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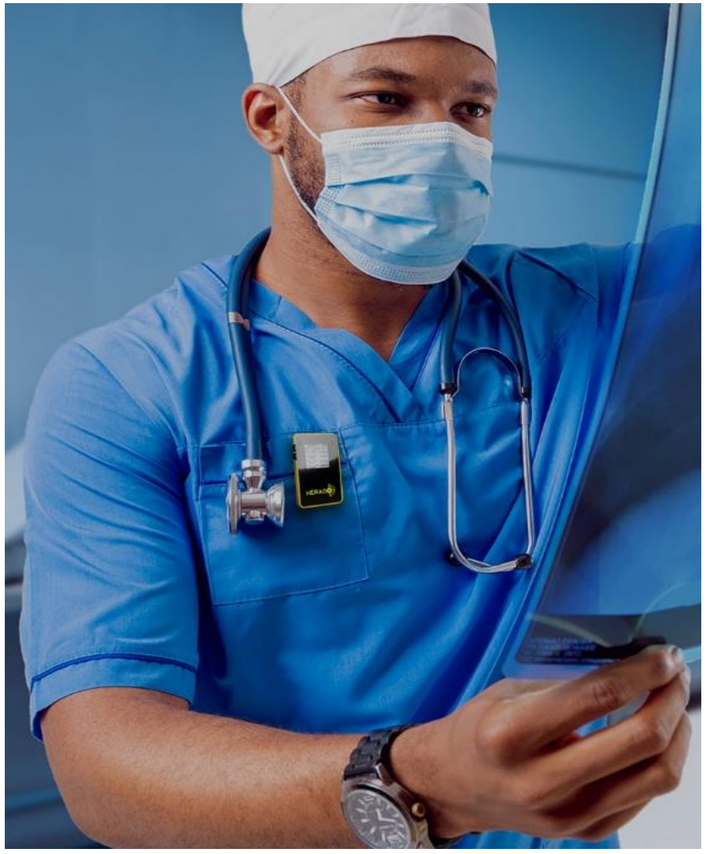

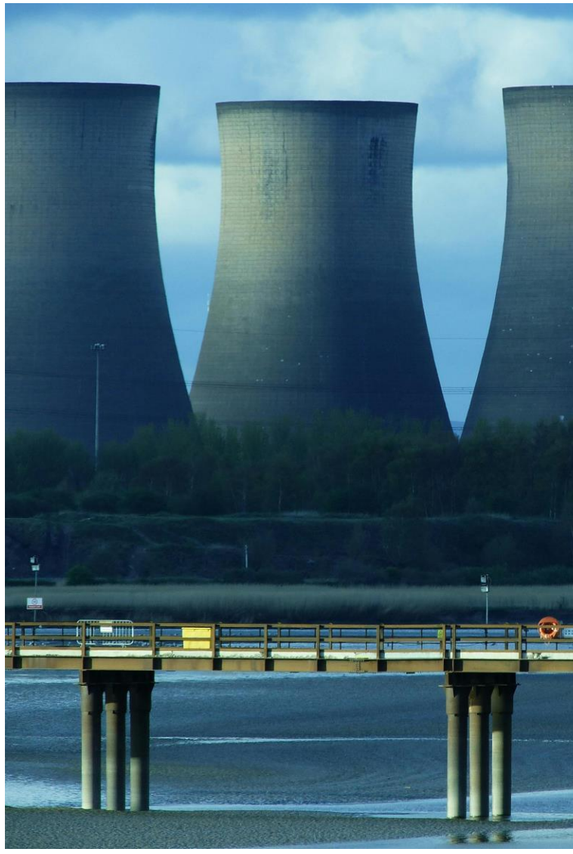

Ultra-Sensitive dosimeter for Artemis: Enabling Lower Detection Limits in Space Radiation Measurement.

