

DOCUMENT NO. KP1/7B.2/TSM/ST/09/011-1



Kenya Power

HANDHELD UV ELECTRIC UTILITY CAMERA - SPECIFICATION

A Document of the Kenya Power & Lighting Co. Ltd
OCTOBER 19, 2026

TITLE:
**HANDHELD UV
ELECTRIC UTILITY
CAMERA**

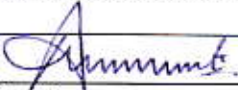
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0.1 CIRCULATION LIST

COPY NO.	COPY HOLDER
1	Snr Engineer, Sub-transmission, Central Office.

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2 Manager, Transmission, Central Office.

0.2 AMENDMENT RECORD

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	2026-02-09	New issue	Eng. Alistair Akute	Eng. George Korir

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FOREWORD

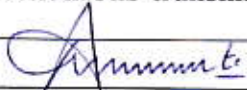
This specification has been prepared by the Transmission Department of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for the Handheld UV electric utility camera.

Handheld UV corona cameras operate by utilizing specialized "solar-blind" optical filters tuned to the ultraviolet spectrum (typically 240–280 nm) to isolate the faint UV photons emitted by nitrogen ionization during an electrical corona discharge. The device overlays this captured UV signal onto a simultaneous high-definition visible light image, allowing utility operators to pinpoint the exact physical location of active arcing or discharge in real-time, even during bright daylight. The importance of this technology to KPLC lies in its role as a crucial non-contact predictive maintenance tool. It will enable KPLC engineers/technicians to identify structural anomalies, component contamination, or early-stage insulator degradation that are completely invisible to the naked eye. By catching these faults early, KPLC engineers/technicians can take targeted, load-independent remedial actions to prevent catastrophic equipment failures, costly grid outages, and radio interference.

There are no other specifications in this series.

This specification stipulates the minimum requirements for a Handheld UV electric utility camera acceptable for use in the company and it shall be the responsibility of the supplier and manufacturer to ensure that the offered design is of the highest quality and guarantees excellent service to KPLC, good workmanship and good engineering practice in the manufacture of the Equipment for KPLC.

Users of Kenya Power specifications are responsible for their correct interpretation and application.

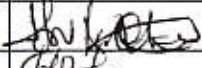
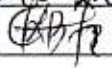
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The following are members of the team that developed this specification:

Name	Department	Signature
Nicodemus Ondigo Otoré	Transmission	 19/10/2026
Callen Buruchara	Distribution / Live Line	 19/10/2026

1. SCOPE

- 1.1. This specification is for a Handheld UV electric utility camera for use by company's Transmission Department.
- 1.2. The specification covers requirements, design, tests and inspection and schedule of Guaranteed Technical Particulars of the Handheld UV electric utility camera.

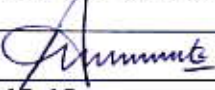
2. NORMATIVE REFERENCES

The following standards contain provision which, through reference in this text, constitute provisions of this specification. For dated editions the cited edition will apply; for undated editions the latest edition of the referenced document shall apply.

IEC 60529 (Degrees of Protection Provided by Enclosures): Governs the IP54 rating of the camera chassis. This certifies that the device is protected against harmful dust deposits (Ingress Protection 5x) and splashing water from any direction (Ingress Protection x4)

IEC 60068-2-6 (Environmental Testing - Vibration): Validates the camera's structural integrity under steady vibration stress (2g sweep testing) to ensure internal components do not loosen during transport or industrial use.

EC 60068-2-27 (Environmental Testing - Shock): Validates mechanical ruggedness against sudden drops or impacts (25g shock testing), ensuring the chassis, screen, and sensor grid remain operational after industrial bumps.

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IEC 61010-1 (Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use): Ensures the 90–264V AC power charging system is safely insulated, preventing electrical shocks, short circuits, or overheating risks for the operator during recharging.

IEC 61326-1 (Electrical Equipment for Measurement, Control, and Laboratory Use - EMC Requirements): Certifies that the camera's high-frequency processors, Bluetooth, and USB-C data transmission are immune to industrial electromagnetic interference (EMI) and will not emit radiation that disrupts other factory machinery.

IP64 when in use with top covers open.

