

## EV Charging Patent Portfolio License Cross-Reference Chart

(The following chart shows illustrative essential claims for each patent.  
Other claims may also be essential and/or other portions of the Standard may be covered.)

Ctry.	Patent	Description	CI	Standards / Sections
CH	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
CN	102761156	Charging System and Method for Monitoring an Electric Vehicle	1	GB/T 18487.1:2015, Secs. 2, 3.4.1, 5.2.1.1, A.1.1 IEC 61851-23: 2014, Sec. 6.4.1, pg. 11-12, Secs. 6.4.3.102, 6.4.3.114, Table CC.5, Fig. CC.6 ISO 15118-1: 2013, Sec 5.5.2
CN	102810858	Electric Vehicles for the Power Grid Running Profile	1	GB/T 18487.1:2015, Secs. 2, 3.1, B.1, Fig. B.1 IEC 61851-23:2014, Sec. 2 ISO 15118-1:2013, Secs. 6.1, 3.17, 3.48, 5.4, 7.5.2, 7.6.2, 7.8.2, Fig. 1, Tables 1, 8, 13 ISO 15118-2:2014, Secs. 2, 3.35, 8.4.5.4.2, 8.5.2.10, E.2.1
CN	103023093	A Charging Device, a System and a Method for Controlling the Charging Device	1	GB/T 18487.1:2015, Forward, App. B, Fig. B.2, IEC 61851-1: 2017. Secs. 1, 3.3, 3.4, Tables A.5, A.6 ISO 15118-1: 2013, Secs. 1, 3, 3.25, 3.9, 5.4, 7.6.2, Table 13 ISO 15118-2:2014, Sec. 8.4.3.8.1
CN	103648828	Method and Device for Operating a Vehicle, Computer Program and Computer Program Product	1	IEC 61851-1:2017, Figs. 1, 2, 3 IEC 61851-24:2014, Tables A.1, A.7 SAE J1772:2017, Figs. 7, 8, 12, 13
CN	103930297	Smart Phone Control and Notification for an EV Charging Station	1	IEC 61851-23:2014, Table D.1, Fig. AA.1 SAE J1772:2017, p.29-30, Figs. 7-8:Control Electronics, p. 63/116 "PEV Scheduled Charge", "phone app"
CN	103959590	Sequential Charging of Multiple EVs	1	IEC 61851-1:2017, Secs. 6.3.1.6, 13.1, D.8.2.4, Figs. C.2-C.5, Table D.18 SAE J1772:2017, Sec. 5.3, Figs. 5, 7, 8, 10, 12, 13, Table 9
CN	104002691	Power Conduit, Charging Device, and Method for Charging A Power Storage Device	1	GB/T 18487.1:2015, Secs. 2, 3.4.1, 3.4.9-3.4.11, 5.2.2.3, 9.6, App. B, Tables A.7, B.2 (Sequence T19-T21) GB/T 20234.1:2015, Sec. 6.3.3, Fig. 1 IEC 61851-23:2014, Sec. 2 ISO 15118-1:2013, Sec. 3.14 ISO 15118-2:2014, Sec. 8.6, Fig. 96
CN	104203636	Safety Device for a High-Voltage System and Method for Safeguarding a High-Voltage System	1	IEC 61851-1:2017, Sec. 8 IEC 61851-23:2014, Figs. AA.2, BB.1 SAE J1772:2017, Figs. 5, 7, 8, 10, 12, 13, 22, 23
CN	105922883	Smart Phone Control and Notification for an EV Charging Station	1	IEC 61851-23:2014, Table D.1, Fig. AA.1 SAE J1772:2017, p.29-30, Figs. 7-8:Control Electronics, p. 63/116 "PEV Scheduled Charge", "phone app"
CN	102574476B	Charging Device, System and Method for Controlling a Charging Device	1, 17	IEC 61851-1:2017, Secs. 3.1, 3.1.1, 3.1.4, 3.1.5, 3.1.10, 3.1.11, 3.1.12, 3.3, 3.3.1, 3.3.2, 3.3.3, 3.4, 3.4.1, 3.5, 3.5.2, 6.3.1.6, 6.3.2.3, Figs. 1, 2, Annexes A.1, A.2, A.2.1, A.2.2, A.2.3, A.2.4, A.3, Figs. A.1, A.2, A.3, A.4, Tables A.2, A.3, A.6, A.7 IEC 62196-1:2014 Secs. 3.9, 3.10, 3.11
DE	50 2010 008 152.6	Method/System for Communication Between a Vehicle and a Charging Station for Locking and Unlocking Mechanical Charging Cable Coupling	1	IEC 61851-1:2017, Secs. 1, 3, 3.1.1, 3.1.4, 3.1.5, 3.1.10, 3.1.11, 3.1.12, 3.3.1, 3.3.2, 3.3.3, 3.4.1, 3.5.2, 6.3.2.3, A.1, A.2.1, A.2.4, A.3, Fig. A.3, Table A.6
DE	50 2010 012 131.5	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4

