

AT6101DR Spectrometer



Automatic contamination calculations for:
 ^{134}Cs , ^{137}Cs , ^{131}I , ^{40}K , ^{226}Ra , ^{232}Th

- Automatic calculation of NORM contribution
- Measurement of surface and specific activity of ^{134}Cs and ^{137}Cs of the soil with in situ measurement geometry correction (in places of natural occurrence without preliminary sampling). Automatic thickness determination of soil layer contaminated by radionuclides
- Measurement of specific activity of ^{137}Cs , ^{134}Cs , ^{131}I in water, foodstuffs, agricultural and forestry products
- Radionuclide identification
- Measurement of ambient gamma radiation dose equivalent rate on objects of radiation monitoring
- Internal GPS-receiver provides geo-tagging option for measured data.

Applications

- Environmental monitoring
- Radiation monitoring during decontamination operations
- Geological survey
- Radioactive waste monitoring
- Construction material and products radiation monitoring
- Dosimetry survey and radioactive contamination mapping

Features

- Wireless communication between detection device and hand-held PC (Tablet PC)
- Automatic calculation of contaminated soil layer thickness for ^{137}Cs and ^{134}Cs radionuclides
- Instant detection of near background dose rate level increase
- Automatic LED stabilization and temperature compensation
- Easy calibration procedure using KCl check sample or naturally occurring ^{40}K
- Expert mode for detailed spectrum analysis with automatic radionuclide identification
- Records and stores in non-volatile memory up to 140,000 measured spectra
- All measurement data can be transferred to PC for further detailed processing and mapping with GARM software
- Display of measurement results with GPS tagging (for Tablet PC version)
- Measurement result display in:
 Bq/kg (^{134}Cs , ^{137}Cs , ^{131}I , ^{40}K , ^{226}Ra , ^{232}Th),
 ppm (^{226}Ra , ^{232}Th),
 % (^{40}K)



Concept of operation:

Smart detector module in IP67 shock, dust and moisture-proof housing registers gamma radiation of controlled radionuclides

Data is wirelessly transmitted to the hand-held PC (Tablet PC).

Spectral processing software can display radioisotope composition data as specific or surface activity of certain radionuclides or their concentration and specific effective activity of natural radionuclides.

Optionally measurement results can be GPS tagged.



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 Instruments and Technologies for Nuclear
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Zievert

Ionizing radiations
 detectors and
 instruments

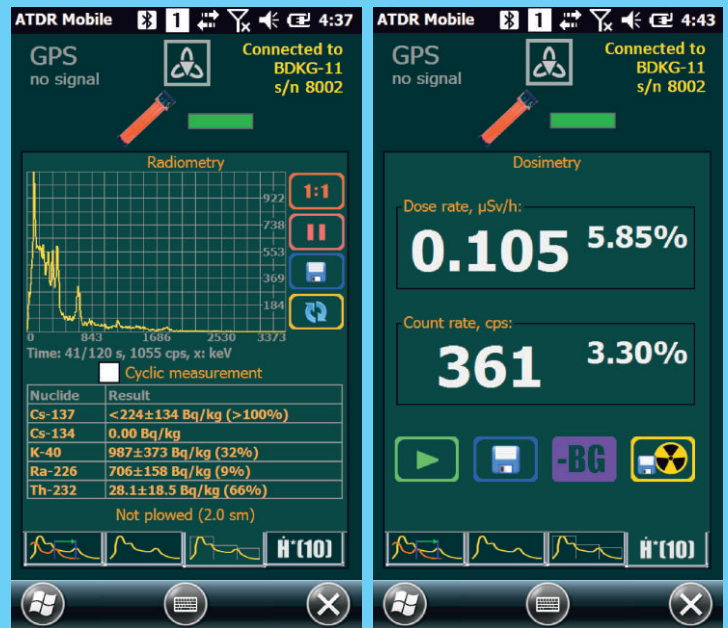
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Specification

