

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

WITRICITY CORPORATION,

Plaintiff,

v.

IDEANOMICS, INC., and  
WIRELESS ADVANCED VEHICLE  
ELECTRIFICATION, LLC,

Defendants.

**C.A.**

**JURY TRIAL DEMANDED**

**COMPLAINT**

Plaintiff WiTricity Corporation (“WiTricity” or “Plaintiff”), for its complaint against Defendants Ideanomics, Inc. (“Ideanomics”) and Wireless Advanced Vehicle Electrification, LLC (“WAVE”) (individually, a “Defendant,” and collectively, “Defendants”), hereby alleges as follows:

**PARTIES**

1. Plaintiff WiTricity is a Delaware corporation having a principal place of business at 57 Water Street, Watertown, MA 02472.

2. Upon information and belief, Defendant Ideanomics is a Nevada corporation with its principal place of business at 1114 Broadway, Suite 5116, New York, NY 10018. Defendant Ideanomics may be served via its registered agent, Paracorp Inc., at 318 N. Carson Street #208, Carson City, NV 89701.

3. Upon information and belief, Defendant WAVE is a Delaware corporation with its principal place of business at 4752 West California Avenue, Suite B-400, Salt Lake City, UT

84104. Defendant WAVE may be served via its registered agent, The Corporation Trust Company, at 1209 Orange Street, Wilmington, Delaware 19801.

4. Upon information and belief, Ideanomics wholly owns WAVE and both WAVE and Ideanomics develop and deploy wireless charging systems for automotive and transportation industries in the United States.

5. Upon information and belief, Defendant Ideanomics maintains a website at [www.ideanomics.com](http://www.ideanomics.com) that commercializes the accused “WAVE by Ideanomics” technology by offering the wireless charging systems for sale and deployment throughout the United States, including in this District.

6. Upon information and belief, Defendant WAVE maintains a website at [www.wavecharging.com](http://www.wavecharging.com) that commercializes the accused “WAVE by Ideanomics” technology by offering the wireless charging systems for sale and deployment throughout the United States, including in this District.

#### **NATURE OF THE ACTION**

7. This is a civil action for infringement by Defendants of U.S. Patent Nos. 9,843,228 (the “228 Patent”); 9,184,595 (the “595 Patent”); 8,400,021 (the “021 Patent”); 9,450,422 (the “422 Patent”); 10,141,790 (the “790 Patent”). This action is based upon the Patent Laws of the United States, 35 U.S.C. § 1 et seq. and arises from Defendants’ installations or proposed installations of wireless charging systems.

#### **JURISDICTION AND VENUE**

8. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

9. This Court has personal jurisdiction over WAVE because WAVE is subject to general and specific jurisdiction in the State of Delaware. WAVE is subject to personal jurisdiction at least because WAVE is incorporated in this District.

10. This Court has personal jurisdiction over Ideanomics because both Ideanomics and WAVE are working in concert to develop “WAVE by Ideanomics,” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution.”

11. This Court also has personal jurisdiction over Ideanomics under agency theory because Ideanomics asserts more than just ownership over WAVE. In particular, Defendants made (and continue to make) concerted effort to target “WAVE by Ideanomics” to the U.S. market, including entering into various agreements with U.S. customers. Accordingly, personal jurisdiction over Ideanomics based on the agency theory is proper.

12. Venue is proper in this District pursuant to 28 U.S.C. §§ 1331 and 1400(b) at least because WAVE is incorporated in this District.

### **THE ASSERTED PATENTS**

13. On December 12, 2017, the '228 Patent, titled “Impedance Matching in Wireless Power Systems,” was duly and lawfully issued by the United States Patent and Trademark Office. WiTricity is the owner by assignment of the '228 Patent. A true and correct copy of the '228 Patent is attached as Exhibit 1.

14. On November 10, 2015, the '595 Patent, titled “Wireless Energy Transfer in Lossy Environments,” was duly and lawfully issued by the United States Patent and Trademark Office. WiTricity is the owner by assignment of the '595 Patent. A true and correct copy of the '595 Patent is attached as Exhibit 2.

15. On March 19, 2013, the '021 Patent, titled “Wireless Energy Transfer with High-Q Sub-wavelength Resonators,” was duly and lawfully issued by the United States Patent and Trademark Office. Massachusetts Institute of Technology is the owner by assignment of the '021 Patent and WiTricity is the exclusive licensee. A true and correct copy of the '021 Patent is attached as Exhibit 3.

16. On September 20, 2016, the '422 Patent, titled “Wireless Energy Transfer,” was duly and lawfully issued by the United States Patent and Trademark Office. Massachusetts Institute of Technology is the owner by assignment of the '422 Patent and WiTricity is the exclusive licensee. A true and correct copy of the '422 Patent is attached as Exhibit 4.

17. On November 27, 2018, the '790 Patent, titled “Wireless Non-radiative Energy Transfer,” was duly and lawfully issued by the United States Patent and Trademark Office. Massachusetts Institute of Technology is the owner by assignment of the '790 Patent and WiTricity is the exclusive licensee. A true and correct copy of the '790 Patent is attached as Exhibit 5.

### **BACKGROUND**

18. WiTricity was founded in 2007 based on novel technology for wireless power transfer. The technology, invented and patented initially by a team of physicists from the Massachusetts Institute of Technology (“MIT”) and subsequently improved upon by WiTricity engineers and scientists, is known as “highly resonant wireless power transfer.” Highly resonant wireless power transfer enables the transfer of power from one device to another at high efficiency and over an increased distance. Highly resonant wireless power transfer is the foundational technology underlying resonant-based systems for wireless charging of electric vehicles, including, upon information and belief, Defendants’ systems.

