

# Developing National Measurement Capability for the Millimetre-wave and Terahertz Frequency Ranges

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## **Abstract**

The National Physical Laboratory (NPL) is the UK's National Measurement Institute (NMI). As such, NPL is tasked with developing, maintaining and disseminating the UK's primary national standards of measurement. These standards represent the ultimate in measurement accuracy and are used to provide measurement traceability to the international system of units (SI). Standards and associated measurement capability are developed in areas of relevance to science and technology—as new science and technology is established, new measurement standards and measurement capability are needed to underpin and validate the new science and technology.

In recent years, much use has been made of the millimetre- and submillimetre-wave (also known as terahertz) parts of the electromagnetic spectrum. This is for applications in electronics and telecommunications, defence and security, radio astronomy and atmospheric science, and, healthcare and pharmaceuticals. All these applications have driven the need for accurate and reliable measurement capabilities at these frequencies.

This talk reviews recent developments being made at NPL to establish such measurement capabilities. The talk is based on the Invited Talk that was given at the IEEE MTT/AP/EMC Joint Chapter event, Islamabad, Pakistan in September 2020.