Marianthi Fragkopoulou
CEO of HERADO Group

ALMAR history

2016
Prototype

2017
Ver.1

2017
Ver. 2

2018
Ver. 3

2018
Ver. 4

2019
Ver. 5

2020
Ver. 6

2023
Ver. 7

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SELECTED STARTUP

EUROPEAN TOP 10 SPACE STARTUP

Why to use ALMAR in space

- High Stability
- Lower detectable limit 0,6 µSv
- Linearity up to 10 Sv
- Measure the different types of radiation.
- Fully calibrated (Los Alamos, HIMAC,)
- Dose rate and angular dependence < 5%
- No Electromagnetic interference
- Very low power consumption/ Long battery lifetime/rechargeable
- Compact Size and weight
- Selection of the alarm levels
- software/ telemetry system
- User friendly

CE

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Solution | A Real-Time Radiation Data

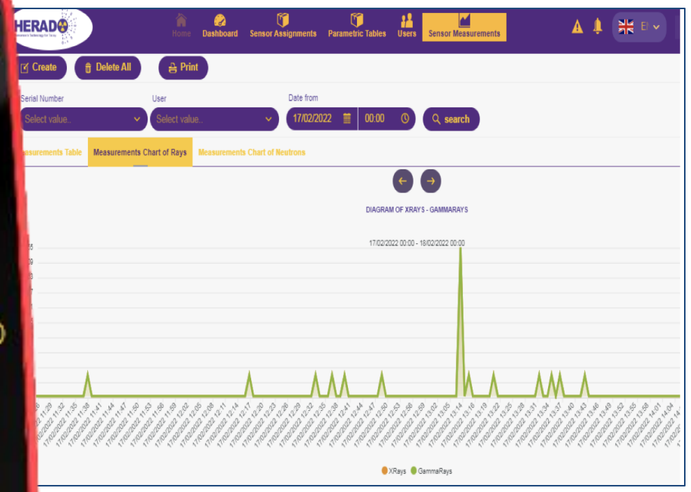
EN 61526:2013

25 gr

Wide Range

X-rays, Gamma
Neutrons, Electrons
Heavy Ions

IP 68



HERADO Platform

Analysis Platform

Real Time Dose Breakdown
Cumulative Dose
Metadata per device/user/procedure

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ALMAR characteristics

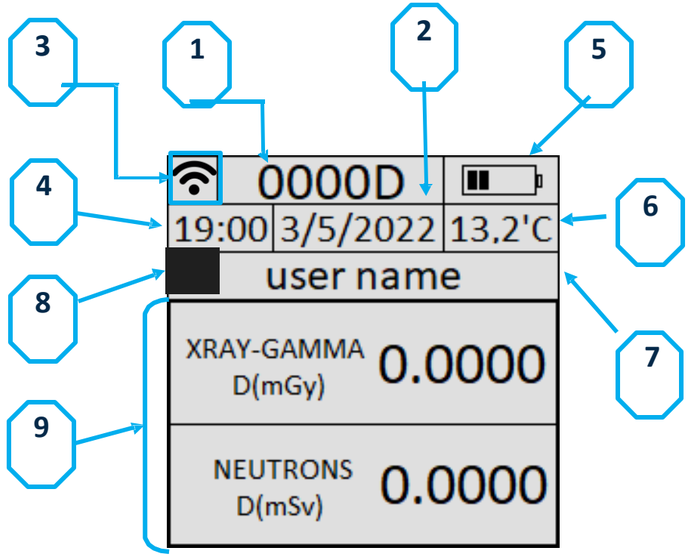
Power consumption
Active mode typical current: 5mA
Stand-by mode typical current: below of 0.5 µA

Measurement of protons and neutrons

The battery may last for more than 4 months

<u>Dimensions</u>
Compact size & weight Weight: 25 gr
Length: 79 mm
Width: 10 mm
Height: 48 mm

WiFi and USB connectivity



1. .Unique Device ID
2. .Date
3. .WiFi ON indicator
4. .Time
5. .Battery level indicator
6. .Temperature
7. .User name
8. .Mode H
9. .Measurement Area

