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SPEAKER

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VITA

Roger Appleby currently leads the passive millimeter wave imaging team at QinetiQ Malvern UK. His team has pioneered the use of real time mechanically scanned passive millimeter wave imagers for security and poor weather surveillance. At 35GHz this technology has been used to scan PVC sided trucks at channel ports in Europe for the detection of illegal immigrants and was also used to construct a portal for imaging people in the indoor environment. At 94GHz it has been applied to standoff security scanning and helicopter collision avoidance. Dr Roger Appleby is a Senior QinetiQ Fellow.

ABSTRACT

“Standoff Detection of Weapons and Contraband in the 100 Ghz to 1 THz Region”

The stand-off detection of objects concealed under clothing can be achieved using millimetre and sub-millimetre wave radiation. In this presentation the optical properties of materials in the 100GHz to 1THz frequency range will be discussed. A Michelson interferometer was used to measure transmission, reflection and complex refractive index of clothing and energetic materials. Two passive equipments will be described both operating at 100GHz. The first is a passive imager with 64 receivers which is capable of imaging at a 15Hz frame rate with a field of view of 20 x 10 degrees and the second is a sensor that uses a single receiver to detect people born devices. In these instruments the technology used draws on many fields, including semiconductor devices, RF components, antennas, computing and image processing. A case study will be outlined to show how these different technologies are bought together and transferred to a manufacturer.