

CLAIMS

WHAT IS CLAIMED IS:

1. A method of wireless communication by a transmitter, the method comprising:
generating, by the transmitter, a reference signal having a non-constant envelope for nonlinearity estimation by a receiver; and
transmitting, by the transmitter, the reference signal.
2. The method of claim 1, wherein the reference signal comprises a primary synchronization signal.
3. The method of claim 1, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.
4. The method of claim 1, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).
5. The method of claim 1, wherein the reference signal comprises a preamble having the non-constant envelope.
6. The method of claim 1, wherein the generation of the reference signal having the non-constant envelope comprises:
modulating the reference signal to have a first dynamic range, the first dynamic range being higher than a second dynamic range of another signal having a constant envelope.
7. The method of claim 1, further comprising:
receiving, from the receiver, feedback associated with the nonlinearity estimation; and
performing at least one digital pre-distortion (DPD) operation based on the feedback.
8. The method of claim 7, wherein the performance of the at least one DPD operation based on the feedback comprises adjusting one or more coefficients associated

with at least one of a high-power amplifier (HPA) or a digital to analog converter (DAC).

9. A method of wireless communication by a receiver, the method comprising:
receiving a reference signal having a non-constant envelope;
estimating at least one nonlinearity characteristic based on the reference signal having the non-constant envelope; and
at least one of:
transmitting feedback based on the at least one nonlinearity characteristic, or
performing at least one digital post distortion (DPoD) operation based on the at least one nonlinearity characteristic.
10. The method of claim 9, wherein the reference signal comprises a primary synchronization signal.
11. The method of claim 9, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.
12. The method of claim 9, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).
13. The method of claim 9, wherein the reference signal comprises a preamble having the non-constant envelope.
14. The method of claim 9, wherein the estimation of the at least one nonlinearity characteristic based on the reference signal having the non-constant envelope is based on a least-squares algorithm.
15. The method of claim 9, wherein the performance of the at least one DPoD operation based on the at least one nonlinearity characteristic comprises adjusting one or more coefficients associated with at least one of a low-noise amplifier (LNA) or an analog to digital converter (ADC).

16. An apparatus for wireless communication, the apparatus comprising:
a memory; and
at least one processor coupled to the memory and configured to:
generate a reference signal having a non-constant envelope for nonlinearity estimation by a receiver; and
transmit the reference signal.
17. The apparatus of claim 16, wherein the reference signal comprises a primary synchronization signal.
18. The apparatus of claim 16, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.
19. The apparatus of claim 16, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).
20. The apparatus of claim 16, wherein the reference signal comprises a preamble having the non-constant envelope.
21. The apparatus of claim 16, wherein the generation of the reference signal having the non-constant envelope comprises modulation of the reference signal to have a first dynamic range, the first dynamic range being higher than a second dynamic range of another signal having a constant envelope.
22. The apparatus of claim 16, wherein the at least one processor is further configured to:
receive, from the receiver, feedback associated with the nonlinearity estimation;
and
perform at least one digital pre-distortion (DPD) operation based on the feedback.
23. The apparatus of claim 22, wherein the performance of the at least one DPD operation based on the feedback comprises adjustment of one or more coefficients

associated with at least one of a high-power amplifier (HPA) or a digital to analog converter (DAC).

24. A apparatus of wireless communication by a receiver, the apparatus comprising:
a memory; and
at least one processor coupled to the memory and configured to:
receive reference signal having a non-constant envelope;
estimate at least one nonlinearity characteristic based on the reference signal having the non-constant envelope; and
at least one of:
transmit feedback based on the at least one nonlinearity characteristic, or
perform at least one digital post distortion (DPoD) operation based on the at least one nonlinearity characteristic.
25. The apparatus of claim 24, wherein the reference signal comprises a primary synchronization signal.
26. The apparatus of claim 24, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.
27. The apparatus of claim 24, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).
28. The apparatus of claim 24, wherein the reference signal comprises a preamble having the non-constant envelope.
29. The apparatus of claim 24, wherein the estimation of the at least one nonlinearity characteristic based on the reference signal having the non-constant envelope is based on a least-squares algorithm.
30. The apparatus of claim 24, wherein the performance of the at least one DPoD operation based on the at least one nonlinearity characteristic comprises adjustment of

one or more coefficients associated with at least one of a low-noise amplifier (LNA) or an analog to digital converter (ADC).

31. An apparatus for wireless communication, the apparatus comprising:
means for generating a reference signal having a non-constant envelope for nonlinearity estimation by a receiver; and
means for transmitting the reference signal.

32. The apparatus of claim 31, wherein the reference signal comprises a primary synchronization signal.

33. The apparatus of claim 31, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.

34. The apparatus of claim 31, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).

35. The apparatus of claim 31, wherein the reference signal comprises a preamble having the non-constant envelope.

36. The apparatus of claim 31, wherein the means for generating the reference signal having the non-constant envelope is configured to modulate the reference signal to have a first dynamic range, the first dynamic range being higher than a second dynamic range of another signal having a constant envelope.

37. The apparatus of claim 31, further comprising:
means for receiving, from the receiver, feedback associated with the nonlinearity estimation; and
means for performing at least one digital pre-distortion (DPD) operation based on the feedback.

38. The apparatus of claim 37, wherein the means for performing the at least one DPD operation based on the feedback is configured to adjust one or more coefficients

associated with at least one of a high-power amplifier (HPA) or a digital to analog converter (DAC).

39. A apparatus of wireless communication by a receiver, the apparatus comprising:
means for receiving a reference signal having a non-constant envelope;
means for estimating at least one nonlinearity characteristic based on the reference signal having the non-constant envelope; and

at least one of:

means for transmitting feedback based on the at least one nonlinearity characteristic, or

means for performing at least one digital post distortion (DPoD) operation based on the at least one nonlinearity characteristic.

40. The apparatus of claim 39, wherein the reference signal comprises a primary synchronization signal.

41. The apparatus of claim 39, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.

42. The apparatus of claim 39, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).

43. The apparatus of claim 39, wherein the reference signal comprises a preamble having the non-constant envelope.

44. The apparatus of claim 39, wherein the estimating the at least one nonlinearity characteristic based on the reference signal having the non-constant envelope is based on a least-squares algorithm.

45. The apparatus of claim 39, wherein the means for performing the at least one DPoD operation based on the at least one nonlinearity characteristic is configured to adjust of one or more coefficients associated with at least one of a low-noise amplifier (LNA) or an analog to digital converter (ADC).

46. A computer-readable medium storing computer-executable code for wireless communication by a transmitter, comprising code to:

- generate, by the transmitter, a reference signal having a non-constant envelope for nonlinearity estimation by a receiver; and
- transmit, by the transmitter, the reference signal.

47. A computer-readable medium storing computer-executable code for wireless communication by a receiver, comprising code to:

- receive a reference signal having a non-constant envelope;
- estimate at least one nonlinearity characteristic based on the reference signal having the non-constant envelope; and
- at least one of:
 - transmit feedback based on the at least one nonlinearity characteristic, or
 - perform at least one digital post distortion (DPoD) operation based on the at least one nonlinearity characteristic.