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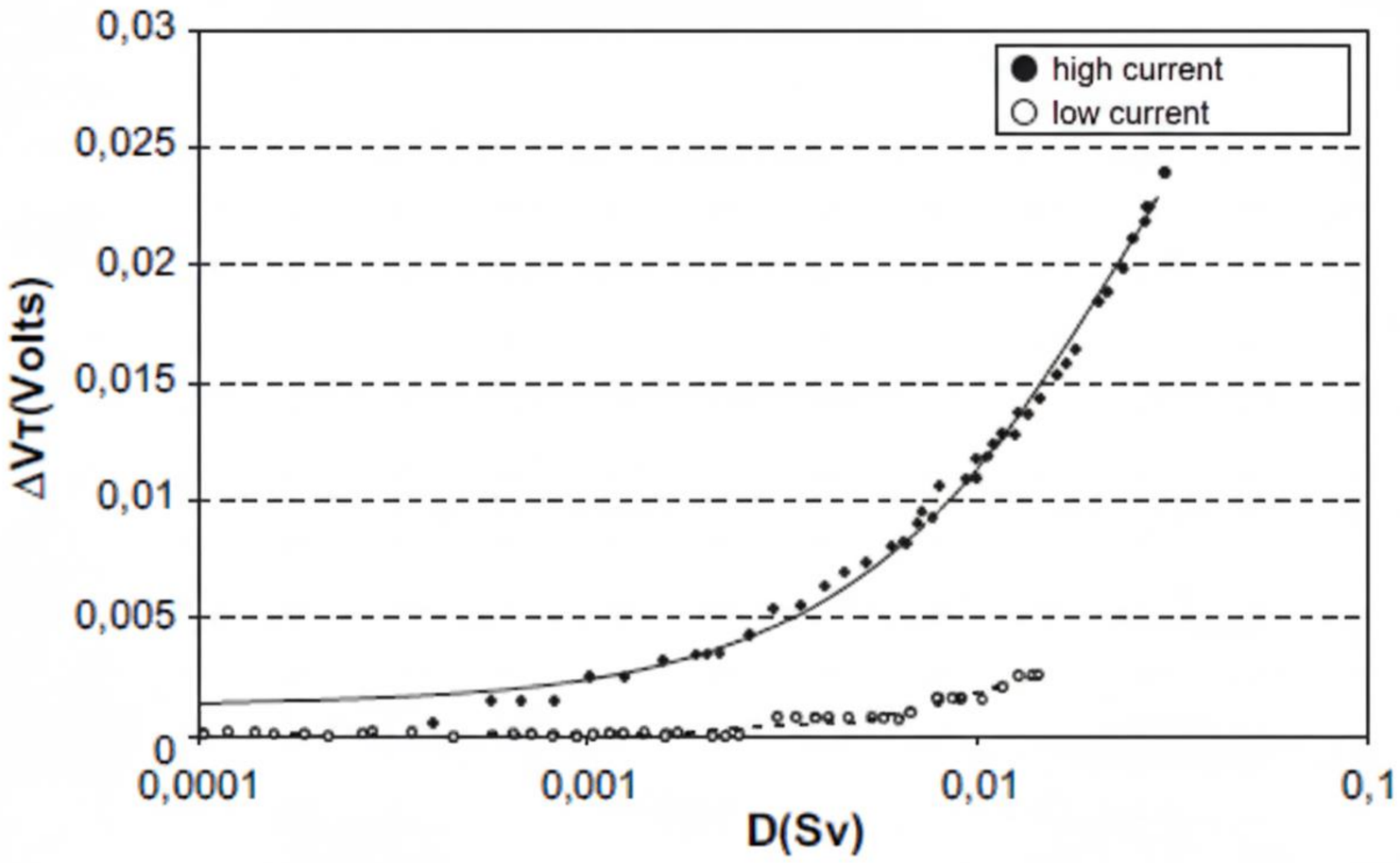
Linear Test of ALMAR



Response in Gamma radiation

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ALMAR test and measurements reports

ALMAR is **fully licensed CE** (EN 61526) and **accredited, meets ICRU 95 recommendations**.

Conforms with the following Harmonized standards:

Safety:	EN 61010-1:2010 + A1:2019 + AC:2019
EMC:	ELOT EN 61326-1 E3:2021 / ELOT EN 61326-1 E2:2013 ELOT EN 60601-1-2 E4:2015 + A1:2021 IEC 60533:2015 IEC 60092-504:2016 ELOT EN 60945 E3:2003 ELOT EN IEC 61000-6-2 E3:2019 / ELOT EN 61000-6-2 E2:2005 ELOT EN IEC 61000-6-3 E3:2021 / ELOT EN 61000-6-3 E2:2007 + A1:2011 ETSI EN 301 489-1 v2.2.3 (2019-11) / ETSI EN 301 489-1 v1.9.2 (2011-09) ETSI EN 301 489-17 v3.2.4 (2020-09)
RED:	ETSI EN 300 328 V2.2.2 (2019-07)
RoHS:	EN IEC 63000:2018
Human Exposure:	EN 62311:2008
Radiation Protection:	EN 61526:2013

Photo 8.1: Setup for radiated emissions test (30MHz-1GHz)

ALMAR test and measurements reports

ALMAR is **fully licensed CE** (EN 61526) and **accredited, meets ICRU 95 recommendations**.

