

Antenna diversity for the improvement of satellite radio reception in fading scenario (Inaugural Lecture)

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In the last years digital satellite radio reception in cars has won increasing interest in the united states and is to be expected in Europe too. However the satellite radio services enable the reception of more than 100 channels in good quality, the reception quality is harmed a lot in urban multipath scenario where no supporting terrestrial repeaters are available as well as in rural multipath scenario where trees with dense foliage cause Rayleigh fading.

In this contribution the different fading scenarios are discussed with respect to the satellite reception quality. Concepts for antenna diversity are compared for the solution of this problem and a fast and efficient antenna diversity is introduced. The diversity concept is raising the reception performance in critical situations by up to two orders in magnitude and is easy to realize since no additional antenna cable and no additional tuner are required for the diversity function. By way of bit error rate measurements the performance of the antenna diversity concept is evaluated in a hardware demonstrator.