In the last decades, several analytical approaches for linear RF modeling and design have been introduced. In general, using these approaches, source and load reflection coefficients are calculated for designing input and output matching networks. This reflection coefficient is set to achieve a specific target such as maximum output power and minimum noise or an intermediate condition. The most common linear design approach is the use of S-parameters. However, S-parameters cannot model the nonlinear behavior of amplifiers. Nonlinear RF systems such as power amplifiers are typically designed using nonlinear models and/or load-pull measurements. Recently, X-parameters have been presented to model nonlinear device behavior. In this paper, a new design approach based on X-parameters has been introduced and will be verified by simulations and experimental results. Also, it will be indicated that this method speeds up the design procedure when compared with the load-pull method. Using this approach, we can calculate the load reflection coefficient at the fundamental frequency for minimizing a specific harmonic output power. Finally, the application of this approach in minimizing a specific harmonic in the output signal and increasing the dynamic range of the amplifier will be investigated.