Conforms with the following Harmonized standards:

Test Parameters	Version 7	New Version
80MHz-1GHz (80% 1kHz AM modulation)	**Improved Performance:** First deviation at 55V/m within 920-1000MHz.	Test was already passed
800-960MHz (28V/m Pulse Modulation 50% 18Hz) - Medical Equipment	**Success:** No measurement deviation.	Test was already passed
1GHz-6GHz (80% 1kHz AM modulation)	**Success:** No measurement deviation at 17-27V/m.	Test was already passed
2.400GHz-2.570GHz (28V/m Pulse Modulation 50% 217Hz) - Medical Equipment	**Failure:** Test failure at >20V/m within 2.480GHz - 2.560GHz.	**Success:** Passed the test after the update.

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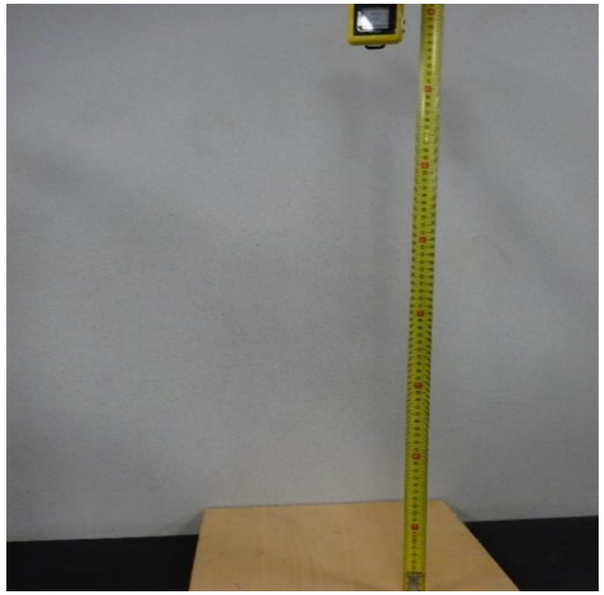
ALMAR mechanical test

