

Power Added Efficiency Model for Mesfet Class E Power Amplifier Using Jackknife Resampling

ABSTRACT

There are several types of amplifier classes, and this includes the class E amplifier. The class E can achieve its efficiency up to 100%. This paper thus aims on getting the best model in estimating the power added efficiency of Class E power amplifier circuit using Silicon Carbide MESFET. Twelve models are obtained from three independent variables; DC current (I_{dc}), drain voltage (V_{dc}), and power out (P_{out}). The original data set of 7 is generated to become 105 data samples (21 sets x 5 observations where each set with two missing observations) using the Jackknife sampling technique at the first stage (7C2). The power added efficiency model employs the Multiple Regression (MR) technique up to the second order of interactions. The best model is based on the eight selection criteria (8SC). The best model is found to be model M12.5.0, chosen from the six selected model). Efficiency factors affect the power added efficiency estimation are found to be X3(I_{DC}) and X12(interaction between P_{out} and V_{DS}).