

riešenia na presné meranie

**FLUKE®**

**Biomedical**

# TNT 12000 X-Ray Test Tools

**ELSO**

riešenia na presné meranie™

Elso Philips Service; tel: +421 32 6582410  
email: [elso@elso.sk](mailto:elso@elso.sk); web: [www.elso.sk](http://www.elso.sk)



**Accurate. Simple. Versatile. Reliable.**

<http://www.elso.sk>



# Diagnostic imaging quality assurance made easy

## TNT 12000 X-Ray Test Tools

TRIAD™ and NERO®  
quality in the palm  
of your hands

### Accurate

- Best-in-industry sampling rate
- Proprietary smart detection system with Smart Optimization algorithm
- DoseMate ion chamber accuracy

### Versatile

- Unique, customizable platform accommodates work model to your requirements
- Choice of automated reporting systems designed for AARC, AAPM, and MQSA compliance
- Full functionality across all modalities radiographic, mammographic, dental, fluoroscopic, and CT imaging systems

### Simple

- Advanced wireless platform sets up in seconds for one-exposure testing
- Minimal navigation through customizable protocols
- Automated compliance reporting

### Reliable

- Long, proven battery life to accomplish full-days work
- No moving parts
- Award-winning design rugged enough to handle bumps/drops and transport



## The right tool for all modalities

Introducing the most advanced diagnostic imaging quality control platform. TNT 12000 delivers unprecedented versatility in the first advanced wireless system with unbeatable accuracy, reliability and simplicity. TNT 12000 X-Ray Test Tools are the foundation for your diagnostic imaging quality assurance program with comprehensive compliance testing and reporting for radiographic, mammographic, dental, fluoroscopic, and CT imaging systems.

The TNT 12000 platform offers simple, easy-to-use tools for reliable testing along with the versatility required by today's imaging systems. Get in and out fast with these new streamlined, easy-to-use devices.

Smarter and faster  
QA protocol



Champion regulatory  
compliance with ease



Dose control  
with confidence

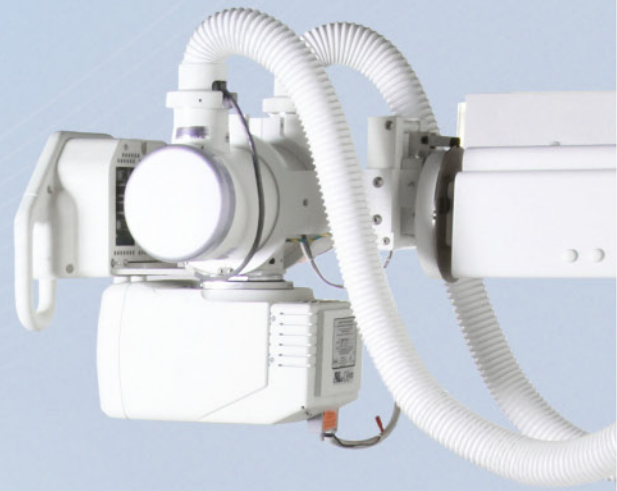


### Addressing your daily challenges

- Maximize uptime to accommodate patient loads with quick/easy testing and troubleshooting
- Support dose management and image quality with precision dose measurement
- Manage compliance with standardized reports and procedures
- Optimize workflow with customizable tools and protocols
- Ensure total confidence in system integrity with unbeatable measurement accuracy
- Avoid downtime thanks to rugged/reliable Fluke quality and post-purchase service and support programs

# A versatile system to meet your QA program demands

- Portable, lightweight system for fast testing/troubleshooting to avoid downtime
- All-in-one exposure, one-button measurement and results reporting for kVp, dose, dose rate, time, and half value layer
- Dedicated handheld display shows all results on one screen
- Designed for optimal functionality and flexibility with all x-ray testing modalities and tests
- Intuitive interface with limited key strokes and window navigation
- Default function to last use on power-up to streamline repetitive testing
- Auto-measurement and display flexibility of three kVp values: kV, kV Peak, and PPV
- Smart detection system
  - Smart optimization algorithm optimizes detector array for more precise accurate measurements
  - Smart auto correction automatically corrects for beam filtration during measurements
  - Smart DSP processor for real-time data processing and reporting
- 40 kHz sampling rate supports challenges for c-arms, fluoro, and mobile x-ray for uncompromised results integrity in all modalities