ALMAR Static test

ALMAR Drop test

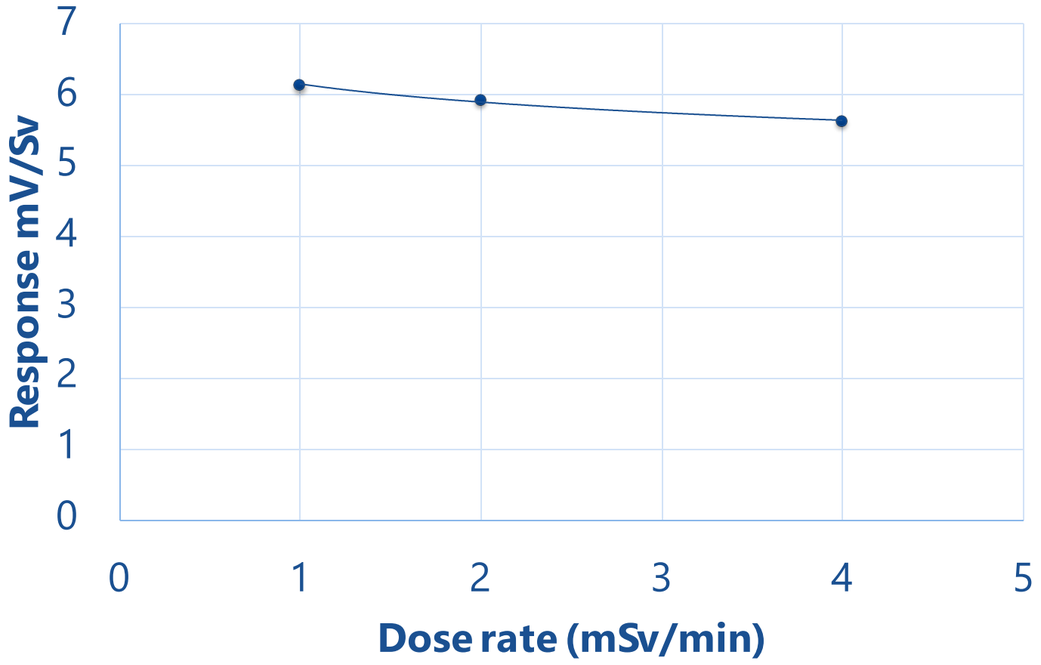


ALMAR Impact test

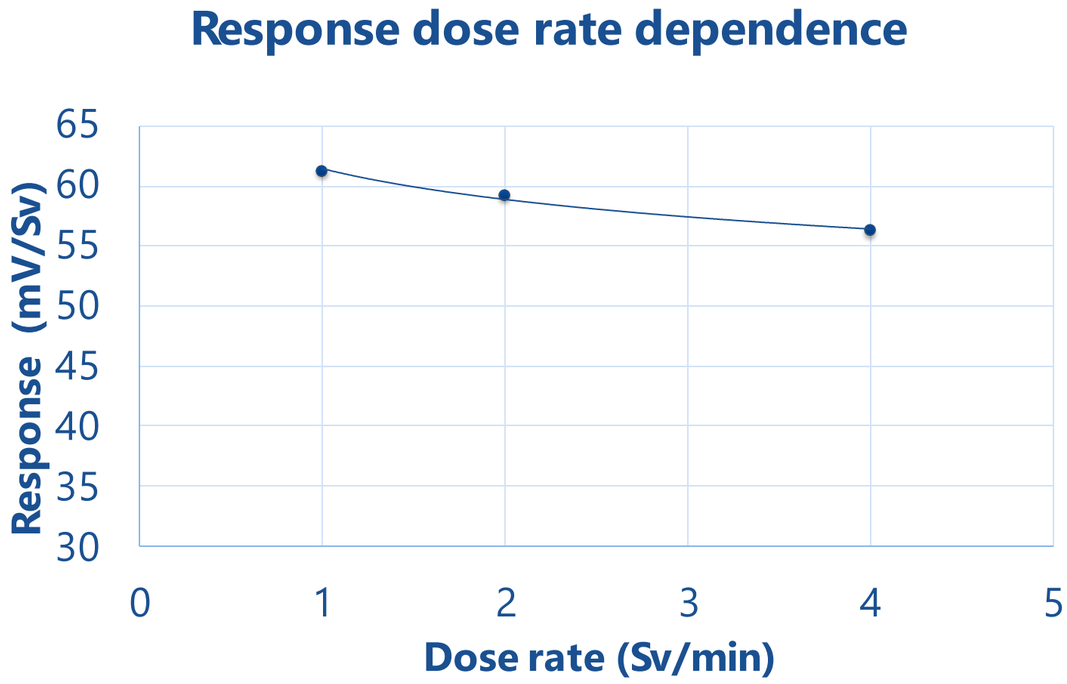
Conforms with the EN 61010-1 E3: 2010 + A1:2019 + AC1:2019. Harmonized standards:

A compact, smooth steel sphere with a diameter of 50 mm± 1 mm and a mass of 500 g ±25 g was used for the tests.

Dose Rate Test



Low Dose



High Dose mode

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HERADO: Test Inside the Water

HERADO: Integrated Dosimetry for Unmanned Vehicles

Seamless Integration

Real-time Situational Awareness

Mission Versatility

Robust & Reliable

On a wide range of UGVs, UAVs vehicles

Immediate, accurate low level radiation dose measurements

Crucial for sensitive geopolitical zones

Essential WMD threat detection

Enhance Unmanned Vehicle Operations with Integrated Radiation Monitoring.

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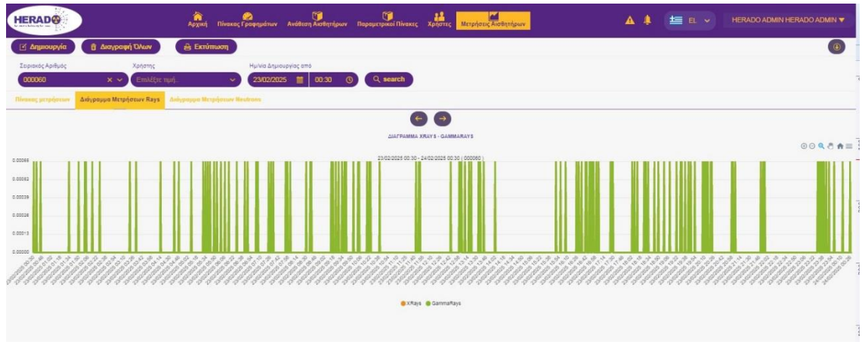
HERADO: Homeland Security Drone Fly