19. WiTricity continues to develop and patent the core technology necessary for wireless charging of electric vehicles, as well as acquire additional intellectual property building upon WiTricity's foundational technology. WiTricity now controls more than 1,300 issued patents worldwide.

20. Upon information and belief, Defendants have multiple deployments of their infringing wireless inductive charging system "WAVE by Ideanomics" for "Mass Transit," "Ports," and "Warehouse and Distribution,"<sup>1</sup> throughout the United States.

21. Upon information and belief, the "WAVE by Ideanomics" wireless inductive charging system includes 50 kW, 125kW, 250 kW, and 500 kW systems installed in multiple locations in the United States. According to the Ideanomics and WAVE websites, Defendants have provided wireless charging to at least the public transportation systems in St. Petersburg, Florida; McAllen, Texas; San Pedro, CA; Lancaster, CA; Concord, CA; and Centralia, Washington.<sup>2</sup>

### **COUNT I - INFRINGEMENT OF THE '228 PATENT**

22. Upon information and belief, Defendants have infringed and continue to infringe one or more claims of the '228 Patent, including but not limited to exemplary claim 1, pursuant to 35 U.S.C. § 271(a), at least by without authority making, using, offering to sell, and/or selling the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" within the United States.

23. As a wireless power transfer system module, the "WAVE by Ideanomics" wireless charging system directly infringes at least claim 1 of the '228 Patent, literally or under the doctrine of equivalents because it includes a first inductive element formed by at least one loop

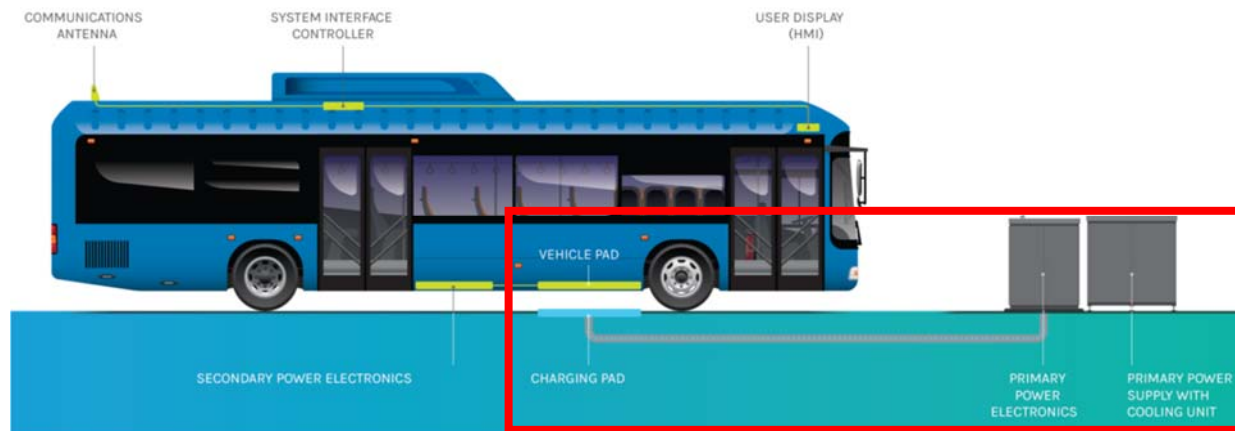
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<sup>1</sup> <https://wavecharging.com/>

<sup>2</sup> *Id.*; <https://ideanomics.com/our-businesses/>

of electrically conductive material. The “WAVE by Ideanomics” wireless charging system also includes additional circuitry connected to the first inductive element that comprises terminals for connection to a power supply or electrical load. The first inductive element of the “WAVE by Ideanomics” wireless charging system forms a high-Q resonator with at least a portion of the additional circuitry. Further, the “WAVE by Ideanomics” wireless charging system’s resonator has an intrinsic Q value greater than 100 for at least one resonant frequency between 10 kHz and 100 MHz. The additional circuitry in the “WAVE by Ideanomics” wireless charging system includes a first capacitor connected in series with the first inductive element to form a first circuit pathway, a second capacitor connected in parallel to the first circuit pathway and forming a second circuit pathway, and a second inductive element connected in series with the first and second circuit pathways.

24. The mass transit deployment of the “WAVE by Ideanomics” wireless charging system is an emblematic example of the wireless power system module recited in claim 1 of the ’228 Patent, as evidenced in the photo below, at least because, for example, the charging pad, primary power electronics, and power supply with cooling unit include the recited inductive elements, additional circuitry, power supply or electrical load, capacitors, and circuit pathways such that the resonator has an intrinsic Q value greater than 100 for at least one resonator frequency between 10 kHz and 100 MHz.



See, e.g., <https://wavecharging.com/> (last accessed July 9, 2024); see also <https://ideanomics.com/transit/> (last accessed July 9, 2024); <https://m.youtube.com/watch?v=YzJGwZeiFYU&noapp=1> (last accessed July 9, 2024).

