



The world's first handheld Z Backscatter[®] imaging system provides fast, portable, real-time imaging to detect drugs, contraband, and explosives in hard-to-reach locations.

ON-THE-GO DETECTION

Meet the world's first handheld Z Backscatter imaging system — MINI Z. We took the same technology that made the ZBV[®] system the top-selling cargo and vehicle inspection system in the world, and miniaturized it. The MINI Z system provides effective detection of organic threats, contraband, and explosives for public safety, customs and border enforcement, and security officials.

GO WHERE OTHERS CAN'T

The MINI Z system is a compact, single-sided imager that scans objects in hard-to-reach areas, giving better visibility into suspicious bags, walls, furniture, small boats, aircraft, vehicle tires, and car interiors. Unlike density meters, trace detectors, or portable transmission X-ray systems, the MINI Z system produces an easy-to-interpret image to quickly locate organic contraband behind non-metallic surfaces.

SAFE FOR OPERATORS, BYSTANDERS, AND THE ENVIRONMENT

The MINI Z system was designed with safety in mind, and features reliable and redundant safety subsystems. The MINI Z system shielding ensures that a full time operator's exposure remains well below the National Council on Radiation Protection & Measurements (NCRP), International Commission on Radiological Protection (ICRP), and European Atomic Energy Community (EURATOM) annual allowable radiation dose levels for the "general public and minors" of 100 milliRem (1 mSv). The MINI Z system uses an X-ray tube to electrically generate X-rays — there is no radioactive source.

An operator using the MINI Z at a typical 25% duty cycle, 5 days a week for a year, would receive a dose equal to approximately 10% of the allowable annual dose. This is equivalent to the additional dose

received from taking one US round trip, cross country flight four times in one year.

Safety Summary

- The system conforms to applicable radiation safety standards, such as NCRP, ICRP, and EURATOM for annual allowable dose for the general public.
- The MINI Z system must be used in accordance with the manufacturer's instructions and applicable laws and regulations.
- Although the MINI Z system is a low-energy, low-dose Z Backscatter system, it is not designed to scan people.

Frequently Asked Questions

Is the MINI Z system safe for the operator to use every day? An operator using the MINI Z at a typical 25% duty cycle, 5 days a week for a year, would receive a dose equal to approximately 10% of the allowable annual dose. This is equivalent to the additional dose received from taking one US round trip, cross country flight four times in one year. The system's shielding ensures that a full time operator's exposure remains well below the NCRP, ICRP, and EURATOM annual allowable radiation dose levels for the "general public" of 100 milliRem (1 mSv).

What is the radiation dose to the general public? As long as members of the general public remain outside of the radiation controlled zone boundary, they are guaranteed not to exceed the NCRP, ICRP, and Euratom annual allowable dose for the "general public". The MINI Z scan dose, while limited, varies with scan motion and distance. A typical dose to target, at 6 in/sec scan speed and 4 in. scan distance, is less than 10 microRem (0.10 uSv).

How do I know if X-rays are being emitted? The MINI Z system has 9 visual warnings of X-ray emission:

- 4 red LED "X-ray On" indicators on the hand grip
- 2 "X-ray On" indicator icons on the tablet's ASEInspection software scan screen and checking status screen.
- 1 safety label on the emitter surface.
- 2 Class-1 laser guide beams that indicate the X-ray beam path. These beams are located on the left and right sides of the X-ray emission window on the face of the scanner unit. These beams are set at the 60° fan angle of the emitted X-ray beam and serve as a visual indicator of the beam path. These laser beams are on at all times when X-rays are being emitted.

In addition, the MINI Z has an audible indicator (buzzer) which signals 1 short tone when X-rays emit and two short tones when X-ray emission ends.

Can the MINI Z system be used to scan people? Although the MINI Z system is a low-energy and low-dose Z Backscatter system, it is not designed to scan people. The MINI Z system must be used in accordance with the manufacturer's instructions and under the jurisdiction of local laws and regulations.

What if I accidentally scan myself or someone else? If someone is scanned accidentally, the scanning dose, while limited, will vary with scan motion and distance. A typical whole body equivalent dose to a person, at 6 inches/second scan speed and 4 inch scan distance, would be approximately 5 microRem (0.05 uSv), which is about the same exposure as they would get from being on an airplane at altitude for 1 minute.

The safety timeout shuts the system down after a 30 second exposure. A full 30 second concentrated exposure, in contact with the body near a blood forming region (e.g., bone marrow), would result in a whole body equivalent dose of 14 milliRem (140 uSv), which is roughly equivalent to a chest X-ray, or 1% of an abdominal CT scan. It represents about 14% of the NCRP, ICRP, and EURATOM annual allowable dose to the general public and minors, and only 0.28% of the dose considered as the lower limit for a potential health risk as expressed by the Health Physics Society.

Is the MINI Z radioactive? No. The MINI Z uses an X-ray tube to electrically generate X-rays. There is no radioactive source.