## EV Charging Patent Portfolio License Cross-Reference Chart

Ctry.	Patent	Description	CI	Standards / Sections
DE	60 2009 055 930.3	Systems and Methods for Charging an Electric Vehicle Using Broadband Over Powerlines	1	IEC 61851-1:2017, Secs. 3.1.1, 3.1.12 IEC 61851-23:2014, Secs. 2, 6.4.3.104, Table CC.3 ISO 15118-1:2013, Secs. 3.11, 3.20, 3.21, 5.3, Fig. 3, Tables 8, 13, 14, 18 ISO 15118-2:2014, Secs. 7.7.3.3, 7.9.2.4
ES	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
FR	2,379,363	Systems and Methods for Charging an Electric Vehicle Using Broadband Over Powerlines	1	IEC 61851-1:2017, Secs. 3.1.1, 3.1.12 IEC 61851-23:2014, Secs. 2, 6.4.3.104, Table CC.3 ISO 15118-1:2013, Secs. 3.11, 3.20, 3.21, 5.3, Fig. 3, Tables 8, 13, 14, 18 ISO 15118-2:2014, Secs. 7.7.3.3, 7.9.2.4
FR	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
FR	2,454,117	Method/System for Communication Between a Vehicle and a Charging Station for Locking and Unlocking Mechanical Charging Cable Coupling	1	IEC 61851-1:2017, Secs. 1, 3, 3.1.1, 3.1.4, 3.1.5, 3.1.10, 3.1.11, 3.1.12, 3.3.1, 3.3.2, 3.3.3, 3.4.1, 3.5.2, 6.3.2.3, A.1, A.2.1, A.2.4, A.3, Fig. A.3, Table A.6 IEC 62196-1:2014, Secs. 3.9, 3.10, 3.11
GB	2,379,363	Systems and Methods for Charging an Electric Vehicle Using Broadband Over Powerlines	1	IEC 61851-1:2017, Secs. 3.1.1, 3.1.12 IEC 61851-23:2014, Secs. 2, 6.4.3.104, Table CC.3 ISO 15118-1:2013, Secs. 3.11, 3.20, 3.21, 5.3, Fig. 3, Tables 8, 13, 14, 18 ISO 15118-2:2014, Secs. 7.7.3.3, 7.9.2.4
GB	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
IT	2,454,117	Method/System for Communication Between a Vehicle and a Charging Station for Locking and Unlocking Mechanical Charging Cable Coupling	1	IEC 61851-1:2017, Secs. 1, 3, 3.1.1, 3.1.4, 3.1.5, 3.1.10, 3.1.11, 3.1.12, 3.3.1, 3.3.2, 3.3.3, 3.4.1, 3.5.2, 6.3.2.3, A.1, A.2.1, A.2.4, A.3, Fig. A.3, Table A.6 IEC 62196-1:2014, Secs. 3.9, 3.10, 3.11
IT	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
JP	5,624,556	Systems and Methods for Charging an Electric Vehicle Using Broadband Over Powerlines	1	IEC 61851-1:2017, Sec. 3.1.1 IEC 61851-23:2014, Secs. 2, 6.4.3.104, Table CC.3 ISO 15118-1:2013, Secs. 3.11, 3.21, 5.3, Fig. 3, Tables 8, 13, 14, 18 ISO 15118-2:2014, Secs. 3.20, 7.7.3.3, 8.6.3.2
JP	5,851,730	Charging Management System	1	ISO 15118-1:2013, Secs. 3.16, 3.19, 3.26, 3.47, 6.1, 7.1, Fig. 2, 7.6.3, Table 14, Fig. A5
JP	5,901,906	Electric Vehicles and Chargers	1	ISO 15118-1:2013, Sec. 7.5.1, Fig. 1, Annex C
JP	6,047,284	Power Demand Calculation System	1,7,8	ISO 15118-1:2013, Secs. 3.2, 3.17, 6.1, 7.1, 7.6.2; Figs. 1, 2; Tables 1, 13
JP	6,140,430	Vehicle Data Collection System	1,7,8	ISO 15118-1:2013, Secs. 3.2, 3.17, 3.21, 3.35, 3.36, 3.53, 6.1, 7.1; Figs. 1, 2
JP	6,464,531	Charging Infrastructure Management System	1	ISO 15118-1:2013, Secs. 3.25, 3.26, 3.57, 7.1, Fig. 2, Tables 3, 5, 18, 24, 25, Annex C IEC 61851-1:2017, Sec. 3.1.4, Fig. 3
JP	6,539,903	EV Charge Management System	1,4,9,10	ISO 15118-1:2013, Secs. 3.11, 3.17, 3.21, 3.33, 6.1, 7.1, 7.5.3, 7.5.5, 7.6.2; Figs. 1, 2; Tables 9, 11, 13 IEC 61851-23:2014, Annex DD, Fig. D.1
JP	6,738,380	Charging Infrastructure	1,2,3	ISO 15118-1:2013, Secs. 3.47, 3.52, 6.1, 7.1, 7.6.2; Figs. 1, 2, A.6; Tables 1, 13; Annex A.3
KR	1,934,938	Charging Device, System and Method for Controlling a Charging Device	1	IEC 61851-1:2017, Secs. 1, 3.3, 3.4, Tables A.5, A.6. ISO 15118-1:2013, Secs. 1, 3, 3.25, 3.9, 3.11, 5.4, 7.6.2 ISO 15118-2:2014, Secs. 8.4.3.8.1

