Alternate Classes of classes utilized in Doherety amplifiers:

Typically, Doherety Power Amplifiers use a combination of class AB and class C amplifiers. The class AB amplifier is called the main amplifier and the class C is called the auxiliary amplifier.

Class F is basically a class C with filters on the output. Theoretically can get 100% efficiency, but more like 60 to 75% in real life.

Class F amplifiers use filters to tune out the higher order harmonics that distort the signal and waste energy. This is called harmonic termination.

Replacing the class AB with a class F amplifier can increase the overall efficiency of the amplifier.

When using a class F amplifier, more consideration must be made in selecting the load that the whole system sees.

In some cases, a class F amplifier can be used as an alternative to for the main class AB amplifier. The purpose of using a class F amplifier is to increase the over all efficiency of the amplifier. A class F amplifier is similar to a class B (bias condition), however the output is harmonically terminated, and it is single ended, rather than a push pull. This means that the there are several filters on the output that tune out the higher order harmonics that distort the signal and cause energy from the power source to be put into frequencies that are not in the spectrum of interest.

Distortion in the signal can come from various places, however in the class B bias condition (no bias) the main sources of the distortion comes from the input waveform also needing to bias the transistor, and from the transistor not conducting during the negative cycle of the wave. These distortions show up as higher order harmonics, which are then tuned out via the harmonic termination. Theoretically, a class F amplifier can reach 100% efficiency however realized designs have shown efficiencies near 60% to 75%.

