

# A LoRaWAN: Long Range Wide Area Networks Study

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**Abstract**— The LPWAN (Low Power Wide Area Network) networks are the evolution of wireless sensor networks directed to the IoT (Internet of Things) concept, which entails sensor connectivity to the Internet. This paper presents a performance evaluation of the LoRa wireless networks. LoRa technology represents a possible solution to the problems of the IoT (Internet of Things) concept. The used frequency bands belong to the unlicensed ISM (Industrial, Scientific and Medical) frequency band. Thus, the parameters analyzed are: ToA (Time on Air), the bitrate and the Spreading Factor (SF) influence on performance level. From the obtained results, can be observed that with the increase of the SF parameter the time that the LoRa communication packet spends in the air is increased. If the bandwidth of the communication channel is increased the ToA parameter will decrease significantly.

**Keywords**— LPWAN; LoRa (Long Range) modulation; WSN; Internet of Things;

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