## EV Charging Patent Portfolio License Cross-Reference Chart

Ctry.	Patent	Description	CI	Standards / Sections
KR	1,976,223	Method and Device for Operating a Vehicle, Computer Program and Computer Program Product	1	IEC 61851-1:2017, Figs. 1, 2, 3 IEC 61851-24:2014, Tables A.1, A.7 SAE J1772:2017, Figs. 7, 8, 12, 13
LI	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
NL	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
SE	2,454,117	Method/System for Communication Between a Vehicle and a Charging Station for Locking and Unlocking Mechanical Charging Cable Coupling	1	IEC 61851-1:2017, Secs. 1, 3, 3.1.1, 3.1.4, 3.1.5, 3.1.10, 3.1.11, 3.1.12, 3.3.1, 3.3.2, 3.3.3, 3.4.1, 3.5.2, 6.3.2.3, A.1, A.2.1, A.2.4, A.3, Fig. A.3, Table A.6 IEC 62196-1:2014, Secs. 3.9, 3.10, 3.11
TR	2,514,056	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
US	6,650,120	Apparatus and Method for Accessing Data Stored Within a Power Source	1	IEC 61851-1:2017, Sec. 6.3.1.4, Annex A (59), Annex D (93-97), Tables D.11, D.22 IEC 61851-23:2014, CC.7 IEC 61851-24:2014, Table A.2 IEEE 2030.1.1-2015, Sec A.7.7.1 SAE J1772, Appendix E (60)
US	8,232,763	Electric Vehicle Profiles for Power Grid Operation	1	IEC 61851-1:2017, Sec. 3.1.1 ISO 15118-1:2013, Secs. 3.17, 3.48, 5.4, 6.1, 7.5.2, 7.6.2, Tables 8, 13
US	8,315,930	Systems and Methods for Charging an Electric Vehicle Using Broadband Over Powerlines	1	IEC 61851-1:2017, Sec. 3.1.1 IEC 61851-23:2014, Secs. 2, 6.4.3.104, Table CC.3 ISO 15118-1:2013, Secs. 3.2.1, 3.11, 5.3, Fig. 3, Tables 8, 13, 14, 18 ISO 15118-2:2014, Secs. 3.20, 7.7.3.3, 7.9.2.4
US	8,384,347	Method and System for Charging an Energy Storage Device	1	IEC 61851-1:2017, Secs. 3.1.1, 5.5.2, Fig. 3 IEC 61851-23:2014, Secs. 6.4.1, 6.4.3.102, 6.4.3.114, Fig. CC.6, Table CC.5 ISO 15118-1:2013, Sec. 5.5.2
US	8,390,252	Charging Device, System and Method	1	IEC 61851-1:2017, Secs. 1, 3.3, 3.4, Tables A.5, A.6 ISO 15118-1:2013, Secs. 1, 3, 3.25, 3.9, 3.11, 5.4, 7.6.2 ISO 15118-2:2014, Sec. 8.4.3.8.1
US	8,466,656	Charging Device and Methods for Charging Electrically Powered Vehicles	1	IEC 61851-1:2017, Secs. 3.1.1, 3.3.2, 3.3.4, 3.1.12, A.2.1, A.2.2, A.2.3, Figs. A.1, A.2, Table A.2, A.4 IEC 61851-23:2014, Secs. 3, 6.4.1, 102.2, 102.3.2, Table 102, CC.3.3, Table CC.4
US	8,624,719	Smart Phone Control and Notification for an EV Charging Station	1	IEC 61851-23:2014, Table D.1, Fig. AA.1 SAE J1772:2017, p.29-30, Figs. 7-8:Control Electronics, p. 63/116 "PEV Scheduled Charge", "phone app"
US	8,706,312	Charging Device and Methods of Authorizing a Charging Request	1	IEC 61851-1:2017, Sec. 3.1.1, Table A.5 IEC 61851-23:2014, Sec. 2 ISO 15118-1:2013, Secs. 3.11, 3.17, 3.19, 3.48, 5.3, 5.5.1, 5.5.3, Table 13
US	8,710,796	EVSE Having a Socket and a Method of Charging a EV	1	IEC 61851-1:2017, Figures on pp. 86-91, Secs. 3.3.4, 8.3, 8.5, 13, 14, A.2.2
US	8,823,330	Charging System for Use with Electric Vehicles and Methods of Monitoring Same	1	IEC 61851-1:2017, Secs. 3.1.1, 5.5.2, Fig. 3 IEC 61851-23:2014, Secs. 6.4.1, 6.4.3.102, 6.4.3.114, Fig. CC.6, Table CC.5 ISO 15118-1:2013, Sec. 5.5.2
US	8,850,226	Method for Testing Electrical Components in Main Supply	1	ISO 15118-2:2014, Secs. 1, 3.21, 7.3.1, 7.3.4, 7.5, 7.7.3.1, 7.7.3.2, 7.7.3.3, 7.7.3.4
US	8,860,366	Plug-in EVSE	1	SAE J1772:2017, pp. 29, 30, 68, Figs. 7, 8, Table 9

