



IRD 2000

Computerized Irradiator for
Dosimeter Source Checking



Nuclear
Power



Healthcare



Homeland
Security
& Defense



Labs and
Education



Industrial and
Manufacturing

OVERVIEW

This irradiator has been developed to be used by organisations using significant quantities of dosimeters.

The IRD 2000 is used for periodic control in NPPs, Defense departments...with a capability of up to 90 dosimeters (one irradiator) to 150 units (double irradiators) per hour. This tool is a standard production unit.

KEY FEATURES

- Simultaneous checking of 3 or 6 dosimeters, 90 to 150 checks per hour.
- Dosimeter source check or recalibration
- Automatic operation:
 - User operation limited to dosimeter insertion and removal
 - Automated measurement acquisition
 - Automated efficiency calculation and load
- Database with full traceability
- ¹³⁷Cs shielded source, very low external radiation
- Single or double irradiators on same PC

FUNCTIONAL CHARACTERISTICS

- Checks response with/without recalibration
- Results saved in the database with links to check sessions and irradiator calibration
- Date loading and discriminant display on dosimeter according to result
- Editing:
- Accuracy Hp(10)
- Checks per dosimeter, per session
- Calibrations
- Result printout
- Irradiator calibration assisted by Transfer-Standard dosimeter with automatic traceable acquisitions and calculation

GENERAL CHARACTERISTICS

- 37Cs - 0.37 GBq source
- Delivered dose rate: 3 mSv/h approx.
- Total check length: 2 mins (dose 50 µSv)
- Total uncertainty (K=2) 6% (dose 100 µSv)
- Total uncertainty (K=2) 7% (dose 50 µSv)
- Capacity: 3 slots for DMC2000 per irradiator module
- Max. check capability:
- 90 dosimeters/hour (1 irradiator module)
- 150 dosimeters/hour (2 irradiator modules)
- 5 cm (1.96 in) lead protection:
- External dose rate: < 2.5 µSv/h at 0.3 m (11.81 in)
- Lockable shutter
- Dimensions (irradiator module) :
- 350 x 443 x 529 mm (13.77 x 17.44 x 20.82 in)
- Weight: < 80 kg (176 lb)

HARDWARE SETUP

- One or two irradiators module
- One control module comprising an LDM2000 reader and a specific extension
- DOSICAL software (including database run-time)
- 1 set of cables
- Requires 1 standard PC with Windows 2000, XP or VISTA plus 1 printer

Dosimeter #	Response / Abs Ref	Measure #	Response / Current Standard	Response Corrected	Source Rate Recalculated
157794	1.04	1	1.06	1.02	0.291
157794	1.04	2	1.03	0.99	0.282
157794	1.04	3	1.03	0.99	0.282
158714	1.09	1	1.10	1.01	0.286
158714	1.09	2	1.08	0.99	0.282
158714	1.09	3	1.08	0.99	0.282
159113	1.06	1	1.10	1.04	0.294
159113	1.06	2	1.05	0.99	0.281
159113	1.06	3	1.06	1	0.285

Summary Statistics:

- Min: 0.261 cGy/h
- Max: 0.294 cGy/h
- Mean: 0.285 cGy/h
- Std Dev: 1.59 %
- Validity: Valid

Irradiator calibration results

Detail of irradiator dose rate reference setting using 3 Transfer-Standard dosimeters:

3 measurements are displayed per dosimeter for each reference position.

The software checks the coherence of the reference dosimeter results and suggests a reference rate per position which is then accepted or rejected by the operator.

The reference rate history and calibration details are saved.

Pos	Node	Dosimeter #	Type	Efficiency Coef	Reference Rate (mSv/h)	Exposure Time (sec)	Reference class (mSv)	Dose read (mSv)	Response	Tol (%)	Decision	
1	1st Check	051697	Hp	384	3.064	65	0.053	0.062	0.055	0.96	15	Fail
2	1st Check	205489	Hp	320	3.089	69	0.059	0.069	0.056	0.96	15	Fail
3	1st Check	205721	Hp	332	2.969	76	0.063	0.071	0.064	1.00	15	Pass
1	2nd Check	051697	Hp									
2	2nd Check	205489	Hp									

Information common to dosimeter batch

Reference dose rates reminder

Operator dialog box

Check results: the three dosimeters are within tolerances (here, 15 %)

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