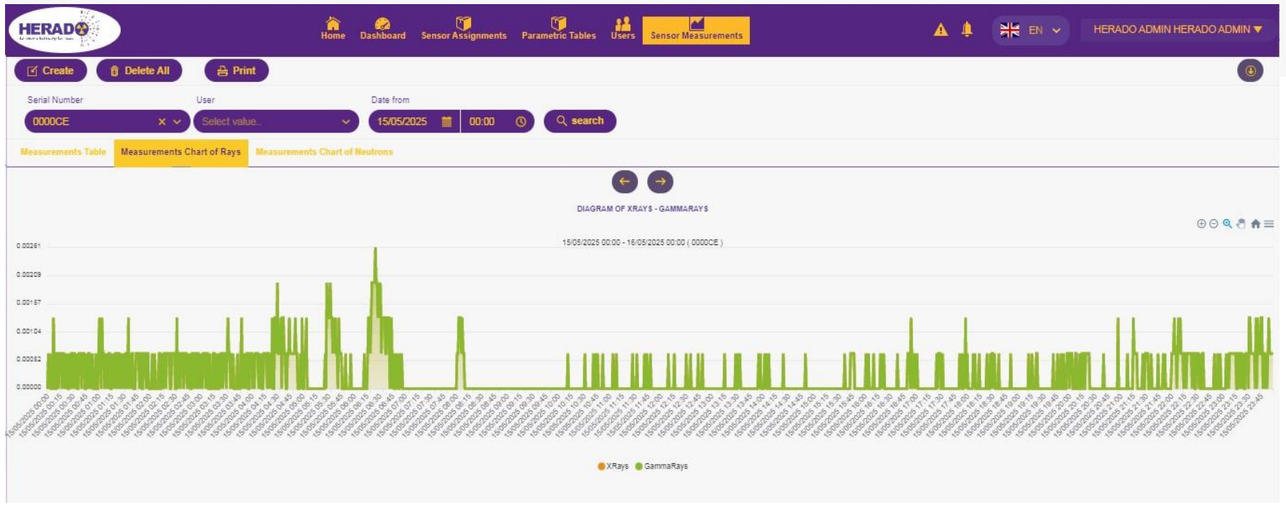
HERADO: Measurements

Normal Daily Background



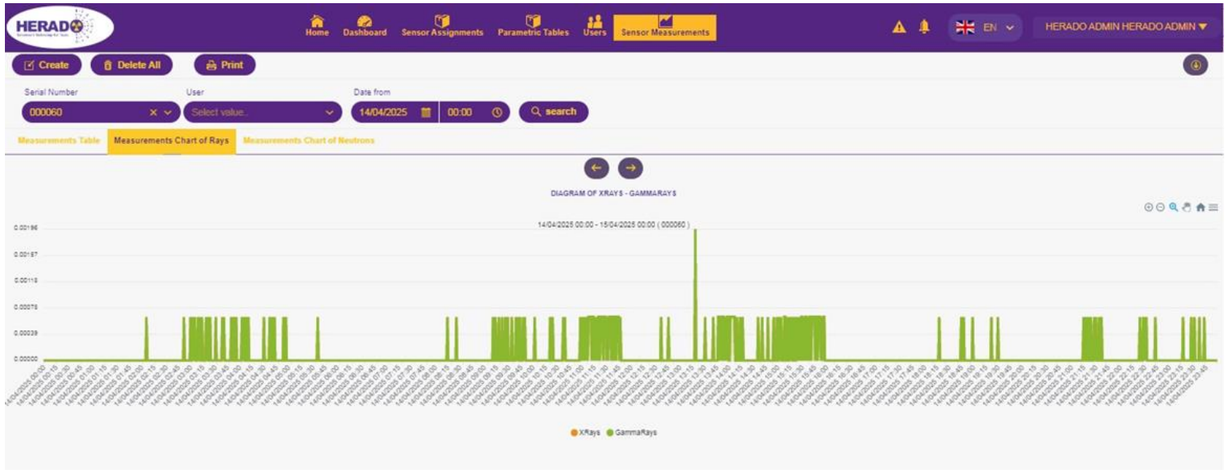
May 14, 2025

May 15, 2025

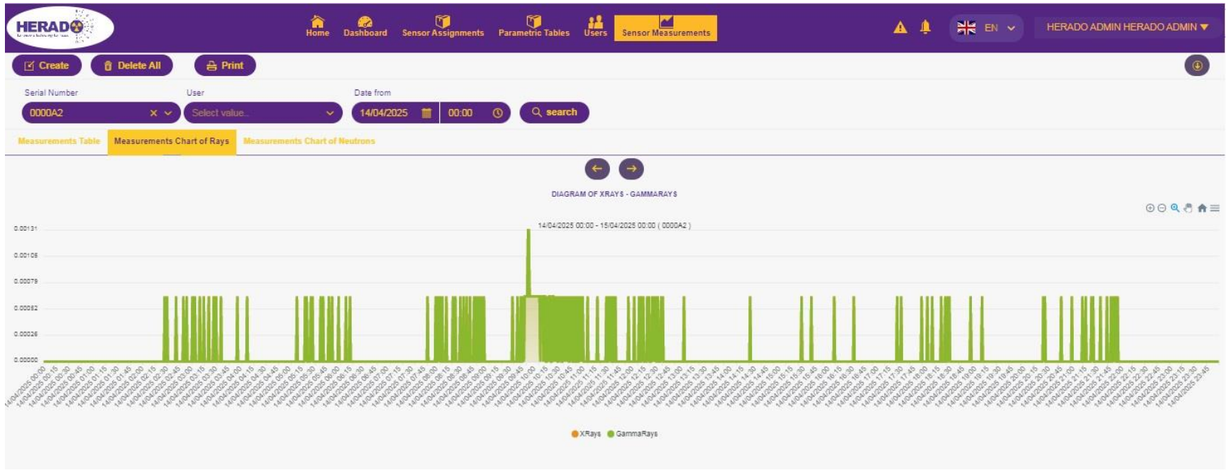


HERADO: Measurements

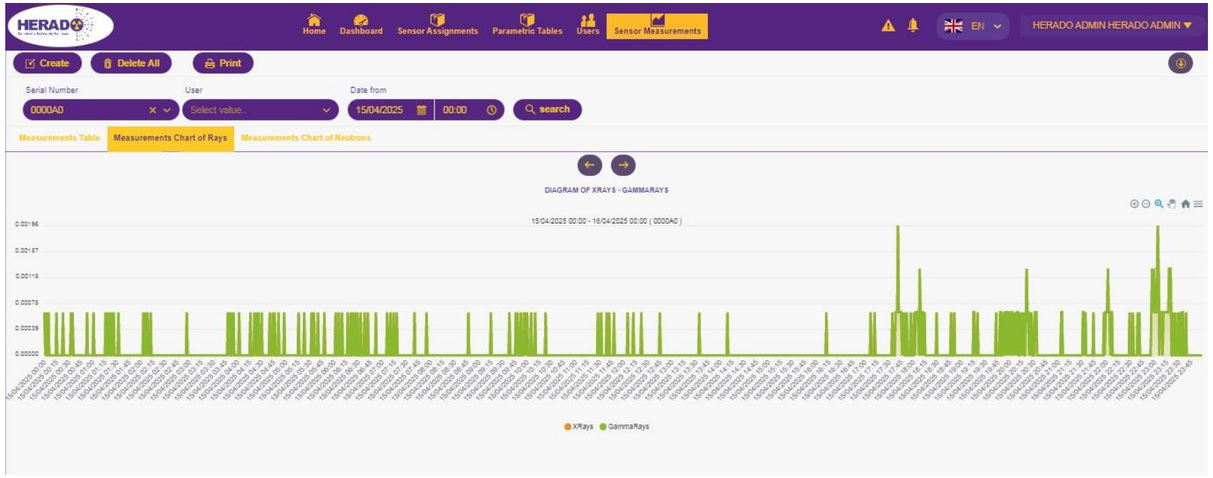
Almar Station 000060 **April 14, 2025**



Almar Station 0000A2 **April 14, 2025**



Almar Station 0000A0 **April 15, 2025**



