

ABSTRACT

Low Power Wide Area Network(LPWAN) LoRa is an unlicensed LPWAN which have an advantage in CSS(Chirp Spread Spectrum) modulation for power consumption efficiency and increasing LoRa communication range. Adjusting spreading factor value can be increasing LoRa communication range but on the other hand, adjusting spreading factor value can be increasing power consumption time too. Current condition there is no suggestion for configuring spreading factor and power transmit value in certain end-device LoRa communication range so the power consumption that is used isn't efficient enough; hence, in this research writer be doing design end-device LoRa as power consumption efficiency tools so that is able to be configured by the parameter which is efficient in power consumption.

In this research be carried out designing software and reconfiguration hardware in end-device LoRa that able to be transmitting end-device LoRa position and communication distance between transmitter(LoRa end-device) with a receiver(gateway LoRa). Result of this design will be used for measuring communication distance and measuring current consumption in end-device LoRa with the configuration parameter spreading factor 7 to 12 and power transmits 10 dBm to 15 dBm.

The result of this research is power consumption in spreading 7 has lowest power consumption i.e. 7.88 mAS-11.08 mAS and current consumption in spreading factor 12 i.e. 133 mAS - 211 mAS so that, using lower spreading factor and adjusting power transmit is especially recommended for adjusting communication distance due to the higher spreading factor is going to increase power consumption time which no efficient enough for power consumption.

Keywords: LoRa, *Power Consumption, spreading factor, power transmit.*