CLAIMS

1. A method of wireless communication by a transmitter, the method comprising:

generating, by the transmitter, a reference signal having a non-constant envelope which is used for nonlinearity estimation by a receiver, wherein the generating the reference signal 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; ~~and~~

transmitting, by the transmitter, the reference signal;

receiving, from the receiver, feedback associated with the nonlinearity estimation; and

performing at least one digital pre-distortion (DPD) operation based on the feedback, 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).

2. The method of claim 1, wherein the reference signal comprises a primary synchronization signal.

3. The method of claim 2, 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, 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.~~

~~7. The method of claim 6, 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).~~

~~8. A method of wireless communication by a receiver, the method comprising: receiving a reference signal having a non-constant envelope, the reference signal having a first dynamic range that is higher than a second dynamic range of another signal having a 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.~~

~~9. The method of claim 8, wherein the reference signal comprises a primary synchronization signal.~~

~~10. The method of claim 8, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.~~

~~11. The method of claim 8, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).~~

~~12. The method of claim 8, wherein the reference signal comprises a preamble having the non-constant envelope.~~

~~13. The method of claim 8, 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.~~

~~14. The method of claim 8, 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).~~

~~15~~6. 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 which is used for nonlinearity estimation by a receiver, wherein the generation of the reference signal 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; ~~and~~

transmit the reference signal;

receive, from the receiver, feedback associated with the nonlinearity estimation; and

perform at least one digital pre-distortion (DPD) operation based on the feedback, 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).

~~16~~7. The apparatus of claim ~~15~~6, wherein the reference signal comprises a primary synchronization signal.

~~17~~8. The apparatus of claim ~~16~~7, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.

~~18~~9. The apparatus of claim ~~15~~6, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).

~~19~~10. The apparatus of claim ~~15~~6, wherein the reference signal comprises a preamble having the non-constant envelope.

~~20. The apparatus of claim 15, 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.~~

~~21. The apparatus of claim 20, 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).~~

~~22. 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, the reference signal having a first dynamic range that is higher than a second dynamic range of another signal having a 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.~~

~~23. The apparatus of claim 22, wherein the reference signal comprises a primary synchronization signal.~~

~~24. The apparatus of claim 22, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.~~

~~25. The apparatus of claim 22, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).~~

~~26. The apparatus of claim 22, wherein the reference signal comprises a preamble having the non-constant envelope.~~

~~27. The apparatus of claim 22, 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.~~

~~28. The apparatus of claim 22, 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).~~

~~29~~11. An apparatus for wireless communication, the apparatus comprising:

means for generating a reference signal having a non-constant envelope which is used for nonlinearity estimation by a receiver, wherein the means for generating 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; ~~and~~

means for transmitting the reference signal;

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, 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).

~~30~~12. The apparatus of claim ~~29~~11, wherein the reference signal comprises a primary synchronization signal.

~~31~~13. The apparatus of claim ~~30~~12, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.

~~32~~14. The apparatus of claim ~~29~~11, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).

~~33~~15. The apparatus of claim ~~29~~11, wherein the reference signal comprises a preamble having the non-constant envelope.

~~34. The apparatus of claim 29, 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.~~

~~35. The apparatus of claim 34, 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).~~

~~36. A apparatus of wireless communication by a receiver, the apparatus comprising: means for receiving a reference signal having a non-constant envelope, the reference signal having a first dynamic range that is higher than a second dynamic range of another signal having a 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.~~

~~37. The apparatus of claim 36, wherein the reference signal comprises a primary synchronization signal.~~

~~38. The apparatus of claim 36, wherein the primary synchronization signal is based on a Zadoff-Chu sequence.~~

~~39. The apparatus of claim 36, wherein the reference signal comprises one of a short training sequence (STS) or a guard interval (GI).~~

~~40. The apparatus of claim 36, wherein the reference signal comprises a preamble having the non-constant envelope.~~

~~41. The apparatus of claim 36, 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.~~

~~42. The apparatus of claim 36, 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).~~

~~43~~16. A non-transitory, computer-readable medium storing computer-executable code for wireless communication by a transmitter, comprising code to execute the method of any one of claims 1 to 5~~: generate, by the transmitter, a reference signal having a non-constant envelope which is used for nonlinearity estimation by a receiver, wherein the generation of the reference signal 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; and transmit, by the transmitter, the reference signal~~.

