We shall study certain categories of modules for vertex algebras of affine type which are larger than the category $\mathcal{O}$. We are motivated by fusion rules analysis and the problem of classification of irreducible representations of affine Lie algebras of certain types. Particular emphasis will be put on simple vertex algebras associated to admissible representations and representations at the critical level. Connection with certain irrational, $C_2$ cofinite vertex algebras will be also discussed. (Received August 26, 2012)