

**ESS Patent Portfolio**  
(2/2/2022)

**Granted Patents:**

To date, ESS has been awarded the following 15 patents claiming the H.E.L.P.<sup>™</sup> (Hazard Enhanced Location Protocol) system:

• US 9,481,331	• JP 6523320
• US 9,616,810	• JP 6975780
• US 10,870,390	• KR 10-1925526
•	• KR 10-2070857
• US 11,094,924	• KR 10-2310984
• US 11,135,968	• AU 2016262723
• EP 3,177,484*	• AU 2018205070
• CN 106852137	• AU 2019226226
• CN 110949242	• CA 2,942,926
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These patents claim one or more of the following aspects of the H.E.L.P.<sup>™</sup> system:

- A system that implements high flash rate patterns to existing vehicle hazard lights for both new vehicles at the production stage and existing vehicles that have upgrade capability;
- A system that adds high flash rate patterns to existing vehicle lights as well as auxiliary lights and uses a decision circuit to determine when the auxiliary light will display the high flash rate pattern or another pattern;
- A vehicle lighting system that uses a microcontroller to receive an input from a vehicle safety system and implements a high flash rate pattern to vehicle signal lights upon receipt of the input from the vehicle safety system; and
- A system that includes first and second strobing light modules and microcontrollers connect to each other that flash their respective lights at a high flash rate pattern simultaneously upon receiving an input from each other.

\* The EP'484 Patent has been validated in all 38 member states of the European Patent Convention

**Pending Patent Applications:**

In addition to the above-listed, granted patents, ESS has the following 38 patent applications pending that claim these and other features of the H.E.L.P.<sup>™</sup> system.

• US 16/878,160 (US2020-0276944A1)	• CN 201680091231.5 (CN110035925A)
• US 17/153,830	• CN201910858230.4 (CN110949242A)
• US 16/878,185 (US2020-0276945A1)	• CN201980091837.2
• US 16/878,195 (US2020-0276946A1)	• CN202080031538.2

• US 17/193,614	• CN202080034199.3
• US 17/334,309	• EP18193390.4 (EP 3 434 520 A1)
• US 16/710,669 (US2020-0189453A1)	• EP16917956.1 (EP 3 519 246 A1)
• US 16/820,500 (US2020-0290507A1)	• EP19181421.9 (EP 3 578 417 A1)
• US 17/156,496	• EP19895037.0
• US 17/317,822	• EP19895409.1
• US 17/334,309	• EP20772882.5
• US 17/499,593	• EP20776496.0
• US 17/493,441	• JP2019-083569 (JP2019163033)
• US 16/834,547 (US2020-0307447A1)	• JP2021-533504
• US 16/991,595 (US2021-0049909A1)	• JP2021-533508
• US 63/174,019	• JP2021-555608
• AU 2021 218203	• JP2021-557953
• AU 2019 398216	• KR10-2019-7012462 (KR20190054169)
• AU 2019 396452	• KR10-2020-7002038 (KR20200011562)
• AU 2020 241841	• KR10-2021-7021558
• CA 3,038,796	• KR10-2021-7021611
• CA 3,123,209	• KR10-2021-7033441
• CA 3,123,216	• KR10-2021-7035040
• CA 3,133,773	• PCT/US2020/045930 (WO2021/030435A1)
• CA 3,135,623	