IP67 when the case is closed for transport, it is dust-tight and protected against temporary immersion in water

EPRI Guidelines (Electric Power Research Institute): Establishes the framework for the camera's onboard software algorithms to categorize, count, and score partial discharge photon data. This ensures that corona severity ratings map directly to standard utility risk matrices for predictive maintenance decisions.

3. DEFINITIONS AND ABBREVIATIONS

For this specification the definitions and abbreviations given in the reference standards shall apply together with the following abbreviations.

3.1. ABBREVIATIONS

EMC: Electromagnetic Compatibility

KPLC- Kenya Power and Lighting Company Limited

ISO – International Organization for Standardization.

IEC- International electrotechnical commission

LCD - Liquid Crystal Display

Kg –Kilogram

KV - Kilovolt

EHV - Extra High Voltage

USB- Universal Serial Bus

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UV - ultraviolet

4. REQUIREMENTS

4.1 Technical Specifications:

4.1.0 UV & Optical Sensing Properties:

4.1.1 Solar-Blind Spectral Range: 240 nm to 280 nm

The sensor must utilize high-rejection solar-blind filtering technology ensuring 100% sunlight rejection to allow accurate daytime corona tracking under full sun.

4.1.2 UV Sensitivity: Must achieve a minimum discharge sensitivity of 2.2×10^{-18} W/cm², capable of detecting trace partial discharges down to 1.0 pC at a distance of 15 meters.

4.1.3 Radio Interference Voltage (RIV) Sensitivity: Minimum RIV sensitivity shall be 3.6 dBμV @ 1 MHz.

4.1.4 Optical Camera: High-definition color digital sensor with low-light capability down to 0.1 Lux.

4.1.5 Lens Focusing & Zoom: Synchronized auto-focus system where the UV focus actively tracks the visible light focus, supporting at least 10x Optical Zoom and 12x Digital Zoom.

4.1.6 Field of View (FOV): Narrow telephoto configuration optimized for standoff utility inspections, roughly 6.4° x 4.8°.

4.2.0 Image Fusion & Processing:

4.2.1 Bi-Spectral Overlay Accuracy:

Real-time software core that overlays UV discharge "blobs" directly onto the visible light image. The absolute overlay spatial accuracy must be better than 0.5 mrad.

4.2.2 Display Modes: System must allow seamless toggling between UV Only, Visible Only, and Combined Bi-Spectral Overlay.

4.2.3 Quantitative Analysis: Onboard digital photon counting analytics supporting single or multiple selectable regions of interest (ROI) to score defect severity.

4.2.4 False Color Customization: Ability to change the overlaid UV emission color palette (e.g., Red, White, Purple) to guarantee clean visibility against complex backgrounds.

4.3.0 Hardware & Display Architecture:

4.3.1 Display Screen:

Premium integrated 5.0-inch to 5.7-inch color LCD touchscreen. Must be engineered for high-brightness, sunlight-readable performance at a minimum of 1,000 nits/cd/m².

4.3.2 Ergonomics & Weight: Designed for single-handed pistol-grip operation with a total weight not exceeding 1.9 kg including battery. Must include a physical quick-snap capture trigger and backlit physical function keys for low-light use.

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4.4.0 Power & Charging Infrastructure:

4.4.1 Battery System:

Powered via high-capacity, field-swappable, rechargeable Lithium-Ion batteries providing a minimum runtime of 4 hours per charge cycle.

4.4.2 Charge Input: Main system unit and external desk charger must support an input range of 90–264V AC, 50/60 Hz. The power infrastructure, battery insulation, and charger interface shall satisfy the safety criteria of IEC 61010-1 (Safety requirements for electrical equipment for measurement, control, and laboratory use).

4.5.0 Data Capture & Metadata Logging:

4.5.1 Onboard Metadata & Sensors:

Embedded hardware must include GPS geolocation positioning, an ambient Temperature and Humidity sensor, and an integrated Laser Rangefinder to automatically calculate environmental correction factors for discharge calculations.

4.5.2 Storage Capacity: Minimum 64 GB via ruggedized removable flash storage (TF/SD card), capturing still .jpg images and real-time audio/video files with integrated voice annotations.

