Proceedings of SPIE 10036, Fourth Conference on Sensors, MEMS, and Electro-Optic Systems, 12-14 September 2016, Kruger National Park, South Africa

Development of paper-based wireless communication modules for point-of-care diagnostic applications

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ABSTRACT:

We present an ultra-high frequency radio frequency identification based wireless communication set-up for paper-based point-of-care diagnostic applications, based on a sensing radio frequency identification chip. Paper provides a low-cost, disposable platform for ease of fluidic handling without bulky instrumentation, and is thus ideally suited for point-of-care applications; however, result communication – a crucial aspect for healthcare to be implemented effectively – is still lacking. Printing of radio frequency identification antennas and electronic circuitry for sensing on paper are presented, with read out of the results using a radio frequency identification reader illustrated, demonstrating the feasibility of developing integrated, all-printed solutions for point-of-care diagnosis in resource-limited settings.