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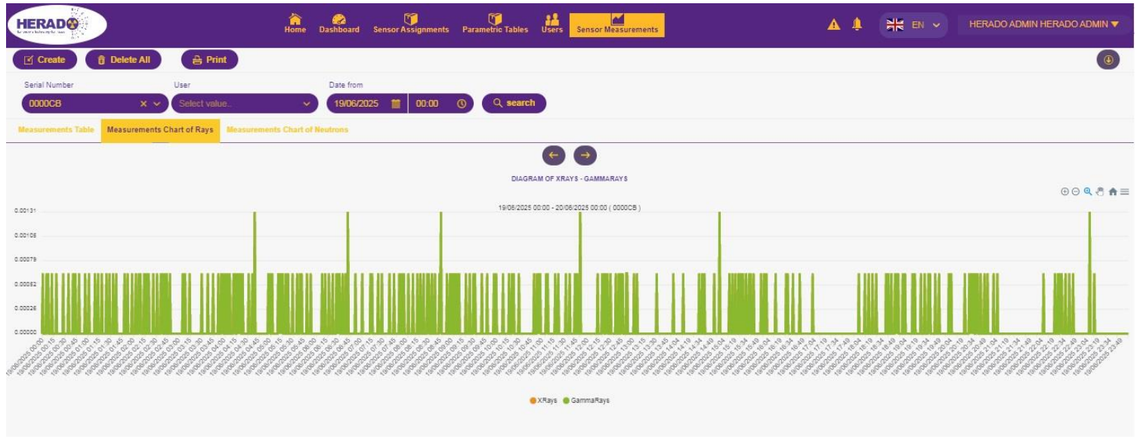
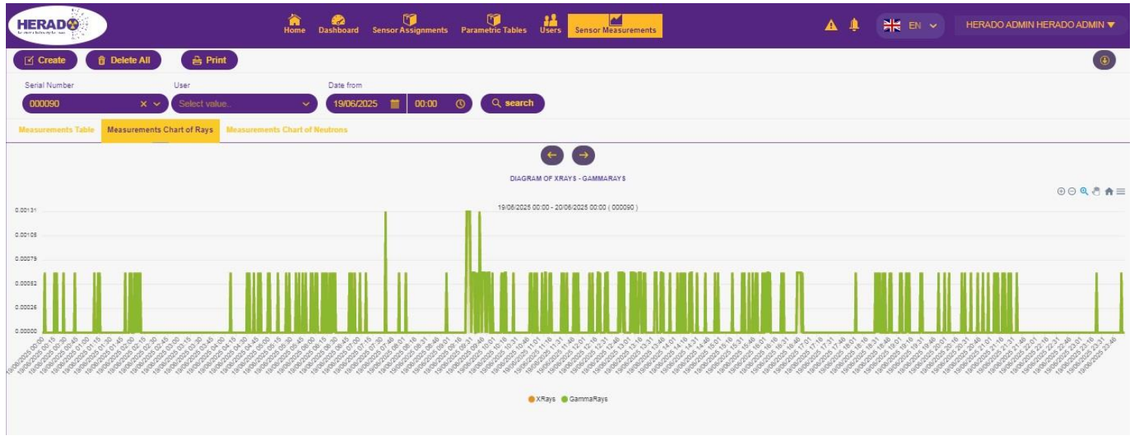
HERADO: Measurements

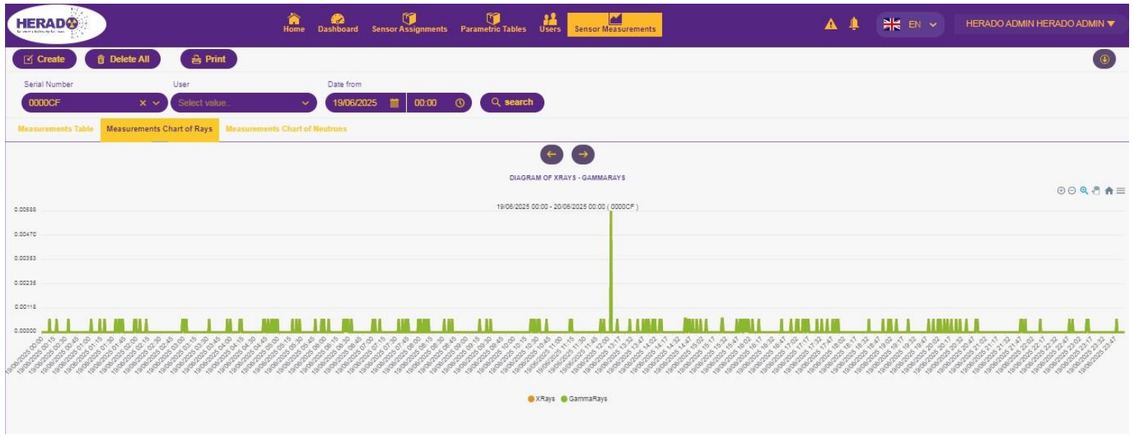
Almar Station 0000CB **June 19, 2025**



Almar Station 000090 **June 19, 2025**



Almar Station 0000CF **June 19, 2025**



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Continued focus on ESG
Lower power consumption, rechargeable batteries

Enhance returns to shareholders
Continuous investment in organic and inorganic growth

Portfolio evolution
towards higher-growth end markets, mitigating business risks

Accelerated growth in line with global megatrends
IoT clever device, Digital AI healthcare protocol

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ARTEMIS ORION

Co-investigator with NASA and DLR