## EV Charging Patent Portfolio License Cross-Reference Chart

Ctry.	Patent	Description	CI	Standards / Sections
US	8,886,391	Method and System for Retrieving Diagnostic Information from a Vehicle	1	ISO 15118-2:2014, Sec. 7.6.2.2, Sec. E.1.2 (R3) IEC 61851-24:2014, Fig. 1, Table B.3 IEEE 2030.1.1-2015, Sec. A.7.2.7.2
US	8,890,473	Sequential Charging of Multiple EVs	1	IEC 61851-1:2017, pp. 47, 51, 59, 86, 88-91, 122, Secs. 12.2.5, 13.1, 14, A 2.2 SAE J1772:2017, pp. 29, 30, 68
US	9,024,744	Smart Phone Control and Notification for an EV Charging Station	1	IEC 61851-23:2014, Fig. AA.1, Table D.1 SAE J1772:2017, p. 63, "phone app"
US	9,030,153	Systems and Methods for Delivering Energy to an Electric Vehicle with Parking Fee Collection	1	IEC 61851-1:2017, Secs. 1, 3.1.1 IEC 61851-23:2014, Sec. 2 ISO 15118-1:2013, Secs. 5.2, 7.7.2, Tables 18, 19 ISO 15118-2:2014, Sec. 8.6.3.2
US	9,054,535	Methods and Systems for Charging an Energy Storage Device	1	CCS 1.0-2015, Secs. 2.1, 2.4, 3.1, p. 11 IEC 61851-1:2017, Secs. 1.0, 3.1, 3.1.1, 3.3, 3.3.2, 3.3.4, 7.2, Table D.10 IEC 61851-23:2014, Table 102, pg. 30, BB.1, CC.3, CC.4, Figs. CC.1-CC.3 ISO 15118-1:2013, Sec. 7.2, Table 2
US	9,121,073	Plug-in EVSE with Indicators	1	IEC 61851-1:2017, Pages 88, 92, Table C.1, Figs. C.3, C.6 IEC 61851-23:2014, Figs. AA.1, BB.4, Table 101
US	9,124,104	Electrical Connecting Device for Hybrid and EVs and Associated Charging Method	1	IEC 61851-1:2017, Pages 88, 92, Table C.1, Figs. C.3, C.6 IEC 61851-23:2014, Secs. CC.3.1, BB.3.6, Fig. AA.1, BB.4, Table 102
US	9,227,519	Method/System for Communication Between a Vehicle and a Charging Station for Locking and Unlocking Mechanical Charging Cable Coupling	1, 12, 14, 17	IEC 61851-1:2017, Secs. 1, 3, 3.1.1, 3.1.4, 3.1.5, 3.1.10, 3.1.11, 3.1.12, 3.3.1, 3.3.2, 3.3.3, 3.4.1, 3.5.2, 6.3.2.3, A.1, A.2.1, A.2.4, A.3, Fig. A.3, Table A.6 IEC 62196-1:2014 Secs. 3.9, 3.10, 3.11
