

**A computational study of the interference effects of a single
radio frequency transmitted from two different locations**

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Some radio service providers transmit two radio waves of the same frequency in an attempt to provide a better service to receptors in areas where regions shadowed by mountains are deprived of sufficiently strong signals. An example is provided by the two Sri FM transmission stations located at Rathnapura and Deniyaya targeting the Rathnapura, Elapatha, Pelmadulla and Nivithigala divisions in the Rathnapura district. However, it is known that reception throughout this area is not sufficiently strong. In this study, we investigate the reason for poor reception in many places in the area by computing the field strengths throughout the area.

According to our computations which considered the interference of six waves, namely the direct wave, the ground reflection and the diffraction from the tallest obstacle in the line of sight path for each of the two stations, it was revealed that destructive interference of the waves from the two stations resulted in weak signals in many parts of the region studied, despite the expectation of enhancing the reception. Unavailability of measured data prevented us from comparing measured and computed data which is a drawback. However, this type of study would be useful in designing radio communication links.

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