4.5.3 Data Export: Shall feature high-speed USB-C and wireless connectivity options.

4.6.0 Physical, Chassis & Safety Rating:

4.6.1 Ingress Protection:

Enclosure shall be certified to an IP54 rating in strict compliance with IEC 60529 (Degrees of protection provided by enclosures) to withstand heavy dust and water splashing in substation environments.

4.6.2 Environmental Resilience: Equipment shall undergo environmental validation following IEC 60068-2-6 (Vibration testing at 2g sweep) and IEC 60068-2-27 (Mechanical shock testing at 25g) to guarantee structural stability across the operating temperature range of -10°C to 50°C.

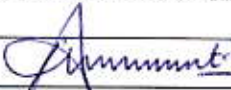
4.6.3 Carrying case: A hard case designed to protect the instrument and all accessories during transport

4.7.0 Electromagnetic Shielding & Compliance:

4.7.1 EMC Immunity:

The entire electronic assembly and data transmission components must meet IEC 61326-1 (EMC requirements for electrical equipment for measurement, control, and laboratory use). Internal components must feature heavy-duty electromagnetic shielding to ensure zero data corruption or display glitching when operated immediately adjacent to high-voltage fields, transformers, and charging substations.

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4.7.2 Field Validation: Equipment performance and scoring algorithms must align with EPRI (Electric Power Research Institute) Guidelines for corona inspection and defect severity rating.

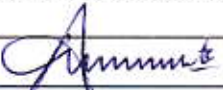
4.8.0 Supportive laptop and mobile phone requirements

4.8.1 Laptop Requirements for Data Analysis & Software Operations

- **Processor (CPU):** Shall be an Intel Core i7 / AMD Ryzen 7 processor (13th Generation or newer) featuring at least 10 cores and a turbo frequency of up to 5.0 GHz to handle simultaneous multi-spectral quantitative photon analytics and environmental correction factors.
- **System Memory (RAM):** Shall be at least 32 GB of high-speed DDR5 RAM configured in dual-channel mode to prevent system bottlenecks when rendering dense false-color UV overlays and handling coronal defect maps.
- **Dedicated Graphics (GPU):** Shall be equipped with a discrete NVIDIA RTX 40-Series graphics card (minimum 6 GB GDDR6 VRAM) to accelerate bi-spectral image fusion renderings, high-definition video scrubbing, and smooth frame-by-frame analysis of discharge logs.
- **Storage Subsystem:** Shall feature a minimum of 1 TB NVMe PCIe Gen 4.0 x4 Solid State Drive (SSD) with read speeds of at least 5000 MB/s to ensure fast transfer, reading, and loading of heavy bi-spectral video packages and metadata reports.
- **Operating System & Software Compatibility:** Shall come pre-installed with an authentic 64-bit Windows 11 Pro operating system fully compatible with the manufacturer's proprietary, license-free analysis and trend-tracking software suite.
- **Chassis & Display:** Shall feature a ruggedized or premium business-grade chassis with a minimum 15.6-inch high-resolution (Full HD or higher), anti-glare, IPS display with at least 400 nits brightness for outdoor, on-site fieldwork visibility.
- **Connectivity & Interfaces:** Shall include at least one Thunderbolt 4 / USB Type-C port (supporting Power Delivery and DisplayPort), minimum two USB 3.2 Gen 2 Type-A ports, an RJ-45 Gigabit Ethernet port, Wi-Fi 6E, and Bluetooth 5.3 for seamless wireless field data synchronization.
- **Accessories & Protection:** Shall be supplied with a premium, water-resistant protective laptop backpack, an ergonomic wireless mouse, and a heavy-duty, shock-absorbent protective sleeve.

