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The Effect of Haze Attenuation on Free Space Optics Communication (FSO) at Two Wavelengths under Malaysia Weather (Conference Paper)

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Suriza, A.Z.^b (https://www.scopus.com/authid/detail.uri?authorId=51665925000&eid=2-s2.0-85015049714) (mailto:suriza@iiium.edu.my)

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Abstract

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Free Space Optical FSO is a promising optical technology that has a great chance of complementing the traditional wireless communication. It offers unlicensed, higher speed, broader, unlimited bandwidth and excellent security. However, the quality of FSO links is greatly affected by weather conditions and link distance. In the tropical regions, the quality of the FSO links is affected mainly by rain attenuation while the air quality is presumed to have little or no impact. However, a state of emergency has consecutively been declared in some part of Malaysia during the past three years due to high air pollution index (API). Since the range of FSO link is limited by air pollution, haze attenuation must be considered as one of the important factors in FSO link design. The aim of this paper is to provide an analysis and simulation of the FSO link with real data from Meteorological Malaysia department (MMD) on haze weather under two different wavelengths 850nm and 1550nm. This paper will discuss the different rate of attenuation operating in the medium between transmitter and receiver and their impact on the link margin calculation. In addition, it will evaluate the maximum distance link for wavelengths and consider the different visibility under the attenuated weather. © 2016 IEEE.

Author keywords

free space optical haze attenuation link margin

Indexed keywords

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Engineering controlled terms: Air pollution Air quality Pollution Wireless telecommunication systems

Air pollution index

Analysis and simulation

Free-space optical

Haze attenuations

Link margin

Transmitter and receiver

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Engineering main heading: Optical communication

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