Abstract: A transmitter circuit (200, 400, 510) includes a power control error data generator (230), a feedforward predistortion data generation (240), feedforward adder logic (250) and the amplifier (210).
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
What is claimed is:

1. A transmitter circuit comprising:
   
a power control error data generator operative to receive amplitude modulation data and a RF coupled output signal and in response to produce power control error data;
   
a feedforward predistortion data generator, operative to receive the amplitude modulation data and in response to produce feedforward predistortion data;
   
feedforward adder logic, operatively coupled to the power control error data generator and to the feedforward predistortion data generator, and operative to receive the power control error data and the feedforward predistortion data and, in response, to produce power control data; and
   
an amplifier, operatively coupled to the feedforward adder logic, and operative to receive the power control data and a radio frequency (RF) input signal and in response to produce an RF output signal, wherein the RF coupled output signal is associated with the RF output signal and wherein the power control data reduces amplitude modulation distortion in the RF output signal.
2. The transmitter circuit of claim 1 wherein the feedforward predistortion data generator includes:
   a storage element, including data representing an amplifier predistortion table containing at least the feedforward predistortion data corresponding to the received amplitude modulation data; and
   a table access circuit, operatively coupled to the storage element, and the feedforward adder logic and operative to produce the feedforward predistortion data in response to the amplitude modulation data.

3. The transmitter circuit of claim 2 wherein the table access circuit dynamically varies the feedforward predistortion data based on a predicted amplitude modulation change in the amplifier in response to the amplitude modulation data.

4. The transmitter circuit of claim 1, wherein the power control data adjusts a bias of the amplifier.

5. The transmitter circuit of claim 1, wherein the feedforward predistortion data corresponds to a predicted amplitude modulation change in the amplifier in response to the amplitude modulation data, such that the power control data changes dynamically to reduce the amplitude modulation distortion in the amplifier.
6. The transmitter circuit of claim 1, further including a phase modulation control circuit including:

a switch, operatively coupled to the amplifier, and operative to receive the RF coupled output signal and the RF input signal and, in response, to produce a feedback signal;

a mixer, operatively coupled to the switch, and operative to receive a frequency reference signal and the feedback signal and to produce a phase difference signal;

a phase comparator, operatively coupled to the mixer, and operative to receive a phase modulation signal and the phase difference signal and in response to produce a modulated phase difference signal; and

a voltage controlled oscillator, operatively coupled to the phase comparator, the amplifier, and the switch, and operative to receive the modulated phase difference signal and, in response, to provide the RF input signal to the amplifier and to the switch.
7. A transmitter circuit comprising:

an amplitude modulation error signal generator operative to receive
amplitude modulation data and a RF coupled output signal and in response to produce
an amplitude modulation error signal;

integrator logic, operatively coupled to the amplitude modulation error
signal generator, and operative to receive the amplitude modulation error signal and in
response to produce power control error data;

a feedforward predistortion data generator, operative to receive the
amplitude modulation data and in response to produce feedforward predistortion data;

and

feedforward adder logic, operatively coupled to the integrator logic,
the feedforward predistortion data generator and to the amplifier, and operative to
receive the power control error data and the feedforward predistortion data and in
response to produce power control data,

an amplifier operatively coupled to the feedforward adder logic, and
operative to receive the power control data and in response to produce an RF output
signal associated with the RF coupled output signal, such that the power control data
is operative to reduce amplitude modulation distortion in the RF output signal.
8. The transmitter circuit of claim 7 wherein the feedforward predistortion data generator includes:

   a storage element, including data representing an amplifier predistortion table containing at least the feedforward amplifier predistortion data corresponding to the received amplitude modulation data; and

   a table access circuit operatively coupled to the storage element, and the feedforward adder logic and operative to produce the feedforward predistortion data in response to the amplitude modulation data.

9. A method to reduce amplitude modulation distortion in an amplifier comprising:

   producing power control error data in response to receiving amplitude modulation data and a detected RF output signal;

   producing feedforward predistortion data in response to the amplitude modulation data; and

   combining the power control error data and the feedforward predistortion data to provide power control data to the amplifier such that the power control data reduces the amplitude modulation distortion in the amplifier.

10. The method of claim 9 wherein the feedforward power distortion data corresponds to a predicted amplitude modulation change in the amplifier in response