

Unveil the Invisible with On-the-Go Imaging
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(1) Keysight Technologies, <http://www.keysight.com>

Advancements in microwave sensing and imaging technology are enabling new applications in noninvasive medical diagnostics, quality control in food industry, environmental monitoring, industrial process control, and more. Designing new products utilizing this technology requires a multidisciplinary approach to ensure that the final product meets the desired specifications and requirements.

Microwave sensing and imaging (MSI) technology offers several advantages including:

1. **Portability:** Microwave sensing and imaging technology can be designed to be compact and portable, like the Keysight embedded MSI solution (MN70x1A). This enables ease of transport, allowing on-site and in-field testing and analysis. This also provides the flexibility for the product to be used in a variety of settings and environments.
2. **Non-invasive:** Microwave sensing and imaging technology can measure materials without the need for physical contact or the use of ionizing radiation. This makes it safe for use in medical applications. Hence it can be used for point-of-care (POC) cancer screening and diagnostics, providing a painless and non-invasive alternative to CT scan, mammography, etc. Microwaves can be used to detect differences in tissue properties between healthy and cancerous tissue and can produce 3D images of the organ with high spatial resolution.
3. **Rapid sensing:** Microwave sensors can perform real-time data processing and analysis. An area scan with microwave sensing takes mere minutes, compared to the one hour it would take using a CT scan or an MRI machine.
4. **Cost effective:** Microwave sensing and imaging technology can be more cost-effective than conventional imaging technologies such as CT, MRI, and X-ray, making it more accessible for a wider range of applications.
5. **Versatility:** This technology can be used to measure or image a variety of materials including biological tissues, food, and industrial materials.

In point-of-care (POC) medical diagnosis applications, patient safety, real-time imaging, and portability are critical factors to save time and increase efficiency of the imaging process. Manufacturing cost is also an important consideration for the product to be cost-effective while meeting the performance and usability requirements.

This presentation will provide some examples of MSI technology research and deployment, and show various applicable commercial off the shelf measurement technologies.