25. Defendants have been on notice of infringement of the '228 Patent since at least as early as December 16, 2020, when WiTricity sent a letter to WAVE, alleging infringement of the '595 Patent by WAVE's "wireless charging systems for buses that use resonant inductive charging technology" and referencing the other Asserted Patents stating that WiTricity "anticipate[d] discovering additional instances of infringement by WAVE including in the technical areas of tuning and matching, circuit architectures, object detection, positioning and alignment, and communication and control." Additionally, Defendants have been on notice of the '228 Patent since at least as early as the service of this Complaint. Defendants' continued actions of making, using, offering to sell, and/or selling their product within the United States after receiving notice, would be with Defendants' knowledge of the '228 Patent, knowledge of infringement of the '228 Patent, intent to encourage others (e.g., their customers) to infringe the '228 Patent, and knowledge that Defendants' encouraging acts actually result in direct infringement of the '228 Patent by WAVE's customers.

26. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(b), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '228 Patent by actively inducing others to use, make, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing such acts would constitute infringement of the '228 Patent. Defendants' customers who use, make, sell, and/or offer for sale, the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance with Defendants' instructions infringe at least claim 1 of the '228 Patent, in violation of 35 U.S.C. § 271(a).

27. Upon information and belief, Defendants actively instruct, encourage, and/or aid such infringement through various activities, including by instructing and training their customers to use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in a manner consistent with one or more claims of the '228 Patent, through descriptions on Defendants' website and upon information and belief through product documentation.

28. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(c), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '228 Patent by contributing to their customers' use, making, selling, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing that those products are especially made or especially adapted to practice one or more of the claims of the '228 Patent. Defendants' customers who make, use, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance



with Defendants' instructions infringe at least claim 1 of the '228 Patent, in violation of 35 U.S.C. § 271(a). 21. Upon information and belief, Defendants contribute to infringement by providing to their customers the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" or components thereof and instructing them how to assemble, install, make, and/or use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution", knowing that those products are especially made or adapted for use in infringement of the '228 Patent.

29. The "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" is not a staple article of commerce.

30. The "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" is not suitable for substantial noninfringing uses.

31. Defendants' infringement of the '228 Patent was and continues to be willful.

32. Defendants' actions render this an exceptional case under 35 U.S.C. § 285.

33. Plaintiff has been injured by Defendants' infringement of the '228 Patent and will suffer irreparable harm unless Defendants are enjoined from infringing the '228 Patent.

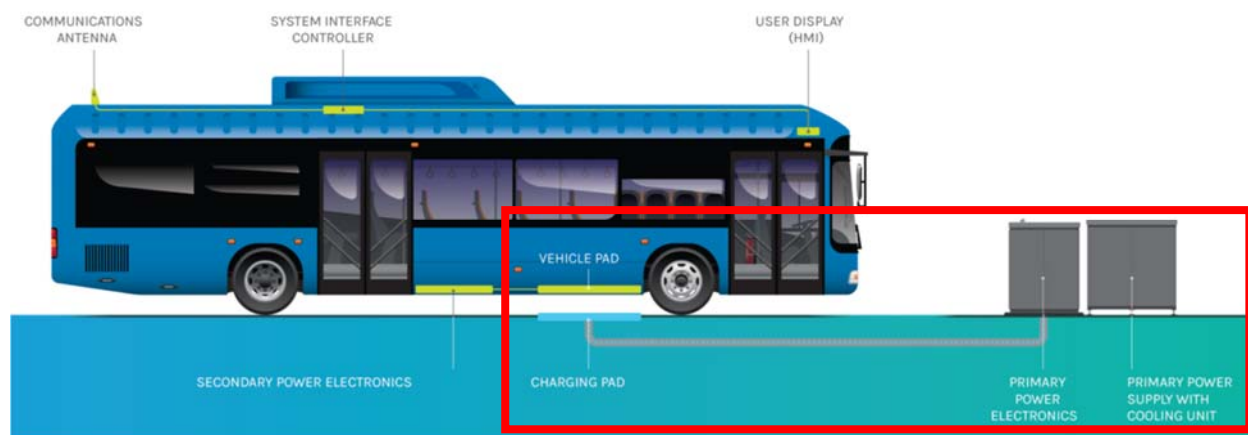
## **COUNT II - INFRINGEMENT OF THE '595 PATENT**

34. Upon information and belief, Defendants have infringed and continue to infringe one or more claims of the '595 Patent, including but not limited to exemplary claim 1, pursuant to 35 U.S.C. § 271(a), at least by without authority making, using, offering to sell, and/or selling "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" within the United States.

35. As a wireless power transfer system, the "WAVE by Ideanomics" wireless charging system directly infringes at least claim 1 of the '595 Patent, literally or under the doctrine of

equivalents because it includes a source magnetic resonator comprising a capacitively-loaded conducting loop coupled to a power source. The source magnetic resonator in the “WAVE by Ideanomics” wireless charging system is configured to generate an oscillating magnetic field to transfer power wirelessly to a device magnetic resonator. The source magnetic resonator in the “WAVE by Ideanomics” wireless charging system also has an unperturbed source quality factor  $Q_s$ , and a layer of non-lossy material that surrounds the source magnetic resonator to form a keep-out zone. The perturbed quality factor  $Q_{\text{perturbed}}$  of the “WAVE by Ideanomics” wireless charging system’s source magnetic resonator due to lossy material outside the keep-out zone is at least 50% of the unperturbed source quality factor  $Q_s$ .

