Multipath Characteristics of MIMO Channel at the UHF band for Wireless System in the Urban Area

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Abstract — Multiple-input multiple-output (MIMO) systems at the UHF bands is interest for wireless communication applications. When designing and evaluating such systems, knowledge of realistic propagation conditions is required. In this paper, the development of wideband MIMO channel sounder and a pilot measurement result is described for research on the multi antenna radio propagation characteristics considering urban environment at UHF band. We developed 4 by 4 MIMO (BW: 50 MHz) channel sounder using the high speed switching mechanism and periodic pseudo random binary signals method considering next generation mobile communication system. A pilot measurement campaign at the urban area of Jeju Island is presented for confirmation of system performance. From the analysis of measurement data, RMS delay spread is 1700 ns and 200 ns respectively. From the experiment results, operation of this measurement system is confirmed considering research for wideband path loss exponent factor at 781 MHz.

Keywords—Radio propagation, MIMO, channel, delay spread, path loss