

POWER DISTORTION-BASED SERVO CONTROL SYSTEMS FOR FREQUENCY TUNING RF POWER SOURCES

ABSTRACT

A radio frequency system includes a power amplifier that outputs a radio frequency signal to a matching network via a transmission line between the power amplifier and the matching network. A sensor monitors the radio frequency signal and generates first sensor signals based on the radio frequency signal. A distortion module determines a first distortion value according to at least one of (i) a sinusoidal function of the first sensor signals and (ii) a cross-correlation function of the first sensor signals. A first correction circuit (i) generates a first impedance tuning value based on the first distortion value and a first predetermined value, and (ii) provides feedforward control of impedance matching performed within the matching network including outputting the first impedance tuning value to one of the power amplifier and the matching network.

FIG. 1 accompanies the abstract