



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

MEMORANDUM CIRCULAR
NO.: 2021-064

20 MAY 2021

**PRESCRIBING THE MINIMUM TECHNICAL SPECIFICATIONS
FOR FORENSIC 3D LASER SCANNER**

1. REFERENCES:

- a. NAPOLCOM Resolution No. 2020-0064 entitled: "Prescribing the Minimum Standard for 3D Laser Scanner" dated January 30, 2020;
- b. NAPOLCOM Memorandum Circular (MC) No. 2019-002 entitled: "Defining the Duty and Authority of the NAPOLCOM to Prescribe Minimum Standards for Uniforms, Arms, and Equipment to be Procured by the PNP" dated January 29, 2019;
- c. PNP MC No. 2019-016 entitled: "Implementing Guidelines of NAPOLCOM Resolution No. 2019-002 Defining the Commission's Function to Prescribe Minimum Standards for Uniforms, Arms and Equipment for the Philippine National Police and Delineation of Authority to the Chief, Philippine National Police and to Set Technical Specifications of PNP Uniforms, Arms and Equipment" dated April 4, 2019; and
- d. PNP Uniform and Equipment Specification Board Resolution No. 2021-02-016 entitled: "Proposed Minimum Technical Specifications for Forensic 3D Laser Scanner."

2. RATIONALE:

This Memorandum Circular (MC) sets forth the minimum technical specifications for Forensic 3D Laser Scanner that will serve as reference in its procurement.

3. SITUATION:

Forensic 3D Laser Scanner aims to enhance the capability of the PNP in the investigation process, and eventually expedite the resolution of crimes since it is a non-contact, mountable device that emits laser lights to scan and capture numerous data on object's surface in a particular area where it is installed. This also allows the ability to create accurate 3D diagrams, animations, and walk-throughs and digital presentations that can be easily shared or shown as convincing testimony or evidence in a court of law. It is a better way to deliver if how the scene looks like and captures and preserves the entire crime scene for easier and wider investigation.

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4. PURPOSE:

To provide and establish the minimum technical specifications for Forensic 3D Laser Scanner that will serve as reference in the procurement of the equipment.

5. DEFINITION OF TERMS:

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

- a. **Cloud-to-Cloud Registration** – is when two or more clouds are integrated based on a 3D shape. In order for Cloud-to-Cloud to work, there should be an overlapping area between the scan position data.
- b. **E57 File Format** – refers to compact neutral format for storing point clouds, images, and metadata produced by 3D imaging system, such as laser scanner.
- c. **Field of View** – refers to the extent of the observable world that is seen at any given moment. In the case of optical instruments or sensors, it is a solid angle through which a detector is sensitive to electromagnetic radiation.
- d. **Forensic also known as criminalistics** – refers to the application of science to criminal and civil laws, mainly—on the criminal side—during criminal investigation, as governed by the legal standards of admissible evidence and criminal procedure.
- e. **High-dynamic-range (HDR) Imaging** – refers to a technique used in photographic imaging and films, and in ray-traced computer-generated imaging, to reproduce a greater range of luminosity than what is possible with standard digital imaging or photographic techniques.
- f. **IP Code, or Ingress Protection Code, IEC standard 60529** – refers as International Protection Code, classifies and rates the degree of protection provided by mechanical casings and electrical enclosures against intrusion, dust, accidental contact, and water.
- g. **Joint Photographic Expert Group (JPEG)** – refers to a standard image format for containing lossy and compressed image data. Commonly used method of lossy compression for digital images, particularly for those images produced by digital photography.
- h. **Laser safety** – refers to the safe design, use and implementation of lasers to minimize the risk of laser accidents, especially those involving eye injuries. Since even relatively small amounts of laser light can lead to permanent eye injuries, the sale and usage of lasers is typically subject to government regulations.
- i. **Pixel** – refers to the basic unit of programmable color on a computer display or computer image.

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- j. **Potable Network Graphics (PNG)** – refers to raster graphics file format that support lossless data compression. PNG was developed as improved, non-patented replacement for graphics Interchange format.
- k. **Point Cloud Registration** – refers to a set of data points in space. Point clouds are generally produced by 3D scanners or by photogrammetry software, which measure many points on the external surfaces of objects around them. As the output of 3D scanning processes, point clouds are used for many purposes, including to create 3D CAD models for manufactured parts, for metrology and quality inspection, and for a multitude of visualization, animation, rendering and mass customization applications.
- l. **PTS Format** – Often described as the “dumb format” because it does not retain any original scan registration information.
- m. **Spatial Reference System or Coordinate Reference System** – refers to a coordinate-based local, regional, or global system used to locate geographical entities. A spatial reference system defines a specific map projection, as well as transformations between different spatial reference systems.
- n. **TXT File** – refers to a standard text document that contains unformatted text. It is recognized by any text editing or word processing program and can also be processed by most other software programs.

6. SPECIFICATIONS:

- a. Description:

3D Laser Scanner is a non-contact, mountable device that emits laser lights to scan and capture numerous data on object’s surface in a particular area where it is installed. It aims to enhance the capability in the investigation process, and eventually expedite the resolution of crimes.
- b. Technical Specifications:

1) Mounting	: With mechanism for mounting
2) Ingress Protection	: IP 54
3) Laser Class	: Class 1
4) Camera	: HDR Imaging
5) Dimensions	: Manufacturer standard
6) Weight	: 6.8 kg. Max
7) Field of View	: 360° (horizontal)/300° (vertical)
8) Operating Temperature:	-5° to +40°C
9) Battery life	: 4 hours
10) Data in Coordinate Reference System:	Automatic
11) Accuracy	: 0.5mm-5mm@10m
12) Software	: Manufacturer Standard
13) Import/Export	: BMP, PTS, TXT, PNG, TIF, or TIFF,E57, JPEG

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- 14) Scenes : 3D
- 15) Constraint Management: Cloud to Cloud Registration
- 16) Alignment : Auto-Target
- 17) Resolution : Selectable or adjustable
- 18) High Dynamic Range (HDR): 3 Bracket or Exposure
- 19) Scanner Control : Touch-screen control
- 20) Mobile devices : Accessible thru Wi-Fi Connection
- 21) Data Storage : 32GB
- 22) Measurement Speed : 975,000 (pts or pixel/sec)
- 23) Range : 0.6 up to 130 m
- 24) Integrated Sensor : GPS and Compass

7. REPEALING CLAUSE:

All previous MCs inconsistent with the foregoing are hereby modified, amended, or repealed accordingly.

8. 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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 Chief, PNP

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