the lenses.
- s. **Polycarbonate** – refers to a particular group of thermoplastics. They are easily worked, molded, and thermoformed, as such, these plastics are very widely used in modern manufacturing. They are called polycarbonates because they are polymers having functional groups linked together by carbonate groups (-O-(C=O)-O-) in a long molecular chain.
- t. **Pre-delivery inspection** – refers to an inspection carried out by PNP team (by a procuring entity and seller) complemented with test and evaluation, prior to the final delivery of the product.
- u. **Proponents** – refers to suppliers/dealers duly accredited to transact business with the PNP.

- v. **Sizing/fit** – the MCEP system shall accommodate (i.e., fit, adjust, and/or successful use).
- w. **Spalling** – refers to the detachment or delamination of a layer of material in the area surrounding the location of impact, which may occur on either the front or rear surfaces of the armor. Spalling may be a threat mechanism even when penetration of the armor itself is not complete.
- x. **Striking Velocity** – refers to the speed with which a projectile ends its flight.
- y. **T37 Shaped Projectile** – is a US ballistic projectiles standard for testing protective eye wear.
- z. **Technical Working Group (TWG)** – refers to a group of people composed of PNP uniformed and non-uniformed personnel of the DRD tasked to facilitate the conduct of test and evaluation of equipment during the post qualification and acceptance.
- aa. **Test Parameter** – in its common meaning, is a characteristic, feature, or measurable factor that can help in defining a particular system relative to assessment/analysis. A parameter is an important element to consider in evaluation or comprehension of an event, project, or situation.
- bb. **Warranty** – refers to a written guarantee, issued to the purchaser of an object by its manufacturer, promising to repair or replace it if necessary within a specified period of time.
- cc. **Workmanship** – refers to the degree of skill with which a product is made or a job done.

## 6. GENERAL GUIDELINES:

- a. The DRD shall function as an independent testing facility of the PNP. The DRD Test Team shall perform their duties pursuant to the mandates of PNP Memorandum Circular No. 2015-015.
- b. The DRD Test Team shall conduct physical inspection (components) and functional test on the sample item submitted to determine conformity with the approved NAPOLCOM Minimum Standards and PNP Minimum Technical Specifications.
- c. The test result containing the findings shall be forwarded to the BAC, Committee on Inspection and Acceptance, and PNP units/offices which requested the conduct of test and evaluation for a particular sample/test specimen/prototype.
- d. Sample unit/test specimen submitted for post-qualification and test and evaluation shall not be considered part of the delivered item.

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- e. If test equipment is not available in the DRD facility, or any certified government/private agencies/reputable scientific organization during the conduct of test and evaluation procedures specified under this MC, the test and evaluation shall be conducted by an accredited government institution or a third party (independent organization) and consistent with the international standard procedures.
- f. In case additional tests not included in the approved test parameters, are imposed by the BAC, the same maybe allowed only if the additional test parameters are properly reflected in the bidding documents or in its Supplemental Bid Bulletin (SBB) with proper consultation with the DRD.
- g. GPPB Circular No. 06-2016 with subject "Expenses Related to the Conduct of Post-Qualification" shall be observed during the conduct of post-qualification. Hence, the administrative and operational expenses shall be charged to the proceeds of the sale of the bidding documents as indirect cost or administrative cost pursuant to GPPB Resolution No. 04-2012.
- h. Administrative and operational expenses for the conduct of test and evaluation during inspection and acceptance shall be imposed upon the supplier if the same were included in the computation of the Approved Budget and Contracts and integrated in the preparation of the Project Management Plan. If such expenses were not considered therein, the same may be charged to the proceeds of the sale of the bid documents as indirect cost or administrative cost allocated to the bidding activities, pursuant to GPPB Resolution No. 04-2012.
- i. Consistent with the "pass or fail criteria," non-conformance with the approved NAPOLCOM Minimum Standards and PNP Technical Specifications during post-qualifications test is a ground for post-disqualification.
- j. As appropriate, all testing fees and/or needed materials/equipment (automated and calibrated equipment) and other incidental expenses related to the test and evaluation shall be borne by the requesting party during post qualification and acceptance.
- k. Manufacturer/Supplier/Distributor of the Ballistic Eyewear must have the equipment and technical personnel throughout the required testing.

## 7. TEST AND EVALUATION:

### Phase I

#### A. Visual and Dimensional

##### 1) Purpose:

To determine the physical characteristics, quality and performance of the Ballistic Eyewear and to validate its conformity with NAPOLCOM specifications, test parameters and bidding documents.

