

Stationary system for detection of UAV, DJI AeroScope or equivalent	 IAEA International Atomic Energy Agency	IAEA Specification Dated 2023-11-07
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SPECIFICATION

Stationary system for detection of UAV, DJI AeroScope or equivalent

1. Scope

During the ongoing armed conflict in Ukraine, critical infrastructure and energy facilities have faced an elevated threat from Uncrewed Aerial Vehicles (UAVs). In order to detect and counteract these UAVs, it is necessary to procure and deploy the appropriate systems for detecting and identifying any such objects which infringe upon the airspace over the SSE ChNPP.

This specification describes the requirements for a stationary system for detection of UAV, DJI AeroScope, hereinafter referred to as “the System”. The System will be used for detection of UAV and tracking the signals of those UAV which cross the protected zone boundaries of SSE ChNPP perimeter.

2. Applicable Documents

The following documents shall be applicable for this Specification to the extent specified hereinafter:

[1] The Decree of President of Ukraine on the Resolution of National Security and Defence Council of Ukraine “On Actions to Neutralize Threats in the Field of Nuclear Energy and Industry” dated 29.01.2021 No.35/2021, pursuant to par.30 of Clause 5 of Interdepartmental Commission Deed “On security arrangements for SSE ChNPP” dated 24.02.2021 No.37t,

[2] Letter of Deputy Commander of National Guard of Ukraine dated 08.07.2021 No. 27/8/3/1-5886/05,

[3] “Counterterrorism Action Plan of the State Agency of Ukraine for Exclusion Zone Management” approved by SAUEZM order 18.10.2021 No. 154-21

In the event of conflict between the documents listed above and the content of this Specification, the content of this Specification shall take precedence to the extent of the conflict.

3. Definitions, Acronyms, and Abbreviations

The following definitions, acronyms, and abbreviations shall apply throughout this Specification unless defined otherwise hereinafter:

UAV Unmanned Aerial Vehicle

ChNPP The Chernobyl Nuclear Power Plant

SSE ChNPP State Specialized Enterprise “Chernobyl NPP”

4. Requirements

4.1. Functional and Performance Requirements

The System shall meet the following functional and performance requirements:

The System shall:

- 4.1.1. Detect and monitor UAVs to prevent consequential incidents;
- 4.1.2. Capable of identifying the vast majority of popular drones on the market;
- 4.1.3. Consist of two main elements, namely i) a signal that is transmitted automatically commercially available drones (such as by every DJI drone sold since 2017) and ii) the receivers that can receive these signals at distance;
- 4.1.4. Capable of detection of UAV and tracking the signals of those UAV which cross the protected zone boundaries of SSE ChNPP perimeter in online mode;
- 4.1.5. Have function to pinpoint the vehicle and determine the parameters of location and movement (altitude, direction of the movement, speed, model, serial ID, operator's geolocation etc.); and
- 4.1.6. The distance for detecting shall be no less than 10 km.

4.2. Technical Requirements

The System shall meet the following technical requirements:

- 4.2.1. Ingress Protection Rating: IP65;
- 4.2.2. Lightning Rating: IEC61000-4-5 6KV;
- 4.2.3. Electro Magnetic Compatibility:
 - EN 55032: 2015
 - EN 55024: 2010+A1:2015
 - EN 61000-3-2: 2014
 - EN 61000-3-3: 2013
 - United States:
 - 47 CFR Part 15, Subpart B:2016
- 4.2.4. Power consumption: approx. 70W;
- 4.2.5. Input Voltage: Voltage range: 100VAC ~ 240VAC;
- 4.2.6. Operating temperature:
 - 30°C to +50°C (without solar radiation)
 - 30°C to +45°C (with solar radiation)
- 4.2.7. Relative Humidity: 5%RH ~ 100%RH
- 4.2.8. Absolute Humidity: 1g/m³ ~ 30g/m³
- 4.2.9. Atmospheric pressure: 70kPa ~ 106kPa
- 4.2.10. A ruggedized laptop will be provided for the operation of the device. The laptop must have sufficient hardware to enable full compatibility and operability with the system. Minimum specifications: Core i7 3.2 GHz quad-core processor, 8 GB DDR4 memory, and 1 TB SSD storage.
- 4.2.11. If a software license is required for use of the system, a lifetime license will be purchased by the contractor.



5. Marking

The system shall have all markings in English and Ukrainian language. If both languages are not possible, one language will be sufficient with Ukrainian preferred.

6. Packing

The System, for the shipment by air to the End-User, shall be packed in accordance with international standards that are applicable for the shipment by air of this kind of equipment.

7. Quality Requirements

7.1. The System shall be manufactured, shipped and installed in accordance with the Contractor's ISO quality assurance system or an equivalent quality assurance system.

7.2. The Contractor shall document the compliance with this quality assurance system.

8. Testing and Acceptance

The System, prior to shipment, shall be tested for conformance of the System with manufacturer's performance specifications and the minimum requirements specified herein.

The System, after installation, shall be tested by the Contractor together with the End-User to demonstrate that the performance meets the manufacturer's performance specifications and the minimum requirements specified herein as determined by the IAEA and the End-User.

The results of the testing of the System shall be documented by the Contractor in an acceptance protocol that shall be signed by the End-User.

9. Training

The Contractor shall provide one day training for up to three staff of the End-User in the operation and maintenance of the System at the End-User's location immediately after the installation of the System.

10. Delivery Requirements

The contractor shall ensure the availability and installation of the system within two (2) months upon the receipt of the IAEA purchase order.

11. Warranty

Starting at the date of acceptance of the operation by the end-user, the contractor shall provide one (1) year of full warranty.

12. Deliverable Data Items

The Contractor shall provide two complete sets of operation and servicing manuals and technical drawings in both English and Ukrainian language. If both languages are not possible, one language will be sufficient with Ukrainian preferred.