4.8.2 Mobile Phone Requirements for Field Data Aggregation & Companion App Usage

- **Processing Engine:** Shall feature a flagship octa-core mobile processor to process real-time bilinear sound-map interpolation. *(Note: This advanced computing engine ensures instantaneous coordination of field commands and rapid execution of EPRI-aligned calculation checks).*

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- **System Memory (RAM):** Shall feature at least 12 GB of LPDDR5X RAM to ensure fluid multitasking and buffer-free operations during simultaneous data syncing and asset-mapping applications.
- **Internal Storage:** Total storage capacity shall be a minimum of 256 GB UFS 4.0 flash storage to store and organize high-definition pictures and dense bi-spectral video logs exported from the camera.
- **Interface & OTG Functionality:** Shall feature a structural USB Type-C port conforming to the USB 3.2 standard (or higher) with native USB On-The-Go (OTG) power-delivery mapping to support hosting external hardware peripherals and active data stream routing.
- **Ruggedization & Resilience:** Enclosure shall be certified to an IP68 rating in compliance with IEC 60529, ensuring complete dust-tight ingress protection and continuous water immersion resilience during severe substation or field inspections.
- **Battery & Power:** Infrastructure shall feature a minimum 5,000 mAh high-capacity lithium battery supporting fast charging (minimum 45W) to ensure prolonged runtime while powering external connected accessories.
- **Wireless Connectivity:** Integrated network chips must support 5G Sub-6GHz bands, Wi-Fi 6E/7 protocols, and Bluetooth 5.3 to facilitate quick field-to-cloud data uploads and wireless hardware synchronization.
- **Included Accessories:** Shall be delivered with a high-durability, shockproof, military-grade protective phone case and an authentic, high-speed USB Type-C to Type-C data sync cable.

4.9.0. TRAINING

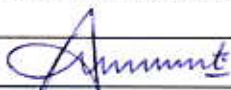
4.9.1 Training at the manufacturer's premises

- The successful bidder/manufacturer shall arrange to conduct a Factory Acceptance Test for the manufactured handheld UV utility camera. The Factory Acceptance Test shall include training on the handheld UV utility camera for four (4) KPLC engineers/technicians. At least two (2) of the engineers/technicians shall be sub-transmission users.
- The manufacturer shall plan adequate time for the training, which shall be conducted by the manufacturer's expert.
- The supplier shall meet all the costs of the factory training.

4.9.2 Local Training

- Following delivery of the handheld UV utility camera, the manufacturer shall conduct training in Nairobi, Kenya. The training shall be conducted in one session of 20 KPLC engineers/technicians and shall last at least three (3) days including field demonstrations.
- The supplier shall meet all the costs for conducting the local training, including local accommodation and transport for their training staff. The supplier shall provide all the training materials including notes.

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APPENDICIES

A: TESTS AND INSPECTION (Normative)

A.1 It shall be the responsibility of the supplier/manufacturer to test or to have all the relevant tests performed as follows:

1. Solar-Blind Optical & Sensitivity Verification

- **Solar-Blind Filtration Test:** The camera is exposed to an intense simulated solar radiation source while viewing a high-voltage corona discharge. The camera must achieve 100% sunlight rejection, registering zero false counts from sunlight between 240 nm and 280 nm.
- **pC Sensitivity Threshold Calibration:** Conducted in a dark or daylight lab using a calibrated corona discharge tube connected to an apparent charge generator. It validates that the camera accurately flags a trace 1.0 pC discharge at an exact line-of-sight distance of 15 meters.
- **Bi-Spectral Overlay Spatial Accuracy:** Uses a laser pointer aligned with a localized electrical spark source. The software's false-color corona overlay must align with the physical spark to within < 0.5 mrad, preventing misalignment during long-range field tracking.

2. Functional Hardware & Ambient Sensor Testing

- **Zoom & Focus Tracking Validation:** Automated script cycles the system through its 10x Optical / 12x Digital Zoom profile. The UV channel's focus must actively lock onto the target synchronously with the visible 0.1-Lux camera sensor.
- **Metadata & Laser Rangefinder Telemetry:** Verifies that the internal GPS, laser rangefinder, and ambient temperature/humidity sensors write accurate real-time data packets directly into the metadata layers of captured .jpg files.