- 2) Procedure:
- a) Visually and manually inspect the components and parts of the Ballistic Eyewear; and
  - b) Check the model and labelling requirements as required.

NAPOLCOM Res. No. 2018-429	Test Procedure	Class of Defect
(1) Lenses:  Polycarbonate	Check the brochure based on Manufacturer's Product technical specifications for material composition of lenses	Major
(2) Frames:  Based on Manufacturer's Product Brand Specification Brochure as offered	Check the brochure based on Manufacturer's Product technical specifications	Major
(3) Ballistics Resistance:  Compliant to MIL-PRF 32432 (GL)	Test Results or Certificate of Compliance with MIL-PRF 32432 (GL) standard for ballistic resistance of all lenses (clear, including the interchangeable lenses – cloud, black and yellow – left and right impact) conducted by a third party testing facility qualified and/or capable to test Personal Protective Equipment for eye protection. Test result/certificate must be duly authenticated with Red Ribbon in case of foreign documents	Major
(4) Size:  Medium to Large	Perform the adjustment of the strap or movable parts of the Ballistic Eyewear. There shall be a means to adjust the eyewear for proper fit/comfort.	Major

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the vision of the user is  
adversely affected.

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<p>(5) Features:</p> <p>99.9% UV A and UV B Protection; and</p> <p>Anti-scratch</p>	<p>Check the brochure based on Manufacturer's Product technical specifications</p> <p>Manually scrub the lenses using the finger nail to determine its anti-scratch feature.</p> <p>Note: Multiple/extra lenses must provide ballistic fragmentation, sun/UV protection and anti-scratch feature.</p>	<p>Major</p>
<p>(6) Other Requirements:</p>		
<p>(a) Replacement lenses for the following:</p> <p>i. Indoor/night</p> <p>ii. Outdoor/bright conditions</p> <p>iii. Low light/cloudy</p>	<p>Perform the manipulation of the movable parts of the Ballistic Eyewear and don/interchange all lenses onto the frame. The lenses must be fixed and not easily loosen when shook three times</p>	<p>Major</p>
<p>(b) Hard case</p>	<p>Manually check the Eyewear Hard case – any Manufacturer's standard</p>	<p>Major</p>
<p>(c) Microfiber pouch</p>	<p>Manually check the Eyewear Microfiber pouch – any Manufacturer's standard</p>	<p>Minor</p>
<p>(d) Microfiber cloth</p>	<p>Manually check the Eyewear Microfiber cloth – any Manufacturer's standard</p>	<p>Minor</p>
<p>(e) Elastic headband (Strap)</p>	<p>Manually check the Elastic headband.</p>	<p>Minor</p>
<p>(f) Resistance to fogging</p>	<p>Certificate from Third party that the lenses shall not fog to the extent that the vision of the user is adversely affected.</p>	<p>Major</p>

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(g) Certificate of Distributorship (for Local Partner) from Manufacturer	Check the certification	Major
<b>Workmanship:</b>	<b>Test Procedure</b>	<b>Class of Defect</b>
<p>(1) Ballistic Eyewear shall be free from all defects which would affect proper functioning during its service. Parts (zippers, snaps, hook and pile, glides, drawstrings, adjustable eyewear features, etc.) shall function properly. All component interfaces shall be present and secured and the finish shall be smooth or free of rough/sharp edges.</p> <p>The Eyewear shall be free from dents, blisters, cracks, crazing, slits, holes or/and other evidence of inferior workmanship. The eyewear shall not warp or deform, delaminate, discolor, corrode, rust, or crack, nor shall its ballistic fragmentation or optical characteristics be degraded beyond the requirement limits during operation, shipping, or storage in all climatic categories.</p>	Manually inspect the physical appearance of the Ballistic Eyewear	Major

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**B. Durability:**

1) Purpose:

To determine a degree of confidence that the materiel can physically and functionally withstand the relatively infrequent, non-repetitive shock encounter in handling, transportation, and operational environment.

