

# ITR

## Station for testing reliability of image intensifier tubes



Fig. 1. Photo of the ITR test station

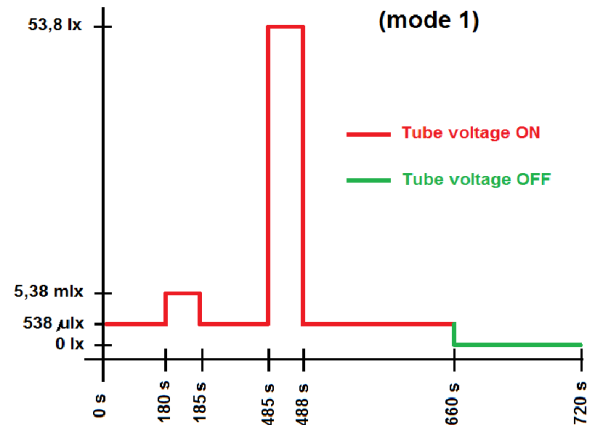


Fig. 2. Illumination during Standard Reliability test

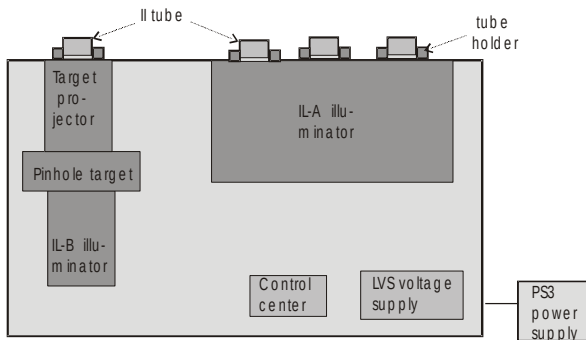


Fig.3. Block diagram of the ITR measuring station

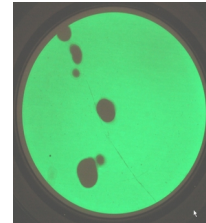


Fig.4. Effects of dead spots on photocathode of an II tube after bright spot protection tests (different spot sizes and different light intensities)

### BASIC INFORMATION:

The ITR station is a test system that enable testing reliability parameters of image intensifier tubes: standard reliability, accelerated reliability, Burn In, Bright Spot Protection. Practically ITR test station enables to determine performance of image intensifier tubes after passing harsh illumination conditions that can occur during real life applications: uniform flashes or bright spots in the observed scenario.

Standard reliability, accelerated reliability, and Burn Ins tests determine tubes performance after working for a long period (up to 10 000 hours) in conditions characterised by sudden changes of average illumination. Bad tubes brake down during such tests or signal to noise parameter significantly decrease. The best tubes pass though these test without noticeable effect on signal to noise parameter or other functional features.

Bright Spot Protection test determines tubes ability to work after passing a test when on the photocathode is created a very bright spot simulating flares met during real applications. For some tubes the spot can create a dead area on the photocathode and damage tube in irrevocable way.

The station is built as a modern compact stand alone test station optimised for speedy testing image intensifier tubes. Up to nine tubes can be tested at the same time. The test procedures used by the ITR station are based on recommendations of the MIL series standards.

*Attention:* ITR station is a replacement of ITS-R station manufactured up to 2017 year of identical test capabilities but of slightly different design.

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## Station for testing reliability of image intensifier tubes

### TEST RANGE

- Burn In – the test determines deterioration of tubes performance after passing a short duration test (50 hours) of work at extreme illumination conditions
- Standard Reliability, Accelerated Reliability – the tests determine deterioration of tubes performance after passing a long duration tests (2000-10 000 hours) of work at extreme illumination conditions
- Bright Spot Protection – the test determines tubes damage for the tube caused by intense bright spots like flares. It is a short time (1 min) test.

### FEATURES:

- Test conditions: according to recommendations of MIL standards
- Enables to carry out the following tests: Burn In, Standard Reliability, Accelerated Reliability, Bright Spot Protection
- User can modify predefined test conditions
- Stand alone automatic station optimized for reliability tests. No human activity is needed during the tests.
- Versatile measuring tool for both testing laboratory and for production line
- II, III, IV gen potted tubes can be tested
- PC controlled test station
- User can create custom non-MIL test scenarios using delivered software
- Optional calibration set is offered that enables to carry out recalibration by the user of ITR test station

**ATTENTION:** The tests carried out using ITR station can irrevocable damage tested image intensifier tubes that are not resistible to test conditions specified by MIL standards.

### SPECIFICATIONS

Main modules of ITR station	BM-R base module, set of DC cables, PS3 power supply, set of adapters for tube holders, ITR Control software, set of spare parts, and calibration set (option)
<i>Reliability tests</i>	
Light Source	LED sources of equivalent color temperature 2856K
Illumination level	Regulated from at least 0.05 mlx to at least 50 lx
Regulation type	Digital from PC
Resolution of illumination regulation	Not worse than 0.05 mlx
Number of ports for tested tubes	Nine
<i>Bright Spot Protection test</i>	
Light Source	Halogen bulb of color temperature 2856K
Flux range	Non regulated 50 mlm at photocathode plane
Spot area	1 mm <sup>2</sup> area
Number of ports for tested tubes	one
Other features	
PC communication	RS 232
Mechanical holders	MX-10160, MX-10130 or equivalent tubes (other types are also possible)
Electrical connections	cables with exchangeable pins
Power source	DC 2.7V
Dimensions	300 x 370r x 380 mm
Mass	11 kg

\*specifications are subject to change without prior notice

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Version 3.1

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