36. The mass transit deployment of the “WAVE by Ideanomics” wireless charging system is an emblematic example of the wireless power transfer system recited in claim 1 of the ’595 Patent, as evidenced in the photo below, at least because for example the charging pad, primary power electronics, and power supply with cooling unit include the recited source magnetic resonator, keep out zone, and layer of non-lossy material such that a perturbed quality factor  $Q_{\text{perturbed}}$  of the source magnetic resonator due to lossy material outside the keep-out zone is at least 50% of the unperturbed source quality factor  $Q_s$ .



*See, e.g.*, <https://wavecharging.com/> (last accessed July 9, 2024); *see also* <https://ideanomics.com/transit/> (last accessed July 9, 2024); <https://m.youtube.com/watch?v=YzJGwZeiFYU&noapp=1> (last accessed July 9, 2024).

37. Defendants have been on notice of infringement of the '595 Patent since at as early as December 16, 2020, when WiTricity sent a letter to WAVE, alleging infringement of the '595 Patent by WAVE's "wireless charging systems for buses that use resonant inductive charging technology." Additionally, Defendants have been on notice of the '595 Patent since at least as early as the service of this Complaint. Defendants' continued actions of making, using, offering to sell, and/or selling their product within the United States after receiving notice, would be with Defendants' knowledge of the '595 Patent, knowledge of infringement of the '595 Patent, intent to encourage others (e.g., their customers) to infringe the '595 Patent, and knowledge that Defendants' encouraging acts actually result in direct infringement of the '595 Patent by WAVE's customers.

38. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(b), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '595 Patent by actively inducing others to use, make, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing such acts would constitute infringement of the '595 Patent. Defendants' customers who use, make, sell, and/or offer for sale, the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance with Defendants' instructions infringe at least claim 1 of the '595 Patent, in violation of 35 U.S.C. § 271(a).

39. Upon information and belief, Defendants actively instruct, encourage, and/or aid such infringement through various activities, including by instructing and training their customers to use the “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” in a manner consistent with one or more claims of the ’595 Patent, through descriptions on Defendants’ website and upon information and belief through product documentation.

40. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(c), have indirectly infringed and continue to indirectly infringe at least claim 1 of the ’595 Patent by contributing to their customers’ use, making, selling, and/or offer for sale the “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” in an infringing manner, knowing that those products are especially made or especially adapted to practice one or more of the claims of the ’595 Patent. Defendants’ customers who make, use, sell, and/or offer for sale the “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” in accordance with Defendants’ instructions infringe at least claim 1 of the ’595 Patent, in violation of 35 U.S.C. § 271(a). 21. Upon information and belief, Defendants contribute to infringement by providing to their customers the “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” or components thereof and instructing them how to assemble, install, make, and/or use the “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution”, knowing that those products are especially made or adapted for use in infringement of the ’595 Patent.

41. The “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” is not a staple article of commerce.

42. The “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” is not suitable for substantial noninfringing uses.

43. Defendants’ infringement of the ’595 Patent was and continues to be willful.

44. Defendants’ actions render this an exceptional case under 35 U.S.C. § 285.

45. Plaintiff has been injured by Defendants’ infringement of the ’595 Patent and will suffer irreparable harm unless Defendants are enjoined from infringing the ’595 Patent.

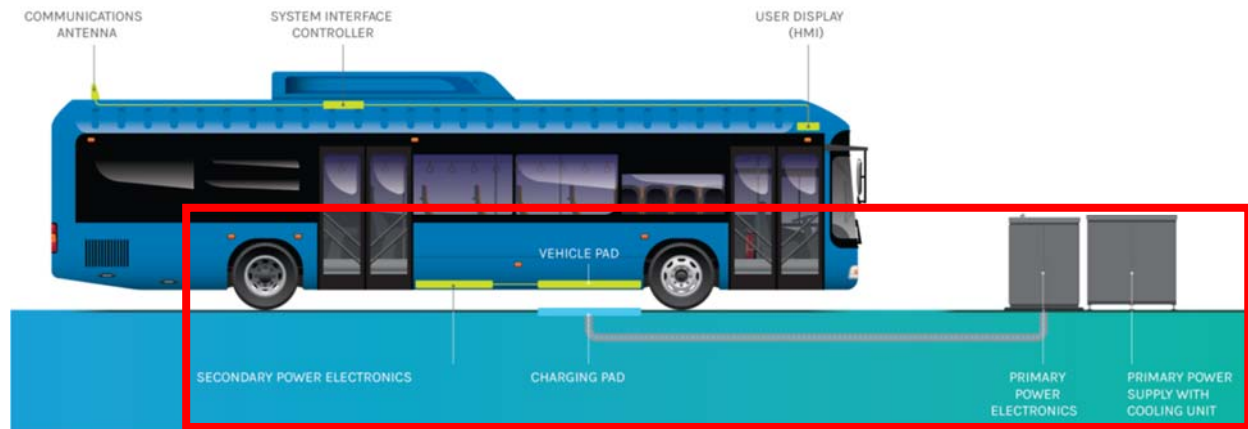
### **COUNT III - INFRINGEMENT OF THE ’021 PATENT**

46. Upon information and belief, Defendants have infringed and continue to infringe one or more claims of the ’021 Patent, including but not limited to exemplary claim 1, pursuant to 35 U.S.C. § 271(a), at least by without authority making, using, offering to sell, and/or selling “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” within the United States.