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3. Electrical, Environmental & Safety Testing

- **Ingress Protection Protocol (IEC 60529):** Physical testing confirming IP54 certification via a dust-exposure chamber and a multi-directional water spray rig.
- **Mechanical Ruggedness (IEC 60068-2-6 / IEC 60068-2-27):** Shaker table tests running 2g sweeps and impact test blocks applying 25g shocks to ensure the 5.0+ inch LCD screen, battery locks, and optical barrel remain perfectly aligned.
- **High-Voltage EMC Immunity (IEC 61326-1):** The camera operates continuously inside an RF testing cell generating intense electromagnetic fields mimicking a high-voltage substation. The display, wireless systems, and storage cards must suffer zero data dropouts or visual artifacting.
- **Thermal Soak Cycle:** Continuous 8-hour soak tests at the environmental limits of -10°C and 50°C to verify that the power architecture and internal components maintain a stable 4-hour runtime without software crashes.

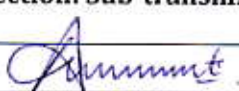
A.2 On receipt of the Handheld UV electric utility camera, Kenya Power will inspect them and may perform or have performed any of the relevant tests to verify compliance with the specification. The supplier shall replace without charge to Kenya Power, any part on the equipment which upon examination, test or use fail to meet any or all the requirements in the specification.

B: QUALITY MANAGEMENT SYSTEM (Normative)

B.1 The bidder shall indicate the delivery time of the equipment

C: DOCUMENTATION AND DEMONSTRATION (Normative)

C.1 The bidder shall submit its tender complete with technical documents for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:

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- a) Fully filled clause by clause guaranteed technical particulars (GTP) signed by the manufacturer.
- b) Copies of the Manufacturer's catalogues, brochures, drawings giving all relevant dimensions, and technical data;
- c) Bidder's warranty and guarantee; subject to 12 months from date of delivery to KPLC stores
- d) User manual.

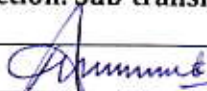
C.2 The bidder (supplier) shall submit the following documents/details to The Kenya Power & Lighting Company for approval before manufacture:

- a) Fully filled clause by clause guaranteed technical particulars (GTP) stamped and signed by the manufacturer, agent or dealer.
- b) Product manuals, operation manuals and brochures,
- c) All documentation necessary for safety of the product.
- d) Packaging details (including packaging materials).

C.3. The supplier shall submit recommendations for use, care, storage and routine inspection/testing procedures, all in the English Language, during delivery of the Handheld UV electric utility camera to KPLC stores.

C.4. Instrument Marking and Product Labeling Specifications

- **Nameplate Permanence:** The Handheld UV Electric Utility Camera body shall be marked legibly, indelibly, and permanently in the English language. The character height for primary data points shall not be less than 4 mm.
- **Mandatory Labeling Details:** In accordance with KPLC instrument standards, the nameplate shall be forged, stamped, or laser-etched onto the camera chassis before delivery, containing the following details:
 - 1. Name or trademark of the manufacturer and country of origin.

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2. Type, model number, and unique hardware serial number.
3. Batch number and month/year of manufacture.
4. Nominal operating voltage, frequency, and maximum power consumption ratings.
5. Ingress Protection (IP) rating and compliance standards.
6. The prominent statutory inscription: "**PROPERTY OF K.P. & L. CO. PLC**".

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D: GUARANTEED TECHNICAL PARTICULARS (Normative)

To be filled and signed by the Bidder and submitted together with relevant copies of the Manufacturer's catalogues, brochures, drawings, technical data, for tender evaluation, all in English Language)

Tender No.

Bidder's name and Address.....

Clause number	KPLC Requirement	Bidder's offer	Comments
Manufacturer's Name			
Country of Manufacture			
Name and model Number			
4.1.1	Solar-Blind Spectral Range: 240 nm to 280 nm The sensor must utilize high-rejection solar-blind filtering technology ensuring 100% sunlight rejection to allow accurate daytime corona tracking under full sun.		
4.1.2	UV Sensitivity: Must achieve a minimum discharge sensitivity of 2.2×10^{-18} W/cm ² , capable of detecting trace partial discharges down to 1.0 pC at a distance of 15 meters.		
4.1.3	Radio Interference Voltage (RIV) Sensitivity: Minimum RIV sensitivity shall be 3.6 dBμV @ 1 MHz.		
4.1.4	Optical Camera: High-definition color digital sensor with low-light capability down to 0.1 Lux.		
4.1.5	Lens Focusing & Zoom: Synchronized auto-focus system where the UV focus actively tracks the visible light focus, supporting at		

