

## **Evaluation of ABP and OTAA in IoT-Based Flood Monitoring and Warning System using LoRaWAN**

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### ***Abstract***

Rapid development and poor drainage management are the ingredients for flash floods in the city during the heavy raining season. Flash flood refers to the body of water that suddenly exist in an area where primally dry. This event can be detected by Flood Monitoring and Warning System (FMWS) using LoRaWAN. However, there are two types of activation that are offered by LoRaWAN, Activation-By-Personalization (ABP) and Over-The-Air-Activation (OTAA). This paper discusses on the performance of developed FMWS while using both activation and evaluating which activation is suitable for FMWS. To assess the performance of FMWS, an ABP activation is chosen due to it provides full control over the device. For OTTA activation, a test is performed using OTTA activation since it is the most recommended due to its protection features. The LoRaWAN has a great performance-based up to 1.5km and can achieve 100% Percentage Data Received (PDR). The testing shows that the PDR values decrease as the distance communication increase. But the OTAA only limit the performance of FMWS in reliability test. Thus, making the device perform with 89% PDR maximum. In conclusion, OTAA activation is good for setting up the system, and the ABP is chosen for a long-run operation.

***Keywords:*** LoRaWAN; IoT; Flood monitoring; ABP; OTAA.