47. As a system of transferring electromagnetic energy, the “WAVE by Ideanomics” wireless charging system directly infringes at least claim 1 of the ’021 Patent, literally or under the doctrine of equivalents because it includes a first electromagnetic resonator receiving energy from a power supply. The first electromagnetic resonator of the WAVE by Ideanomics” wireless charging system has a first mode with a resonant frequency  $\omega_1$ , an intrinsic loss rate  $\Gamma_1$ , an inductance  $L_1$ , and a first Q-factor  $Q_1 = \omega_1 L_1 / (R_{1ohm} + R_{1rad})$ . In the WAVE by Ideanomics” wireless charging system,  $R_{1ohm}$  is the ohmic component of resistance in the first electromagnetic resonator and  $R_{1rad}$  is the radiative component of resistance in the first resonator. The WAVE by Ideanomics” wireless charging system also includes a second electromagnetic resonator that is positioned distally from the first electromagnetic resonator and is not electrically wired to the first electromagnetic resonator. The second electromagnetic resonator in the WAVE by

Ideanomics’ wireless charging system has a second mode with a resonant frequency  $\omega_2$ , an intrinsic loss rate  $\Gamma_2$ , and inductance  $L_2$ , and a second Q-factor  $Q_2 = \omega_2 L_2 / (R_{2ohm} + R_{2rad})$ . In the WAVE by Ideanomics’ wireless charging system,  $R_{2ohm}$  is the ohmic component of resistance in the second electromagnetic resonator and  $R_{2rad}$  is the radiative component of resistance in the second electromagnetic resonator. In the WAVE by Ideanomics’ wireless charging system, electromagnetic energy is wirelessly transferred from said first electromagnetic resonator to said second electromagnetic resonator over a distance  $D$  that is smaller than each of the resonant wavelengths  $\lambda_1$  and  $\lambda_2$  corresponding to the resonant frequencies  $\omega_1$  and  $\omega_2$ , respectively. Additionally, in the WAVE by Ideanomics’ wireless charging system, the  $\sqrt{Q_1 Q_2} > 100$ ,  $R_{1ohm} > R_{1rad}$ , and  $R_{2ohm} > R_{2rad}$ .

48. The mass transit deployment of the “WAVE by Ideanomics” wireless charging system is an emblematic example of the system of transferring electromagnetic energy recited in claim 1 of the ’021 Patent, as evidenced in the photo below, at least because, for example, the charging pad, primary power electronics, power supply with cooling unit, vehicle pad, and secondary power electronics include the recited electromagnetic resonators and electromagnetic energy such that the distance is smaller than each of the resonant wavelengths corresponding to the resonant frequencies.



*See, e.g.*, <https://wavecharging.com/> (last accessed July 9, 2024); *see also* <https://ideanomics.com/transit/> (last accessed July 9, 2024); <https://m.youtube.com/watch?v=YzJGwZeiFYU&noapp=1> (last accessed July 9, 2024).

49. Defendants have been on notice of infringement of the '021 Patent since at least as early as December 16, 2020, when WiTricity sent a letter to WAVE, alleging infringement of the '595 Patent by WAVE's "wireless charging systems for buses that use resonant inductive charging technology" and referencing the other Asserted Patents stating that WiTricity "anticipate[d] discovering additional instances of infringement by WAVE including in the technical areas of tuning and matching, circuit architectures, object detection, positioning and alignment, and communication and control." Additionally, Defendants have been on notice of the '021 Patent since at least as early as the service of this Complaint. Defendants' continued actions of making, using, offering to sell, and/or selling their product within the United States after receiving notice, would be with Defendants' knowledge of the '021 Patent, knowledge of infringement of the '021 Patent, intent to encourage others (e.g., their customers) to infringe the '021 Patent, and knowledge that Defendants' encouraging acts actually result in direct infringement of the '021 Patent by WAVE's customers.

50. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(b), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '021 Patent by actively inducing others to use, make, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing such acts would constitute infringement of the '021 Patent. Defendants' customers who use, make, sell, and/or offer for sale, the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in

accordance with Defendants' instructions infringe at least claim 1 of the '021 Patent, in violation of 35 U.S.C. § 271(a).

51. Upon information and belief, Defendants actively instruct, encourage, and/or aid such infringement through various activities, including by instructing and training their customers to use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in a manner consistent with one or more claims of the '021 Patent, through descriptions on Defendants' website and upon information and belief through product documentation.

52. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(c), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '021 Patent by contributing to their customers' use, making, selling, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing that those products are especially made or especially adapted to practice one or more of the claims of the '021 Patent. Defendants' customers who make, use, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance with Defendants' instructions infringe at least claim 1 of the '021 Patent, in violation of 35 U.S.C. § 271(a). 21. Upon information and belief, Defendants contribute to infringement by providing to their customers the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" or components thereof and instructing them how to assemble, install, make, and/or use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution", knowing that those products are especially made or adapted for use in infringement of the '021 Patent.



53. The “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” is not a staple article of commerce.

54. The “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” is not suitable for substantial noninfringing uses.

55. Defendants’ infringement of the ’021 Patent was and continues to be willful.

56. Defendants’ actions render this an exceptional case under 35 U.S.C. § 285.

57. Plaintiff has been injured by Defendants’ infringement of the ’021 Patent and will suffer irreparable harm unless Defendants are enjoined from infringing the ’021 Patent.

