

Innovative microwave measurement technologies to realize the safe, secure and smart future society

R&D Project Title : Research and Development of Microwave Radar and Radiometer using Ultra Wide Band Antenna and Digital Technologies

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Summary : We have defined an ultra-wideband antenna with upper to lower limit frequency ratio of 30 times or more and digital technologies (ultra-high-speed AD conversion, etc.) as the fundamental technologies. Innovative microwave measurement systems that apply the fundamental technologies can realize below two features, which were difficult with conventional systems, in a small size and at low cost with a small number of parts: (a) hyperspectral measurement of microwave signals, (b) simultaneous measurement of the amount of various objects in the same space by sharing the observation field over a wide band. In this research and development, we first solve the technical issues for acquiring the fundamental technologies, and apply them to three innovative microwave measurement systems to demonstrate the technical availability: (1) multi-frequency radar radiometer, (2) ground penetrating passive bistatic radar, and (3) Scanning Array for Multi-hyperspectral Radiowave Imaging (SAMRAI). We then utilize each system to solve various problems in modern society such as infrastructure monitoring, smart fishing, and carbon neutral to demonstrate the availability of businesses that will realize the safe, secure and smart future society.