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	least 10x Optical Zoom and 12x Digital Zoom.		
4.1.6	Field of View (FOV): Narrow telephoto configuration optimized for standoff utility inspections, roughly 6.4° x 4.8°.		
4.2.1	Bi-Spectral Overlay Accuracy: Real-time software core that overlays UV discharge "blobs" directly onto the visible light image. The absolute overlay spatial accuracy must be better than 0.5 mrad.		
4.2.2	Display Modes: System must allow seamless toggling between UV Only, Visible Only, and Combined Bi-Spectral Overlay.		
4.2.3	Quantitative Analysis: Onboard digital photon counting analytics supporting single or multiple selectable regions of interest (ROI) to score defect severity.		
4.2.4	False Color Customization: Ability to change the overlaid UV emission color palette (e.g., Red, White, Purple) to guarantee clean visibility against complex backgrounds.		
4.3.1	Display Screen: Premium integrated 5.0-inch to 5.7-inch color LCD touchscreen. Must be engineered for high-brightness, sunlight-readable performance at a minimum of 1,000 nits/cd/m².		
4.3.2	Ergonomics & Weight: Designed for single-handed pistol-grip		

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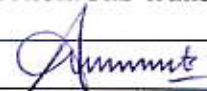
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	operation with a total weight not exceeding 1.9 kg including battery. Must include a physical quick-snap capture trigger and backlit physical function keys for low-light use.		
4.4.1	Battery System: Powered via high-capacity, field-swappable, rechargeable Lithium-Ion batteries providing a minimum runtime of 4 hours per charge cycle.		
4.4.2	Charge Input: Main system unit and external desk charger must support an input range of 90–264V AC, 50/60 Hz. The power infrastructure, battery insulation, and charger interface shall satisfy the safety criteria of IEC 61010-1 (Safety requirements for electrical equipment for measurement, control, and laboratory use).		
4.5.1	Onboard Metadata & Sensors: Embedded hardware must include GPS geolocation positioning, an ambient Temperature and Humidity sensor, and an integrated Laser Rangefinder to automatically calculate environmental correction factors for discharge calculations.		
4.5.2	Storage Capacity: Minimum 64 GB via ruggedized removable flash storage (TF/SD card), capturing still .jpg images and real-time audio/video files with integrated voice annotations.		
4.5.3	Data Export: Shall feature high-speed USB-C and wireless connectivity options.		
4.6.1	Ingress Protection: Enclosure shall be certified to an IP54 rating in strict compliance		

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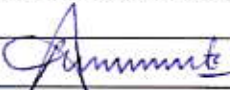
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	with IEC 60529 (Degrees of protection provided by enclosures) to withstand heavy dust and water splashing in substation environments.		
4.6.2	Environmental Resilience: Equipment shall undergo environmental validation following IEC 60068-2-6 (Vibration testing at 2g sweep) and IEC 60068-2-27 (Mechanical shock testing at 25g) to guarantee structural stability across the operating temperature range of -10°C to 50°C.		
4.6.3	Carrying case: A hard case designed to protect the instrument and all accessories during transport		
4.7.1	EMC Immunity: The entire electronic assembly and data transmission components must meet IEC 61326-1 (EMC requirements for electrical equipment for measurement, control, and laboratory use). Internal components must feature heavy-duty electromagnetic shielding to ensure zero data corruption or display glitching when operated immediately adjacent to high-voltage fields, transformers, and charging substations.		
4.7.2	Field Validation: Equipment performance and scoring algorithms must align with EPRI (Electric Power Research Institute) Guidelines for corona inspection and defect severity rating.		