~~44. A non-transitory, 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, the reference signal having a first dynamic range that is higher than a second dynamic range of another signal having a 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.~~

~~45. A method of wireless communication for a first wireless communications device, comprising:~~
~~receiving a signal having a non-constant envelope from a second wireless communications device; and~~
~~determining nonlinearity information based on the signal having the non-constant envelope.~~

~~46. The method of claim 45, wherein the signal having the non-constant envelope further has a non-constant amplitude.~~

~~47. The method of claim 45, further comprising:~~
~~estimating a set of nonlinearity characteristics or nonlinearity constants based on the signal having the non-constant envelope,~~
~~wherein the nonlinearity information comprises the set of nonlinearity characteristics or nonlinearity constants.~~

~~48. The method of claim 47, further comprising:~~
~~adjusting at least one of an amplifier or an analog-to-digital converter (ADC) based on the set of nonlinearity characteristics or nonlinearity constants.~~

~~49. The method of claim 45, further comprising:~~
~~receiving information from the second wireless communications device; and~~
~~reducing distortion associated with the information based on the nonlinearity information.~~

50. The method of claim 49, further comprising:
applying at least one digital post distortion (DPoD) operation to the information based on the nonlinearity information,
wherein the distortion is reduced based on the at least one DPoD operation applied to the information.

51. The method of claim 49, wherein the signal having the non-constant envelope comprises a preamble associated with the information.

52. The method of claim 45, further comprising:
transmitting the nonlinearity information to the second wireless communications device; and
receiving information from the second wireless communications device based on the nonlinearity information.

53. The method of claim 45, wherein the signal comprises at least one of a reference signal, a synchronization signal, a pilot signal, or a training sequence.

54. The method of claim 45, wherein the signal having the non-constant envelope is modulated using phase-key shifting.

55. An apparatus for wireless communications, comprising:
a memory; and
at least one processor coupled to the memory and configured to:
receive a signal having a non-constant envelope from a second wireless communications device; and
determine nonlinearity information based on the signal having the non-constant envelope.

56. The apparatus of claim 55, wherein the signal having the non-constant envelope further has a non-constant amplitude.

57. The apparatus of claim 55, wherein the at least one processor is further configured to:
estimate a set of nonlinearity characteristics or nonlinearity constants based on the signal having the non-constant envelope,
wherein the nonlinearity information comprises the set of nonlinearity characteristics or nonlinearity constants.

58. The apparatus of claim 57, wherein the at least one processor is further configured to:
adjust at least one of an amplifier or an analog-to-digital converter (ADC) based on the set of nonlinearity characteristics or nonlinearity constants.

59. The apparatus of claim 55, wherein the at least one processor is further configured to:
receive information from the second wireless communications device; and
reduce distortion associated with the information based on the nonlinearity information.

60. The apparatus of claim 59, wherein the at least one processor is further configured to:
apply at least one digital post distortion (DPoD) operation to the information based on the nonlinearity information,
wherein the distortion is reduced based on the at least one DPoD operation applied to the information.

61. The apparatus of claim 59, wherein the signal having the non-constant envelope comprises a preamble associated with the information.

62. The apparatus of claim 55, wherein the at least one processor is further configured to:
transmit the nonlinearity information to the second wireless communications device; and
receive information from the second wireless communications device based on the nonlinearity information.

63. The apparatus of claim 55, wherein the signal comprises at least one of a reference signal, a synchronization signal, a pilot signal, or a training sequence.

64. A computer-readable medium storing computer-executable code for wireless communications, the code when executed by a processor cause the processor to:
receive a signal having a non-constant envelope from a second wireless communications device; and
determine nonlinearity information based on the signal having the non-constant envelope.