# ABSTRACT

Zero-crossing detector in receiver side of Loran-C radio navigaion that operates in 100 kHz Low-Frequency, has an important play to detect and selecting the standard zero-crossing for Time Difference calculation between master, secondary land-based transmitting stasion and also the receiver. To avoid the wrong standard zero-crossing detection on linier receiver, so the new technique by using hard-limiting receiver had been implemented.

The technique were implemented is a modification from Half-Cycle Peak Ratio that based on analog way, it processed in digital way so no additional hardware to fullfill the implementation of the new technique. The changes in digital way means the selection and detection decision process should be based on a large samples on each Loran-C pulses, so it will increase the identification immunity from noise effect. Performance of this technique had been tested with -08 dB (moderate) and -17 dB (low) SNR level on Gaussian and also Atmospheric Noise condition.

The standard zero-crossing test result shows closely o the 30 μs value. The test had been done with $N$=16 samples which results a 29.89 μs mean value on -08 dB (moderate) SNR level and 29.42 μs mean value on -17 dB (low) SNR level with deviation value is not more than 0.88. This technique has also doing a good job to take care of Continous Wave Interference because of presence of hard limiter. But all of those just only work in under 3.119 dB SNR level because hard limiter hardware become unlinear anymore since SNR level more than that.

Keywords: Loran-C radio navigation, zero-crossing detector, time difference, noise, bandpass limiter.