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4.8.1	Laptop Requirements for Data Analysis & Software Operations • Processor (CPU): Shall be an Intel Core i7 / AMD Ryzen 7 processor (13th Generation or newer) featuring at least 10 cores and a turbo frequency of up to 5.0 GHz to handle simultaneous multi-spectral quantitative photon analytics and environmental correction factors. • System Memory (RAM): Shall be at least 32 GB of high-speed DDR5 RAM configured in dual-channel mode to prevent system bottlenecks when rendering dense false-color UV overlays and handling coronal defect maps. • Dedicated Graphics (GPU): Shall be equipped with a discrete NVIDIA RTX 40-Series graphics card (minimum 6 GB GDDR6 VRAM) to accelerate bi-spectral image fusion renderings, high-definition video scrubbing, and smooth frame-by-frame analysis of discharge logs. • Storage Subsystem: Shall feature a minimum of 1 TB NVMe PCIe Gen 4.0 x4 Solid State Drive (SSD) with read speeds of at least 5000 MB/s to ensure fast		

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	transfer, reading, and loading of heavy bi-spectral video packages and metadata reports. • Operating System & Software Compatibility: Shall come pre-installed with an authentic 64-bit Windows 11 Pro operating system fully compatible with the manufacturer's proprietary, license-free analysis and trend-tracking software suite. • Chassis & Display: Shall feature a ruggedized or premium business-grade chassis with a minimum 15.6-inch high-resolution (Full HD or higher), anti-glare, IPS display with at least 400 nits brightness for outdoor, on-site fieldwork visibility. • Connectivity & Interfaces: Shall include at least one Thunderbolt 4 / USB Type-C port (supporting Power Delivery and DisplayPort), minimum two USB 3.2 Gen 2 Type-A ports, an RJ-45 Gigabit Ethernet port, Wi-Fi 6E, and Bluetooth 5.3 for seamless wireless field data synchronization. • Accessories & Protection: Shall be supplied with a premium, water-resistant protective laptop backpack, an ergonomic wireless		

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	mouse, and a heavy-duty, shock-absorbent protective sleeve.		
	Mobile Phone Requirements for Field Data Aggregation & Companion App Usage • Processing Engine: Shall feature a flagship octa-core mobile processor to process real-time bilinear sound-map interpolation. <i>(Note: This advanced computing engine ensures instantaneous coordination of field commands and rapid execution of EPRI-aligned calculation checks).</i> • System Memory (RAM): Shall feature at least 12 GB of LPDDR5X RAM to ensure fluid multitasking and buffer-free operations during simultaneous data syncing and asset-mapping applications. • Internal Storage: Total storage capacity shall be a minimum of 256 GB UFS 4.0 flash storage to store and organize high-definition pictures and dense bi-spectral video logs exported from the camera. • Interface & OTG Functionality: Shall feature a structural USB Type-C port conforming to the USB 3.2 standard (or higher) with		

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	native USB On-The-Go (OTG) power-delivery mapping to support hosting external hardware peripherals and active data stream routing. • Ruggedization & Resilience: Enclosure shall be certified to an IP68 rating in compliance with IEC 60529, ensuring complete dust-tight ingress protection and continuous water immersion resilience during severe substation or field inspections. • Battery & Power: Infrastructure shall feature a minimum 5,000 mAh high-capacity lithium battery supporting fast charging (minimum 45W) to ensure prolonged runtime while powering external connected accessories. • Wireless Connectivity: Integrated network chips must support 5G Sub-6GHz bands, Wi-Fi 6E/7 protocols, and Bluetooth 5.3 to facilitate quick field-to-cloud data uploads and wireless hardware synchronization. • Included Accessories: Shall be delivered with a high-durability, shockproof, military-grade protective phone case and an authentic, high-speed USB Type-C to		

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	Type-C data sync cable.		
4.9.1	Training at the manufacturer's premises - The successful bidder/manufacturer shall arrange to conduct a Factory Acceptance Test for the manufactured handheld UV utility camera. The Factory Acceptance Test shall include training on the handheld UV utility camera for four (4) KPLC engineers/technicians. At least two (2) of the engineers/technicians shall be sub-transmission users. - The manufacturer shall plan adequate time for the training, which shall be conducted by the manufacturer's expert. - The supplier shall meet all the costs of the factory training.		
4.9.2	Local Training Following delivery of the handheld UV utility camera, the manufacturer shall conduct training in Nairobi, Kenya. The training shall be conducted in one session of 20 KPLC engineers/technicians and shall last at least three (3) days including field demonstrations.		

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	The supplier shall meet all the costs for conducting the local training, including local accommodation and transport for their training staff. The supplier shall provide all the training materials including notes.		

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Bidder's Name, Signature, Stamp and Date

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