2) Procedures:

a) Install the Ballistic eyewear in its microfiber pouch as prepared for field use.

b) Test item will be dropped unto hard surface from heights of up to 122cm for about six times (faces, edges, and corners).

c) Document the impact point or surface of each drop for any obvious damage.

d) Following completion of the required drops, visually examine the eyewear from its microfiber pouch.

e) After visually examining for obvious damage, place back the ballistic eyewear into its microfiber pouch and put it on the hard ground. A 70kg person shall step-on with force the Ballistic Eyewear for 30 seconds.

f) Record the result.

c. Standard:

Particulars	Result	Remarks	Class of Defects
There must be no deformation, dents, blisters, cracks, warp, delamination, discoloration or ballistic fragmentation cracks, and/or loose or detached parts of the ballistic eyewear after the completion of the drop test			Major
There must be no deformation, dents, blisters, cracks, warp, delamination, discoloration or ballistic fragmentation cracks, and/or loose or detached parts of the ballistic eyewear after the completion of 30 seconds stepping-on by a 70kg person			Major

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**Phase II: Ballistic Testing (Laboratory Set-Up):**

a. Test Variables:

Particulars	Test Data
Fragment	T37 shaped projectile
Fragment Velocity	640 to 725 ft./sec
Fragment Weight	0.15 caliber, 5.85 (+/- 0.15) grain
Firing Distance	12 to 24 inches

b. Performance Requirements (Resistance to Penetration):

Procedures:

- 1) Ballistic Eyewear lenses (clear, cloud, black and yellow) shall be tested for resistance to ballistic penetration. Penetration by any fair hit shall constitute failure.

Ballistic Eyewear	Test Fragment	Lens/s	Nominal fragment mass	Required Hits Per Lenses at 0° angle	Required Fragment Velocity	Distance of Firing	Findings	Remarks
Fragments, flying debris	T37 shaped projectile	Clear	5.85 (+/- 0.15) grain	1 - Left 1 - Right	640-725 ft./sec	12 to 24 inches		
		Black		1 - Left 1 - Right				
		Cloud		1 - Left 1 - Right				
		Yellow		1 - Left 1 - Right				
<p><b>Certification:</b></p> <p>Certification by the Third Party testing facility that actual test was hereby conducted with dates indicated</p>								

**Note:**

Projectiles shall be a Fragment Simulating Project (FSP) of shape and dimensions as specified and shall be manufactured from cold rolled.

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annealed steel conforming with composition 4340H; the projectile hardness shall be Rockwell C30 (+/-2).

c. Procedure:

- 1) Place the ballistic eyewear inside the chamber.
- 2) Position showing as-worn position of Ballistic eyewear into the headform prior to the actual firing.
- 3) The Operator must set the required velocity according to the velocity requirement prior to the actual testing.
- 4) The Operator must give a signal to the audience before the actual firing into the Ballistic eyewear.
- 5) After the first firing, test item shall be removed after each impact for inspection of both the sample and the witness plate/sheet (if any) and any other observations noted. Damage to the witness plate/sheet or eyewear and all observations (i.e. breakage, cracks, complete dislodgement, partial dislodgement, delamination, flaking, etc.) shall be noted.

The test shall be considered a failure if one or more of the following occur:

- a) if the witness sheet is perforated or if there is a complete penetration of the test item;
- b) if the primary lens is cracked, fractured, or shattered;
- c) if an eyewear component needed to retain the eyewear on the head becomes completely separated from the eyewear; and
- d) if the primary lens becomes completely separated from the eyewear.

## 9. PROCEDURES:

### For Post-Qualification:

- a. The supplier must submit sample of test item in accordance with Military Standard 105E sampling plan table when applicable or as specified in the bidding document.
- b. The sample must pass the NAPOLCOM-approved Technical Specifications and PNP Test Parameters, otherwise, it shall mean outright post disqualification.
- c. Three minor defects constitute one major defect.
- d. One Major defect constitutes a post-disqualification.

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**For Acceptance:**

- a. Random sampling will be done where the delivered items are stored using the Military Standard 105-E sampling plan table when applicable or as specified in the bidding documents.
- b. The sample must pass the given functional test otherwise it shall mean outright rejection of the whole delivery.
- c. Three minor defects constitute one major defect.
- d. One Major defect constitutes rejection.
- e. The functional/destructive test samples shall be at least 4 pieces or as prescribed by the procuring entity.

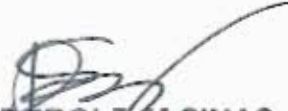
**10. RESCISSION:**

All other test parameters, guidelines or standard operating procedure contrary to or inconsistent with the provisions of this MC are hereby rescinded, modified or amended.

**11. EFFECTIVITY:**

This MC shall take effect after 15 days from filing a copy thereof at the UP Law Center in consonance with Section 3, Chapter 2, Book VII of Executive Order 292, otherwise known as the "Revised Administrative Code of 1987," as amended.



  
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