**HBI-120 Handheld Backscatter X-Ray Imager**

**Specifications**

 **Features, Performance, Ruggedness**

1. The handheld x-ray unit shall be able to image threats through 2.5 mm (12 gauge) steel thickness or the equivalent.
2. The handheld x-ray unit shall weigh no more than 3 kg (6.6 lbs.), including the integrated touch screen display and rechargeable battery pack. The unit shall be ergonomically balanced to allow for single-handed operation in confined areas such as motor vehicles interiors.
3. The handheld x-ray unit shall have a fully integrated high resolution transflective liquid crystal display built into the body of the device so that the unit operator can view the display and see object scans in real time while scanning the object.
4. The handheld x-ray unit shall have a built-in digital color camera that provides a picture of the scan target with the scanned x-ray image.
5. The handheld x-ray unit shall be able to take images at a scan speed of 30 cm (12”) per second and will provide optimal imaging performance at a scan speed of 15 cm (6”) per second.
6. The handheld x-ray unit shall have dimensions no more than 24 cm x 22 cm x 17 cm (9.4” x 8.7” x 6.7”) – including the built-in display to facilitate operation in confined areas such as motor vehicle interiors.
7. The handheld x-ray unit shall haven an operating environment rating in IP54 for protection from dust ingress and from water spray from any direction.
8. The handheld x-ray unit shall use a flexible, supported operating system that is fully integrated into the scanning unit – without the use of a separate control system unit.
9. The handheld x-ray unit shall be able to be stored in its case in a temperature range of -20degrees Celsius to 70 degrees Celsius (-4 degrees Fahrenheit to 158 degrees Fahrenheit).
10. The handheld x-ray unit shall use the Android Operating System and an application-based control software which can be updated and enhanced via and application link.

Operation

1. The handheld x-ray unit shall have a batter life of at least 4 hours at a 25% duty cycle.
2. The handheld x-ray unit shall have an operating temperature range at startup of -20 degrees Celsius (-4 degrees Fahrenheit) to 60 degrees Celsius (140 degrees Fahrenheit); after warm up: -40 degrees Celsius (-40 degrees Fahrenheit); any noncondensing, atmospheric conditions.
3. The handheld x-ray unit shall be splash and dust proof and IP54 rated.
4. The handheld x-ray unit shall have Bluetooth and Wi-Fi wireless communications for data transfer and remote-operation capability.
5. The handheld x-ray unit shall contain a complete set of imaging analysis tools including: touch screen zoom, scrolling, image auto-enhancement, dynamic contrast, colorization and ability to appending notes to images.
6. The handheld x-ray unit shall be supported by off-line viewing station capability via desktop or tablet computer or smartphone.
7. The handheld x-ray unit shall provide the image management capabilities to support mission reporting. Image management shall include: image thumbnails, image searching capability, image exporting and image backups.
8. The handheld x-ray units shall include a lockable, waterproof carrying case that shall be included for transporting and storing the instrument.

 Safety and Certifications

1. The handheld x-ray unit shall be CE and RoHS compliant
2. The handheld x-ray unit shall require the use of a user-definable password to turn on the x-ray generator of the unit.
3. The handheld x-ray unit shall adhere to ANSI/HPS N43.3 2008 and conforms to applicable ANSI, ICRP, NCRP and Euratom radiation safety standards.
4. The LED lights on the handheld x-ray unit that indicate when the unit is producing x-rays shall be visible from all directions.
5. The handheld x-ray unit shall monitor the status of the warning lights that indicate the unit is producing x-rays; should any of the warning lights fail, the x-ray generator in the unit will be disabled.
6. The handheld x-ray unit’s x-ray generator shall have a temperature sensing system that will deactivate the x-ray generator if it overheats.