

Hybrid coding techniques have been proposed recently to improve the coding capacity of chipless RF identification (RFID) tag. This paper examines the possibility to code information thanks to the magnitude level of the radar cross section (RCS) in addition to the more classical technique of frequency position (FP). Single-layer tags based on C-folded dipoles are designed to have different magnitude levels. A magnitude span of up to 15.2 dB is obtained for coupled resonators. A magnitude resolution of 3.5 dB is evaluated for practical applications based on the measurement of the realized tags in different configurations. The problem of tags applied to an unknown object is considered and a compensation technique is proposed for an object similar to a thin dielectric plate.