Smart compensation  
auto waveform analysis  
automatically determines  
the correct data analysis  
for pulse or continuous  
beam fluoro

Mounts to any  
standard camera tripod  
for c-arm testing





- Choice of software solutions for automated regulatory reporting
- Versatility of invasive or non-invasive mA/mAs measurement in either detector or DoseMate dosimeter
- Advanced wireless platform
  - Direct wireless communication with choice of handheld display or own laptop to minimize travel and streamline testing/reporting
  - All key components are wireless in communication
  - Dedicated ZigBee® wireless communication (preferred over Bluetooth in medical settings) operates at less than 1 mW power for optimum, full-day battery life
- System calibration
  - 100 – kv/ dose/ HVL/ cal points
  - NAVLAB and ISO 17025 accredited, NIST traceable
- DoseMate ion chamber technology
  - Precision dose/dose-rate measurement to 10 nGy and 20 nGy/s
- High impact protective case and rugged Fluke design for with stand on-the-road environments
- No moving parts



Complete range of target/filter combination including W/Ag, W/Al, and W/Rh



Absolute dose measurement within 1 % using trusted ion-chamber technology



# Compliance made easy

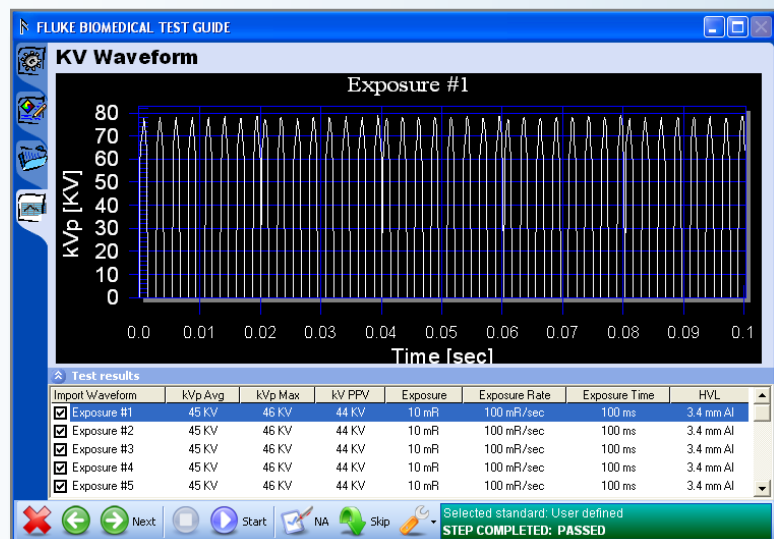
## TNT 12000 Excel add-in software

- Increased productivity and reduction of human error with measurements automatically recorded on template worksheets
- Single page results report can be printed for verification and compliance
- Template worksheets and reports can be customized to fit user needs
- MQSA-compliant templates included

Help		Radiographic Reproducibility														
Facility:	Veterans Administration Medical Center				Surveyor:	Caroline Barbas										
Location:	32				Date:	12/19/2010										
Room:	16															
Machine:	ProMed Xpelorian															
Machine Settings					Measurements											
kVp	100	kVp Avg	kVp Max	kV PPV	kV	kV/100	mAs	no. of pulses	mm Al	mA	mm	mm/min	mm/pulse			
25		99.5	103.0	100.0	456	10005	76.0		3.5	24.7	6.0	412				
FS	Large	101.0	104.0	100.0	444	10032	76.0		3.5	26.0	5.6	411				
SDD	66 cm	101.0	#REF1	100.0	444	10032	76.0		3.5	26.0	5.6	411				
mm	76	99.9	102.0	101.0	473	10043	74.0		3.4	25.0	6.0	410				
		98.9	102.0	101.0	473	10043	74.0		3.4	25.0	6.0	410				
		98.9	102.0	101.0	#REF1	10043	74.0		3.4	25.0	6.0	410				