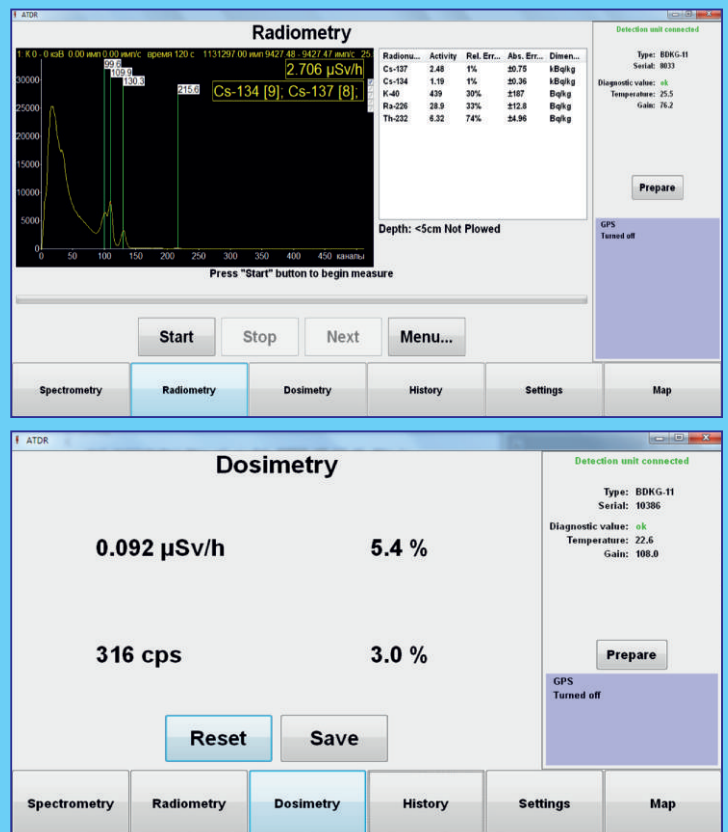
Gamma radiation detector	Scintillator NaI(Tl) Ø63x63 mm
Energy range	50 keV – 3 MeV
Activity measurement range	
<i>Geometry: 2π</i>	
Surface activity of ¹³⁴ Cs and ¹³⁷ Cs	4 – 3700 kBq/m ² (0.1 – 100 Ci/km ²)
Specific activity of ¹³⁴ Cs and ¹³⁷ Cs by in situ method	50 – 10 ⁶ Bq/kg
Specific effective activity of ⁴⁰ K, ²²⁶ Ra, ²³² Th	100 – 10 ⁴ Bq/kg
<i>Geometry: 4π</i>	
Specific activity of ¹³⁴ Cs and ¹³⁷ Cs	50 – 10 ⁶ Bq/kg
Specific activity of ¹³¹ I	30 – 10 ⁶ Bq/kg
Specific effective activity of ⁴⁰ K, ²²⁶ Ra, ²³² Th	50 – 10 ⁴ Bq/kg
Limits of tolerable intrinsic relative error of activity measurement	±20%
Typical resolution at 662 keV (¹³⁷Cs)	8%
Maximum input statistical load	≥5·10 ⁴ s ⁻¹
Number of ADC channels	1024
Ambient gamma radiation dose equivalent rate measuring range	0.03 – 130 μSv/h
Limits of tolerable intrinsic relative error of dose rate measurement	±20%
Typical sensitivity to gamma radiation	
²⁴¹ Am	11600 cps/(μSv·h ⁻¹)
¹³⁷ Cs	2200 cps/(μSv·h ⁻¹)
⁶⁰ Co	1200 cps/(μSv·h ⁻¹)
Response time for dose rate change from 0.1 to 1 μSv/h (accuracy error ±10%)	<2 s
Integral nonlinearity	±1% max.
Operation mode set up time	1 min
Continuous work time in normal conditions	≥9 h
Measurement instability during continuous service	≤1%
Burn-up life	≥100 Sv
Protection class	IP67
PC Interface	USB
Operating temperature range	-20°C to +50°C
Relative humidity with air temperature ≤35°C without condensation	≤95%
Overall dimensions, weight	
Detection device	Ø130x500 mm, 4.5 kg
Hand-held PC	4.7"
Tablet PC	10"

Design and specifications are subject to change without notice

“ATDR mobile” Software Main operation modes (HPC)



“ATDR” Software Main operation modes (Tablet PC)



The spectrometer complies with: GOST 27451-87, Safety requirements of IEC 61010-1:2010, EMC requirements of EN 55011:2009, IEC 61000-4-2:2008, IEC 61000-4-3:2008, IEC 61000-4-4:2004, IEC 61000-4-5:2005, IEC 61000-4-6:2008, IEC 61000-4-11:2004