

Software-Defined Radio Based Channel Measurement System of Wideband HF Communication System in Low-Latitude Region

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Abstract : HF Communication system is one of the attractive fields among many researchers since it can be reached long-distance areas with low-cost. This long-distance communication can be achieved by exploiting the ionosphere as a transmission medium for the HF radio wave. However, due to the dynamic nature of ionosphere, the channel characteristic of HF communication has to be investigated in order to give better performances. Many techniques to characterize HF channel are available in the literature. However, none of those techniques describe the HF channel characteristic in low-latitude regions, especially equatorial areas. Since the ionosphere around equatorial region has an ESF phenomenon, it becomes an important investigation to characterize the wideband HF Channel in low-latitude region. On the other sides, the appearance of software-defined radio attracts the interest of many researchers. Accordingly, in this paper a SDR-based channel measurement system is proposed to be used for characterizing the HF channel in low-latitude region.

Keywords : channel characteristic, HF communication system, LabVIEW, software-defined radio, universal software radio peripheral

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