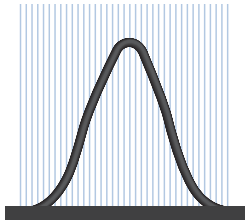
## Ansurs standardization and reporting software

- Standardizes testing for your entire fleet
- Matches test procedure to service manual protocol
- Reduces, if not eliminates, human error through electronic data collection and transfer from test devices
- Guides users through step-wise testing process to minimize dependence on training
- Automatically completes documents per requirements to ensure regulatory compliance
- Offers easy data traceability with electronic archival of detailed preventative maintenance and repair records

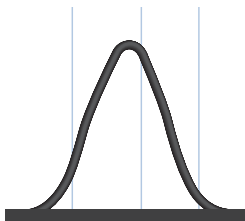


# Compare and decide

## Sampling rate



TNT 12000 40 kHz sampling frequency samples across all detectors and across entire duration of beam, accurately capturing more critical information and handling more challenging modality requirements



Nearest competitor sampling frequency 2.5 kHz

## Wireless connectivity

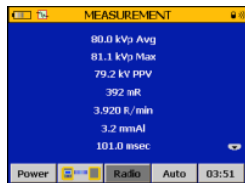


TNT 12000 100 percent dedicated wireless communication from detector/dosimeter and display/laptop

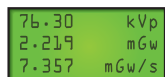


Nearest competitor's "wireless" system

## Results display



TNT 12000 all results displayed on one screen for quick one-shot testing



Nearest competitor's display

## Ion chamber technology



Proven ion chamber technology with inherent transparent properties allowing for more precise placement in center of beam to accommodate ABC and AEC auto settings. Energy-independent ion chambers are the standard choice for the most precise, accurate dose measurements  $\pm 1$  percent accuracy



Nearest competitor lack of ion chambers forces workaround in fluoro to accommodate AEC and ABC for dose and dose rate, not in the middle of the beam, resulting in less precise/accurate measurements. Solid state detector accuracy  $\pm 5$  percent accuracy



## Advanced

### Includes:

Solid-state detector  
Handheld display  
DoseMate dosimeter with integrated mA/mAs  
Non-invasive clamp  
Ion chambers  
Laptop interface  
Ansur compliance software

Complete diagnostic imaging equipment testing, reporting and risk management solution for OEM field service engineers.



## Intermediate

### Includes:

Solid-state detector  
Handheld display  
DoseMate dosimeter ion chambers  
Laptop interface  
Excel reporting software

Full test and service kit with automated reporting capabilities. Tailored for medical physicists and QA personnel with elevated compliance routines/requirements.



## Standard

### Includes:

Solid-state detector  
Handheld display  
Laptop interface  
Excel reporting software

Fast and simple in-and-out testing. Perfect for biomedical technicians, inspectors, routine testers, and on-the-go troubleshooters.

### About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance. Highly credentialed and equipped with a NVLAP Lab Code 200566-0 accredited laboratory, Fluke Biomedical also offers the best in quality and customer service for all your equipment calibration needs.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

### Fluke Biomedical Regulatory Commitment

As a medical test device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 and ISO 13485 medical device certified and our products are:

- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required
- NRC Compliant, where required

### Fluke Biomedical.

*Better products. More choices. One company.*

#### Fluke Biomedical

6045 Cochran Road  
Cleveland, OH 44139-3303 U.S.A.

#### Fluke Biomedical Europe

Science Park Eindhoven 5110  
5692EC Son, The Netherlands

#### For more information, contact us:

In the U.S.A. (800) 850-4608 or  
Fax (440) 349-2307  
In Europe/M-East/Africa +31 40 267 5435 or  
Fax +31 40 267 5436  
From other countries +1 (440) 248-9300 or  
Fax +1 (440) 349-2307  
Email: sales@flukebiomedical.com  
Web access: www.flukebiomedical.com

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