All this while, there is no equipment available in the market that is able to analyze the interference within the bandwidth of Asymmetric Digital Subscriber Line (ADSL). Many problems which are currently faced by the service provider cannot be answered which eventually affecting the service quality performance of ADSL system. There is an urgent need for the digital communication analyzer for simultaneous measurement of noise emission on digital subscriber line (DSL) communication. The TM xDSL APD Analyser have been developed which utilizes a programmable digitizer to evaluate the noise interference and its impact towards digital communication performance. The amplitude probability distribution (APD) has been proposed within Comité International Spécial Des Perturbations Radioélectriques (CISPR) as a measurement level for emitted electromagnetic interference from electrical appliances or equipment. The APD graph and statistical parameter is obtained from analyzer that using the APD sampling methodology. The noises are characterized using statistical distribution functions that exhibiting its own distinct APD parameters $C_U$ and $C_D$ which yielding the noise character. The analyzer will record and analyse noise pattern emission from various sources of interference. The other advantage of analyzer is that of its ability not only to record and analyse the noise but also the possibility to regenerate the noise captured for further analysis. The analyzer fulfils the international standard CISPR16-1-1 (APD standard requirement) and it provides the new platform for interference verification of man-made noise emission towards wired broadband digital communication performance.

**Keywords:** APD, DSL, $a$-Distribution, BER, Impulsive Noise.