Experimental radio channel assessment in densely populated environment

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Abstract:

This TD presents the preliminary results of an experimental characterisation of the radio channel in a densely populated indoor environment. The measurement set-up involves several on-body nodes carried by some human subjects and one fixed off-body device. Users are located in specific position in a room, free to move on a limited surface. Devices compete for the radio resource through Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol; once a node accesses the medium, it broadcasts the data to all other nodes in the network. In that way, the complete set of links is characterized in terms of Received Signal Strength Indicator (RSSI). Bo th on-body and out-of-body (i.e. among nodes carried by two users or between an on-body node and the off-body one) communication links are investigated. The impact of multiple bodies on RSSI values is assessed incrementally, repeating the experiments adding one human subject each time. Channel reciprocity is also evaluated and commented. This work is the basis for further investigation to be performed, starting from the experience acquired during this preliminary study.