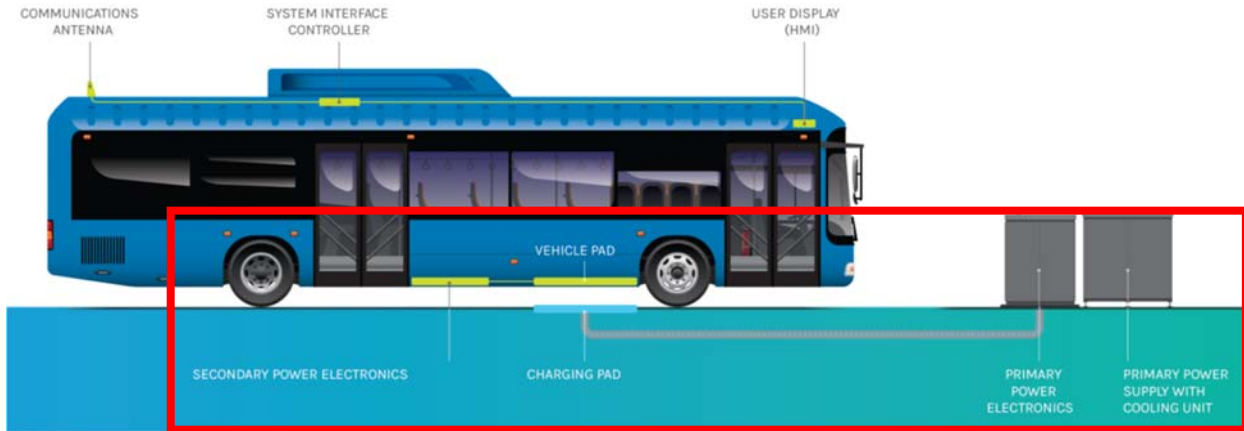
#### **COUNT IV - INFRINGEMENT OF THE ’422 PATENT**

58. Upon information and belief, Defendants have infringed and continue to infringe one or more claims of the ’422 Patent, including but not limited to exemplary claim 1, pursuant to 35 U.S.C. § 271(a), at least by without authority making, using, offering to sell, and/or selling “WAVE by Ideanomics” wireless charging system for “Mass Transit,” “Ports,” and “Warehouse and Distribution” within the United States.

59. As a wireless power system, the “WAVE by Ideanomics” wireless charging system directly infringes at least claim 1 of the ’422 Patent, literally or under the doctrine of equivalents because it includes a source resonator and a power supply coupled to the source resonator to provide power to the source resonator. The source resonator of the “WAVE by Ideanomics” wireless charging system has a resonant frequency  $\omega_1$ , an intrinsic loss rate  $\Gamma_1$ , and an intrinsic quality factor  $Q_1 = \omega_1 / (2\Gamma_1)$ . The source resonator also includes at least one loop of conductive material, a device resonator and a load coupled to the device resonator to receive power from the device resonator and provide power to the load. The device resonator has a resonant frequency  $\omega_2$ , an intrinsic loss rate  $\Gamma_2$ , and an intrinsic quality factor  $Q_2 = \omega_2 / (2\Gamma_2)$ . The device resonator

includes at least one loop of conductive material and is configured to be movable relative to the source resonator over a range of distances  $D$  between the source resonator and the device resonator. The source resonator and the device resonator in the “WAVE by Ideanomics” wireless charging system are configured to resonantly and wirelessly couple electromagnetic power from the source resonator to the device resonator using non-radiative electromagnetic induction having a coupling coefficient  $\kappa$ , and wherein the intrinsic loss rates satisfy  $\kappa/\sqrt{\Gamma_1\Gamma_2}>1$  over the range of distances  $D$ . Additionally, the power provided to the load from the device resonator defines a work drainage rate  $\Gamma_w$ , and the work drainage rate  $\Gamma_w$ , is configured to be set such that  $\Gamma_w=\Gamma_2\sqrt{(1+wp\cdot(\kappa^2/\Gamma_1\cdot\Gamma_2))}$  for some value of the coupling coefficient  $\kappa$  in the range of distances  $D$ , wherein  $wp$  is a parameter satisfying  $wp>1$ .

60. The mass transit deployment of the “WAVE by Ideanomics” wireless charging system is an emblematic example of the system of transferring electromagnetic energy recited in claim 1 of the '422 Patent, as evidenced in the photo below, at least because, for example, the charging pad, primary power electronics, power supply with cooling unit, vehicle pad, and secondary power electronics include the recited source resonator, power supply, device resonator, such that the intrinsic loss rates satisfy  $\kappa/\sqrt{\Gamma_1\Gamma_2}>1$  over the range of distances and the work drainage rate is configured to be set such that  $\Gamma_w=\Gamma_2\sqrt{(1+wp\cdot(\kappa^2/\Gamma_1\cdot\Gamma_2))}$  for some value of the coupling coefficient in the range of distances.



See, e.g., <https://wavecharging.com/> (last accessed July 9, 2024); see also <https://ideanomics.com/transit/> (last accessed July 9, 2024); <https://m.youtube.com/watch?v=YzJGwZeiFYU&noapp=1> (last accessed July 9, 2024).

61. Defendants have been on notice of infringement of the '422 Patent since at least as early as December 16, 2020, when WiTricity sent a letter to WAVE, alleging infringement of the '595 Patent by WAVE's "wireless charging systems for buses that use resonant inductive charging technology" and referencing the other Asserted Patents stating that WiTricity "anticipate[d] discovering additional instances of infringement by WAVE including in the technical areas of tuning and matching, circuit architectures, object detection, positioning and alignment, and communication and control." Additionally, Defendants have been on notice of the '422 Patent since at least as early as the service of this Complaint. Defendants' continued actions of making, using, offering to sell, and/or selling their product within the United States after receiving notice, would be with Defendants' knowledge of the '422 Patent, knowledge of infringement of the '422 Patent, intent to encourage others (e.g., their customers) to infringe the '422 Patent, and knowledge that Defendants' encouraging acts actually result in direct infringement of the '422 Patent by WAVE's customers.

62. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(b), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '422 Patent by actively inducing others to use, make, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing such acts would constitute infringement of the '422 Patent. Defendants' customers who use, make, sell, and/or offer for sale, the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance with Defendants' instructions infringe at least claim 1 of the '422 Patent, in violation of 35 U.S.C. § 271(a).

63. Upon information and belief, Defendants actively instruct, encourage, and/or aid such infringement through various activities, including by instructing and training their customers to use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in a manner consistent with one or more claims of the '422 Patent, through descriptions on Defendants' website and upon information and belief through product documentation.

64. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(c), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '422 Patent by contributing to their customers' use, making, selling, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing that those products are especially made or especially adapted to practice one or more of the claims of the '422 Patent. Defendants' customers who make, use, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance

with Defendants' instructions infringe at least claim 1 of the '422 Patent, in violation of 35 U.S.C. § 271(a). 21. Upon information and belief, Defendants contribute to infringement by providing to their customers the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" or components thereof and instructing them how to assemble, install, make, and/or use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution", knowing that those products are especially made or adapted for use in infringement of the '422 Patent.

65. The "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" is not a staple article of commerce.

66. The "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" is not suitable for substantial noninfringing uses.

67. Defendants' infringement of the '422 Patent was and continues to be willful.

68. Defendants' actions render this an exceptional case under 35 U.S.C. § 285.

69. Plaintiff has been injured by Defendants' infringement of the '422 Patent and will suffer irreparable harm unless Defendants are enjoined from infringing the '422 Patent.

#### **COUNT V - INFRINGEMENT OF THE '790 PATENT**

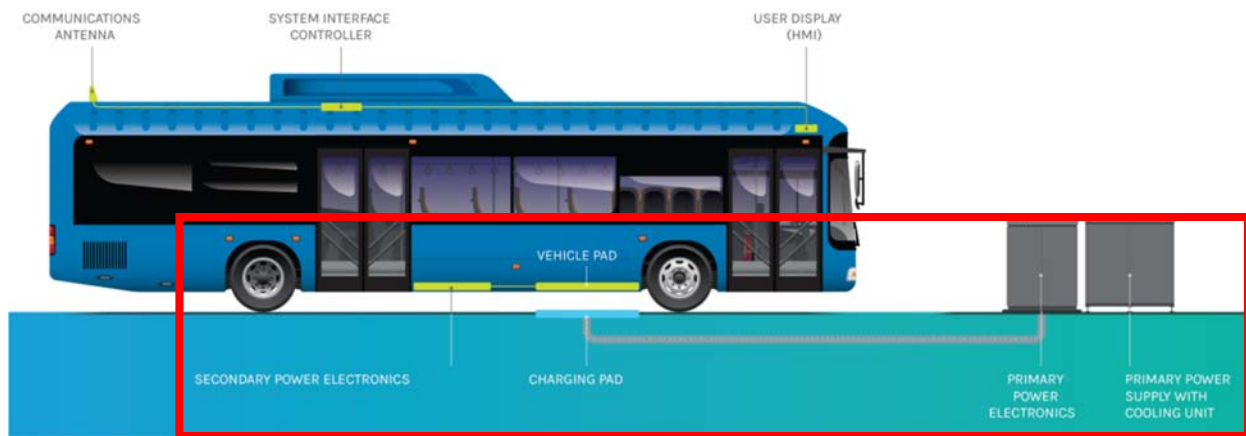
70. Upon information and belief, Defendants have infringed and continue to infringe one or more claims of the '790 Patent, including but not limited to exemplary claim 1, pursuant to 35 U.S.C. § 271(a), at least by without authority making, using, offering to sell, and/or selling "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" within the United States.

71. As a wireless power system, the "WAVE by Ideanomics" wireless charging system directly infringes at least claim 1 of the '790 Patent, literally or under the doctrine of equivalents

because it includes a device resonator and a load coupled to the device resonator to receive power from the device resonator and power the vehicle. The device resonator in the “WAVE by Ideanomics” wireless charging system has a resonant frequency  $\omega_2$ , an intrinsic loss rate  $\Gamma_2$ , and is capable of storing electromagnetic energy with an intrinsic quality factor  $Q_2 = \omega_2 / (2\Gamma_2) \geq 200$ . The device resonator includes at least one loop of conductive material and a capacitance. The “WAVE by Ideanomics” wireless charging system also includes a source resonator and a power supply coupled to the source resonator to provide power to the source resonator. The source resonator in the “WAVE by Ideanomics” wireless charging system has a resonant frequency  $\omega_1$ , an intrinsic loss rate  $\Gamma_1$ , and is capable of storing electromagnetic energy with an intrinsic quality factor  $Q_1 = \omega_1 / (2\Gamma_1) > 200$ . The source resonator also includes at least one loop of conductive material and a capacitance. In the “WAVE by Ideanomics” wireless charging system, the source resonator and the device resonator are configured to resonantly and wirelessly couple electromagnetic power from the source resonator to the device resonator using non-radiative electromagnetic induction having an energy transfer rate  $\kappa$ . In the “WAVE by Ideanomics” wireless charging system, the intrinsic loss rates satisfy  $\kappa / \sqrt{\Gamma_1 \Gamma_2} > 5$  over a range of distances  $D$ . Additionally, the source resonator and the device resonator each have a characteristic size, and the characteristic size of the source resonator is not more than 100/30 times the characteristic size of the device resonator. The device resonator movable relative to the source resonator over a range of distances  $D$  between the source resonator and the device resonator.

