What is claimed is:

1. A wireless electric field power transmission system comprising:

a transmitter comprising a transmitter antenna and a high quality factor (Q-factor) coil, the transmitter antenna comprising at least two conductors defining a volume, the at least two conductors configured to resonate with the high Q-factor coil to generate a resonant electric field in the volume; and

at least one receiver, wherein the transmitter antenna transfers power wirelessly via resonant electric field coupling when the at least one receiver is within the volume.

2. A method for wirelessly transmitting power, the method comprising:

resonating a transmitter antenna and a high quality factor (Q-factor) coil, the transmitter antenna comprising at least two conductors defining a volume at a transmitter resonant frequency;

generating a resonant electric field in the volume;

positioning a receiver antenna comprising two plates in the volume; and

resonating the receiver antenna at the transmitter resonant frequency.

3. A method for wirelessly transferring power, the method comprising:

resonating a transmitter antenna comprising at least two conductors and a high quality factor (Q-factor) transmitter coil at a start-up frequency;

tuning the transmitter antenna and the transmitter coil to their resonant frequency;

generating a resonant electric field within a volume defined by the at least two conductors;

placing a receiver with a receiver antenna comprising two plates in the volume;

accumulating a potential difference on the two plates;

resonating the receiver antenna at the resonant frequency; and

gathering power from the receiver antenna.

4. A transmitter for wirelessly transmitting power, the transmitter comprising:

an antenna for creating a resonant electric field, the antenna comprising at

least two conductors defining a volume;

a high quality factor (Q-factor) coil connected to the antenna; and

a resonator connected to the coil for resonating the coil and the antenna at a resonant frequency to transfer power via resonant electric field coupling, the resonator comprising an auto tuning circuit configured to automatically tune the transmitter.

5. The transmitter of claim 4, wherein the antenna comprises at least two generally parallel plates that are laterally spaced to define the volume.

6. The transmitter of claim 4, wherein the antenna comprises six conductors defining the volume.

7. The transmitter of claim 4, wherein the antenna is a near-field antenna.

8. The transmitter of claim 7, wherein each conductor is formed of conductive tape.

9. The transmitter of claim 4, wherein the coil is constructed using strand wire.

10. The transmitter of claim 4, wherein the coil is a toroid spiral, cylindrical spiral, flat spiral or pancake coil.

11. The transmitter of claim 4, wherein the auto tuning circuit further comprises circuitry configured to boost a signal to the antenna.

12. The transmitter of claim 11, wherein the circuitry comprises at least one of a voltage gain, a current gain and a power amplifier.

13. The transmitter of claim 12, wherein the power amplifier is a push-pull power amplifier.

14. The transmitter of claim 4, wherein the auto tuning circuit further comprises a delay line configured to delay the signal within the auto tuning circuit.

15. The transmitter of claim 14, wherein the delay line is an active inverter delay chain comprising complementary metal-oxide-semiconductor (CMOS) inverters connected in series.

16. The transmitter of claim 4, wherein the auto tuning circuit further comprises a decoupling circuit configured to decouple an output signal of the transmitter.

17. The transmitter of claim 16, wherein the decoupling circuit comprises a balun.

18. The transmitter of claim 4, wherein the auto tuning circuit further comprises a current sensing circuit configured to provide a feedback signal.

19. The transmitter of claim 4, wherein the auto tuning circuit further comprises an oscillator configured to inject a start-up signal into the auto tuning circuit.

20. The transmitter of claim 4, wherein the resonator further comprises modification circuitry configured to modify the output signal of the transmitter when a condition occurs.

21. The transmitter of claim 20, wherein the modification circuitry adjusts the power level of the output signal when the condition occurs.

22. The transmitter of claim 20, wherein the modification circuitry shuts off output of the transmitter when the condition occurs.

23. A vehicle comprising the transmitter of claim 4.

24. A table comprising the transmitter of claim 4.

25. A container comprising the transmitter of claim 4.

26. The container of claim 25, wherein the container is shielded to prevent electromagnetic field (EMF) leakage.

27. The container of claim 26, wherein electric field strength is increased when the container is closed.

28. A receiver for receiving wirelessly transmitted power, the receiver comprising:
an antenna comprising at least two conductors;
a high quality factor (Q-factor) coil connected to the antenna; and
a resonator connected to the coil for resonating the coil and the antenna at a resonant frequency to extract power from a transmitter via resonant electric field coupling.

29. The receiver of claim 28, wherein the conductors are external to a housing accommodating the coil and the resonator.

30. The receiver of claim 28, wherein the conductors are plates or rails.

31. The receiver of claim 30, wherein the rails are rectangular and parallel.

32. The receiver of claim 30, wherein the rails are metallic.

33. The receiver of claim 28, wherein the coil is constructed of strand wire or inductors.

34. The receiver of claim 28, wherein the coil is a toroid, cylindrical spiral, flat spiral or pancake coil.

35. The receiver of claim 28, wherein the resonator further comprises modification circuitry configured to modify a signal received by the receiver when a condition occurs.