US	9,278,620	Method/Device for Operating a Vehicle Computer Program, and Computer Program Product	1	IEC 61851-1:2017, <i>passim</i> . Secs. 3.1.11, 7.1 IEC 61851-23:2014, Secs. 102.3.2, 102.5, CC.3.1, BB.3.6, Fig. AA.1, Tables 102, 103 ISO 15118-1:2013, Sec. 3.19
US	9,283,863	Method/Apparatus for Providing Electrical Energy	1,16	ISO 15118-1:2013, Secs. 5.4, 7.1, 7.6.1, 7.6.2 IEC 61851-1:2017, <i>passim</i>
US	9,475,393	Charging Devices and Methods for Charging Electrically Powered Vehicles	1	IEC 61851-1: 2017, Secs. 3.1.1, 3.1.12, 6.3.1.3, Fig. 3, 3.3.2, 3.3.4, Annex A (Secs. A.2.1, A.2.2, A.2.3, Figs. A1, A2, Tables A.2, A.4) IEC 61851-23:2014, Secs. 3, 6.4.1, 102.2, 102.3.2, Table 102, Sec. CC.3.3, Table CC.4
US	9,475,399	Power Conduit, Charging Device, and Method for Charging A Power Storage Device	1	IEC 61851-1:2017, Secs. 3.3.4, 3.5.2, Fig. C.6, Table A.6 IEC 61851-23:2014. Sec. 6.4.3.104 ISO 15118-1:2013, Secs. 3.1.4, 7.9 ISO 15118-2:2014, pp. 28 and 323
US	9,475,400	EV Charging Device and Method Therefor	1	IEC 61851-1:2017, Secs. 3.1.12, 3.5.2, 8.5, 13.1-13.3 IEC 61851-23:2014, Secs. 3.107, 3.109, 6.2, 6.3.1, 6.4, 6.4.3.4, 6.4.3.114, 6.4.5, 102.1, 102.5.4, Annex CC Secs. 3.4, 4.2, 7, Table CC.5, Figs. CC.1, CC.3
US	9,487,099	Plug-in Electric Vehicle Supply Equipment	1	SAE J1772:2017, pp. 29/116, Figs. 7, 8, p. 104 Fig. 27
US	9,590,416	Safety Device for a High-Voltage System	1, 11	IEC 61851-1:2017, Secs. 3.3.5, 3.5.16, 3.7.6, 8.1, 8.2, A.4.7.1, C.2, Tables A.6, C.1, D.22 IEC 61851-23:2014, Annex CC, Table CC.4
US	9,783,068	Method and Apparatus for Providing Electrical Energy	4	ISO 15118-1:2013, Secs. 1, 3, 3.11, 3.12, 3.24-26, 3.52, 7.6.3, 7.7.3, 7.7.4 ISO 15118-2:2014, Secs. 3, 3.2, 4, 8.4.3.8.1-3, 8.4.3.9.1-3, 8.5.2.13-15
US	10,850,639	On-Board Unit and Electric Vehicle Management System	1, 5, 13, 14	ISO 15118-1:2013, Secs. 3.11, 3.14, 3.17, 3.19, 3.20, 3.22, 3.38, 5.3.1, 5.4, 6.1, 7.1, 7.2.1, 7.2.2, 7.5.3, 7.5.5, 7.6.2; Figs. 1, 2, 3; A.5; Tables 1, 3, 4, 9, 11, 13; Annex A.3 IEC 61851-23:2014, Annex DD, Fig. D.1