72. The mass transit deployment of the “WAVE by Ideanomics” wireless charging system is an emblematic example of the system of the wireless power system recited in claim 1 of the ’790 Patent, as evidenced in the photo below, at least because, for example, the charging pad, primary

power electronics, power supply with cooling unit, vehicle pad, and secondary power electronics include the device resonator, source resonator, and power supply, such that the intrinsic loss rates satisfy  $\kappa/\sqrt{\Gamma_1\Gamma_2} > 5$  over a range of distances and the source resonator is not more than 100/30 times the characteristic size of the device resonator.



See, e.g., <https://wavecharging.com/> (last accessed July 9, 2024); see also <https://ideanomics.com/transit/> (last accessed July 9, 2024); <https://m.youtube.com/watch?v=YzJGwZeiFYU&noapp=1> (last accessed July 9, 2024).

73. Defendants have been on notice of infringement of the '790 Patent since at least as early as December 16, 2020, when WiTricity sent a letter to WAVE, alleging infringement of the '595 Patent by WAVE's "wireless charging systems for buses that use resonant inductive charging technology" and referencing the other Asserted Patents stating that WiTricity "anticipate[d] discovering additional instances of infringement by WAVE including in the technical areas of tuning and matching, circuit architectures, object detection, positioning and alignment, and communication and control." Additionally, Defendants have been on notice of the '790 Patent since at least as early as the service of this Complaint. Defendants' continued actions of making, using, offering to sell, and/or selling their product within the United States after receiving notice, would be with Defendants' knowledge of the '790 Patent, knowledge of infringement of the '790

Patent, intent to encourage others (e.g., their customers) to infringe the '790 Patent, and knowledge that Defendants' encouraging acts actually result in direct infringement of the '790 Patent by WAVE's customers.

74. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(b), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '790 Patent by actively inducing others to use, make, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing such acts would constitute infringement of the '790 Patent. Defendants' customers who use, make, sell, and/or offer for sale, the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance with Defendants' instructions infringe at least claim 1 of the '790 Patent, in violation of 35 U.S.C. § 271(a).

75. Upon information and belief, Defendants actively instruct, encourage, and/or aid such infringement through various activities, including by instructing and training their customers to use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in a manner consistent with one or more claims of the '790 Patent, through descriptions on Defendants' website and upon information and belief through product documentation.

76. Upon information and belief, Defendants, in violation of 35 U.S.C. § 271(c), have indirectly infringed and continue to indirectly infringe at least claim 1 of the '790 Patent by contributing to their customers' use, making, selling, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in an infringing manner, knowing that those products are especially made or



especially adapted to practice one or more of the claims of the '790 Patent. Defendants' customers who make, use, sell, and/or offer for sale the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" in accordance with Defendants' instructions infringe at least claim 1 of the '790 Patent, in violation of 35 U.S.C. § 271(a). 21. Upon information and belief, Defendants contribute to infringement by providing to their customers the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" or components thereof and instructing them how to assemble, install, make, and/or use the "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution", knowing that those products are especially made or adapted for use in infringement of the '790 Patent.

77. The "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" is not a staple article of commerce.

78. The "WAVE by Ideanomics" wireless charging system for "Mass Transit," "Ports," and "Warehouse and Distribution" is not suitable for substantial noninfringing uses.

79. Defendants' infringement of the '790 Patent was and continues to be willful.

80. Defendants' actions render this an exceptional case under 35 U.S.C. § 285.

Plaintiff has been injured by Defendants' infringement of the '790 Patent and will suffer irreparable harm unless Defendants are enjoined from infringing the '790 Patent.

#### **DEMAND FOR JURY TRIAL**

81. Plaintiff respectfully requests trial by jury on all claims so triable.

#### **PRAYER FOR RELIEF**

WHEREFORE, Plaintiff requests that this Court enter judgment in its favor on each and every claim set forth above and award it including, but not limited to, the following relief:

- a. The entry of judgment that Defendants have directly and indirectly infringed the Asserted Patents, and continue to do so;
- b. The entry of a preliminary and permanent injunction, enjoining Defendants and all persons acting in concert or participation with Defendants from further acts of direct and/or direct infringement of the Asserted Patents;
- c. Entry of judgment against Defendants, awarding Plaintiff damages adequate to compensate Plaintiff for Defendants' direct and/or indirect infringement of the Asserted Patents, including any lost profits and for any continuing or future infringement through the date such judgment is entered, but in any case no less than a reasonable royalty for such infringement, as well as an award of pre-judgment interest and post-judgment interest, costs, and expenses, and an accounting and award of damages against Defendants for all future infringing acts occurring after the date such judgment is entered;
- d. Entry of judgment as provided by 35 U.S.C. § 285 that this case is exceptional and an award granting Plaintiff reasonable attorneys' fees, expenses, and costs; and
- e. Entry of judgment in favor of Plaintiff granting any further or additional relief the Court deems just and proper.

Dated: July 30, 2024

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