36. The receiver of claim 35, wherein the modification circuitry adjusts the signal received by the receiver when the condition occurs.

37. The receiver of claim 35, wherein the modification circuitry is a voltage

converter and/or a rectifier.

38. The receiver of claim 28, further comprising an impedance matching circuit.

39. The receiver of claim 38, wherein the impedance matching circuit comprises a balun.

40. A backpack for receiving wirelessly transmitted power, the backpack comprising the receiver of claim 28.

41. The backpack of claim 40, further comprising a battery charger connected to the receiver.

42. The backpack of claim 41, further comprising at least one rechargeable battery connected to the receiver configured to charge when no batteries are present in the battery charger.

43. A radio communication device for receiving wirelessly transmitted power, the device comprising the receiver of claim 28.

44. A computing device for receiving wirelessly transmitted power, the device comprising the receiver of claim 28.

45. A wireless electric field power transmission system comprising:

a transmitter comprising a transmitter antenna and a high quality factor (Q-factor) coil, the transmitter antenna comprising at least one conductor configured to resonate with the high Q-factor coil to generate a resonant electric field in a volume around the at least one conductor; and

at least one receiver, wherein the transmitter antenna transfers power wirelessly via resonant electric field coupling when the at least one receiver is coupled to the transmitter.

46. The system of claim 46, wherein the at least one receiver comprises a receiver antenna and a high Q-factor receiver coil connected to the receiver antenna,

and wherein the receiver antenna and the receiver coil resonate at a resonant frequency to extract power from the transmitter via resonant electric field coupling when the at least one receiver is in the volume.

47. The system of claim 1, wherein the at least one receiver comprises a receiver antenna and a high Q-factor receiver coil connected to the receiver antenna, and wherein the receiver antenna and the receiver coil resonate at a resonant frequency to extract power from the transmitter via resonant electric field coupling when the at least one receiver is in the volume.

48. The method of claim 2, wherein resonating the receiver antenna further comprises resonating a high Q-factor receiver coil connected to the receiver antenna at the transmitter resonant frequency.

49. The method of claim 3, wherein the receiver further comprises a high Q-factor receiver coil connected to the receiver antenna, and wherein resonating the receiver antenna further comprises resonating the receiver coil at the resonant frequency.

50. The receiver of claim 28, wherein the resonator further comprises an auto tuning circuit configured to automatically tune the resonator.

51. The receiver of claim 37, wherein the modification circuitry is a rectifier and the receiver further comprises a load electrically connected to the rectifier.

What is claimed is:

1 A wireless electric field power transmission system comprising:

a transmitter comprising a transmitter antenna and a high quality factor (Q-factor) coil, the transmitter antenna comprising at least two conductors defining a volume, the at least two conductors configured to resonate with the high Q-factor coil to generate a reactive near electric field in the volume; and

at least one receiver, wherein the transmitter antenna transfers power wirelessly via resonant reactive near electric field coupling when the at least one receiver is within the volume.

2. A method for wirelessly transmitting power, the method comprising:

resonating a transmitter antenna and a high quality factor (Q-factor) coil, the transmitter antenna comprising at least two conductors defining a volume at a transmitter resonant frequency;

generating a reactive near electric field in the volume;

positioning a receiver antenna comprising two plates in the volume; and

resonating the receiver antenna at the transmitter resonant frequency.

3. A method for wirelessly transferring power, the method comprising:

resonating a transmitter antenna comprising at least two conductors and a high quality factor (Q-factor) transmitter coil at a start-up frequency;

tuning the transmitter antenna and the transmitter coil to their resonant frequency;

generating a reactive near electric field within a volume defined by the at least two conductors;

placing a receiver with a receiver antenna comprising two plates in the volume;

accumulating a potential difference on the two plates;

resonating the receiver antenna at the resonant frequency; and

gathering power from the receiver antenna.

4. A transmitter for wirelessly transmitting power, the transmitter comprising:

an antenna for creating a reactive near electric field, the antenna comprising

at least two conductors defining a volume;

a high quality factor (Q-factor) coil connected to the antenna; and

a resonator connected to the coil for resonating the coil and the antenna at a resonant frequency to transfer power via resonant reactive near electric field coupling, the resonator comprising an auto tuning circuit configured to automatically tune the transmitter.

5. The transmitter of claim 4, wherein the antenna comprises at least two generally parallel plates that are laterally spaced to define the volume.

6. The transmitter of claim 4, wherein the antenna comprises six conductors defining the volume.

7. The transmitter of claim 4, wherein the antenna is a near-field antenna.

8. The transmitter of claim 7, wherein each conductor is formed of conductive tape.

9. The transmitter of claim 4, wherein the coil is constructed using strand wire.

10. The transmitter of claim 4, wherein the coil is a toroid spiral, cylindrical spiral, flat spiral or pancake coil.

11. The transmitter of claim 4, wherein the auto tuning circuit further comprises circuitry configured to boost a signal to the antenna.

12. The transmitter of claim 11, wherein the circuitry comprises at least one of a voltage gain, a current gain and a power amplifier.

