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Spectrum Awareness for Cognitive Radios Supported by Radio Environment Maps: Zonal Approach

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Abstract: In this paper, we present the concept of the Radio Environment Map (REM) designed to ensure electromagnetic situational awareness of

cognitive radio networks. The map construction techniques based on spatial statistics are presented. The results of field tests done for Ultra High Frequency (UHF) range with different numbers of sensors are shown. Exemplary maps with selected interpolation techniques are presented. Control points where the signal from licensed users is correctly estimated are identified. Finally, the map quality is assessed, and the most promising interpolation techniques are selected.

Keywords: cognitive radio, radio environment map, spectrum awareness, frequency allocation.

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