13. The transmitter of claim 12, wherein the power amplifier is a push-pull power amplifier.

14. The transmitter of claim 4, wherein the auto tuning circuit further comprises a delay line configured to delay the signal within the auto tuning circuit.

15. The transmitter of claim 14, wherein the delay line is an active inverter delay chain comprising complementary metal-oxide-semiconductor (CMOS) inverters connected in series.

16. The transmitter of claim 4, wherein the auto tuning circuit further comprises a decoupling circuit configured to decouple an output signal of the transmitter.

17. The transmitter of claim 16, wherein the decoupling circuit comprises a balun.

18. The transmitter of claim 4, wherein the auto tuning circuit further comprises a current sensing circuit configured to provide a feedback signal.

19. The transmitter of claim 4, wherein the auto tuning circuit further comprises an oscillator configured to inject a start-up signal into the auto tuning circuit.

20. The transmitter of claim 4, wherein the resonator further comprises modification circuitry configured to modify the output signal of the transmitter when a condition occurs.

21. The transmitter of claim 20, wherein the modification circuitry adjusts the power level of the output signal when the condition occurs.

22. The transmitter of claim 20, wherein the modification circuitry shuts off output of the transmitter when the condition occurs.

23. A vehicle comprising the transmitter of claim 4.

24. A table comprising the transmitter of claim 4.

25. A container comprising the transmitter of claim 4.

26. The container of claim 25, wherein the container is shielded to prevent electromagnetic field (EMF) leakage.

27. The container of claim 26, wherein electric field strength is increased when the container is closed.

28. A receiver for receiving wirelessly transmitted power, the receiver comprising:
an antenna comprising at least two conductors;
a high quality factor (Q-factor) coil connected to the antenna; and
a resonator connected to the coil for resonating the coil and the antenna at a resonant frequency to extract power from a transmitter via resonant reactive near electric field coupling.

29. The receiver of claim 28, wherein the conductors are external to a housing accommodating the coil and the resonator.

30. The receiver of claim 28, wherein the conductors are plates or rails.

31. The receiver of claim 30, wherein the rails are rectangular and parallel.

32. The receiver of claim 30, wherein the rails are metallic.

33. The receiver of claim 28, wherein the coil is constructed of strand wire or inductors.

34. The receiver of claim 28, wherein the coil is a toroid, cylindrical spiral, flat spiral or pancake coil.

35. The receiver of claim 28, wherein the resonator further comprises modification circuitry configured to modify a signal received by the receiver when a condition occurs.

36. The receiver of claim 35, wherein the modification circuitry adjusts the signal received by the receiver when the condition occurs.

37. The receiver of claim 35, wherein the modification circuitry is a voltage

converter and/or a rectifier.

38. The receiver of claim 28, further comprising an impedance matching circuit.

39. The receiver of claim 38, wherein the impedance matching circuit comprises a balun.

40. A backpack for receiving wirelessly transmitted power, the backpack comprising the receiver of claim 28.

41. The backpack of claim 40, further comprising a battery charger connected to the receiver.

42. The backpack of claim 41, further comprising at least one rechargeable battery connected to the receiver configured to charge when no batteries are present in the battery charger.

43. A radio communication device for receiving wirelessly transmitted power, the device comprising the receiver of claim 28.

44. A computing device for receiving wirelessly transmitted power, the device comprising the receiver of claim 28.

45. A wireless electric field power transmission system comprising:

a transmitter comprising a transmitter antenna and a high quality factor (Q-factor) coil, the transmitter antenna comprising at least one conductor configured to resonate with the high Q-factor coil to generate a reactive near electric field surrounding the at least one conductor; and

at least one receiver, wherein the transmitter antenna transfers power wirelessly via resonant reactive near electric field coupling when the at least one receiver is coupled to the transmitter.

46. The system of claim 46, wherein the at least one receiver comprises a receiver antenna and a high Q-factor receiver coil connected to the receiver antenna,

and wherein the receiver antenna and the receiver coil resonate at a resonant frequency to extract power from the transmitter via resonant reactive near electric field coupling when the at least one receiver is in the volume.

47. The system of claim 1, wherein the at least one receiver comprises a receiver antenna and a high Q-factor receiver coil connected to the receiver antenna, and wherein the receiver antenna and the receiver coil resonate at a resonant frequency to extract power from the transmitter via resonant reactive near electric field coupling when the at least one receiver is in the volume.

48. The method of claim 2, wherein resonating the receiver antenna further comprises resonating a high Q-factor receiver coil connected to the receiver antenna at the transmitter resonant frequency.

49. The method of claim 3, wherein the receiver further comprises a high Q-factor receiver coil connected to the receiver antenna, and wherein resonating the receiver antenna further comprises resonating the receiver coil at the resonant frequency.

50. The receiver of claim 28, wherein the resonator further comprises an auto tuning circuit configured to automatically tune the resonator.

51. The receiver of claim 37, wherein the modification circuitry is a rectifier and the receiver further comprises a load electrically connected to the rectifier.