

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

LONGHORN AUTOMOTIVE GROUP LLC,

Plaintiff,

v.

MAZDA MOTOR CORPORATION,

Defendant.

Case No. 2:24-cv-

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Longhorn Automotive Group LLC (“LAG” or “Plaintiff”) for its Complaint for patent infringement against Defendant Mazda Motor Corporation (“Mazda” or “Defendant”) alleges as follows:

**THE PARTIES**

1. LAG is a limited liability company organized and existing under the laws of the State of Texas, with its principal place of business located at 104 E. Houston Street, Marshall, Texas 75670.

2. Upon information and belief, Mazda is a Japanese corporation with its principal place of business located at 3-1 Shinchu, Fuchu-cho, Aki-gun, Hiroshima 730-8670, Japan. Mazda is one of the largest car manufacturers and sellers in the world and in the United States. Upon information and belief, Mazda does business in Texas and in the Eastern District of Texas, directly or through intermediaries.

**JURISDICTION**

3. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.* This Court has jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

4. This Court has personal jurisdiction over Defendant. Defendant regularly conducts business and has committed acts of patent infringement and/or has induced acts of patent infringement by others in this Judicial District and/or has contributed to patent infringement by others in this Judicial District, the State of Texas, and elsewhere in the United States.

5. Venue is proper in this Judicial District pursuant to 28 U.S.C. § 1391 because, among other things, Defendant is not a resident in the United States, and thus may be sued in any judicial district pursuant to 28 U.S.C. § 1391(c)(3).

6. Defendant is subject to this Court's jurisdiction pursuant to due process and/or the Texas Long Arm Statute due at least to its substantial business in this State and Judicial District, including (a) at least part of its past infringing activities, (b) regularly doing or soliciting business in Texas, and/or (c) engaging in persistent conduct and/or deriving substantial revenue from goods and services provided to customers in Texas.

### **PATENTS-IN-SUIT**

7. On August 19, 2014, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,810,803 (the "'803 Patent") entitled "Lens System". A true and correct copy of the '803 Patent is available at: <https://patentimages.storage.googleapis.com/b8/ee/03/9912346a786072/US8810803.pdf>.

8. On July 26, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,987,002 (the "'002 Patent") entitled "Arrangement for Distributed Measurement System for Measurement and Simulation in Distributed Control Systems". A true

and correct copy of the '002 Patent is available at:  
<https://patentimages.storage.googleapis.com/2e/7c/c3/eaf362f9a8faf3/US7987002.pdf>.

9. On April 7, 2009, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,513,238 (the "'238 Patent") entitled "Directly Injecting Internal Combustion Engine." A true and correct copy of the '238 Patent is available at:  
<https://patentimages.storage.googleapis.com/23/6c/e0/5d3e6ec82760c9/US7513238.pdf>.

10. On September 11, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,265,353 (the "'353 Patent") entitled "Method of Reconstructing an Image Acquired Using Several Imagery Modes." A true and correct copy of the '353 Patent is available at:  
<https://patentimages.storage.googleapis.com/c3/ee/14/9676306bcc9887/US8265353.pdf>.

11. LAG is the sole and exclusive owner of all right, title, and interest in the '803 Patent, the '002 Patent, the '238 Patent, and the '353 Patent (collectively, the "Patents-in-Suit") and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this patent infringement lawsuit. LAG also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit and to seek injunctive relief as appropriate under the law.

12. LAG has at all times complied with the marking provisions of 35 U.S.C. § 287 with respect to the Patents-in-Suit.

### **FACTUAL ALLEGATIONS**

13. The '803 Patent generally relates to a plurality of lenses used for focusing and projecting the light in plurality of directions. Such patterns include those generated by systems from an emitted light source. These patterns may be analyzed by computers to identify and

determine aspects of the light patterns. The technology described in the '803 Patent was developed by inventor Matt Bell. For example, this technology is implemented in Mazda's headlight systems included in vehicles, in all trims and configurations, such as the Mazda3 Sedan, Mazda3 Hatchback, Mazda CX-90, Mazda CX-90 Phev, Mazda CX-70, Mazda CX-70 Phev, Mazda CX-50, Mazda CX-30, Mazda CX-5, Mazda MX-5 Miata, and Mazda MX-5 Miata RF, among other vehicles (collectively, the "Accused Vehicles").

14. The '002 Patent generally relates to a monitoring system with plurality of monitoring units communicating with a first interface in a first protocol which in turn is connected to a distributed control systems using a second protocol. The technology described in the '002 Patent was developed by inventor Lars-Berno Fredriksson. For example, this technology is implemented through the Mazda Connected Services in the MyMazda App, and all previous versions and iterations, included with personal vehicles, in all trims and configurations, including the Accused Vehicles.

15. The '238 Patent generally relates to novel direct injection in internal combustion engines where the shapes of the piston allow for early or late injection to optimize the direct injection. The technology described in the '238 Patent was developed by inventors Ruediger Pfaff, Martin Schnabel, and Joachim Suess at Daimler AG. For example, this technology is implemented in Mazda internal combustion engines included in Mazda vehicles, in all trims and configurations, including certain Accused Vehicles.

16. The '353 Patent generally relates to measuring a mobile object using a plurality of imaging techniques in synchronization to provide video images of an object's state. The technology described in the '353 Patent was developed by Stéphane Bonnet and Pierre Grangeat. For example, this technology is implemented in Mazda's driver assistance systems, including

Mazda i-Activsense, and all previous versions and iterations, in all trims and configurations, including the Accused Vehicles.

17. Mazda has infringed and is continuing to infringe the Patents-in-Suit by one or more of making, using, selling, offering to sell, and/or importing, and by actively inducing others to make, use, sell, offer to sell, and/or importing commercial and personal vehicles (including, but not limited to, commercial and personal vehicles), which are used or tested by Mazda and its direct or indirect customers or users in the United States.

**COUNT I**  
**(Infringement of the '803 Patent)**

18. Paragraphs 1 through 17 are incorporated by reference as if fully set forth herein.

19. LAG has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '803 Patent.

20. Defendant has and continues to directly infringe the '803 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by one or more of making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '803 Patent. Such products include, but are not limited to, Mazda's headlight system, included in personal vehicles, in all trims and configurations, such as the Mazda CX-5, among other vehicles.

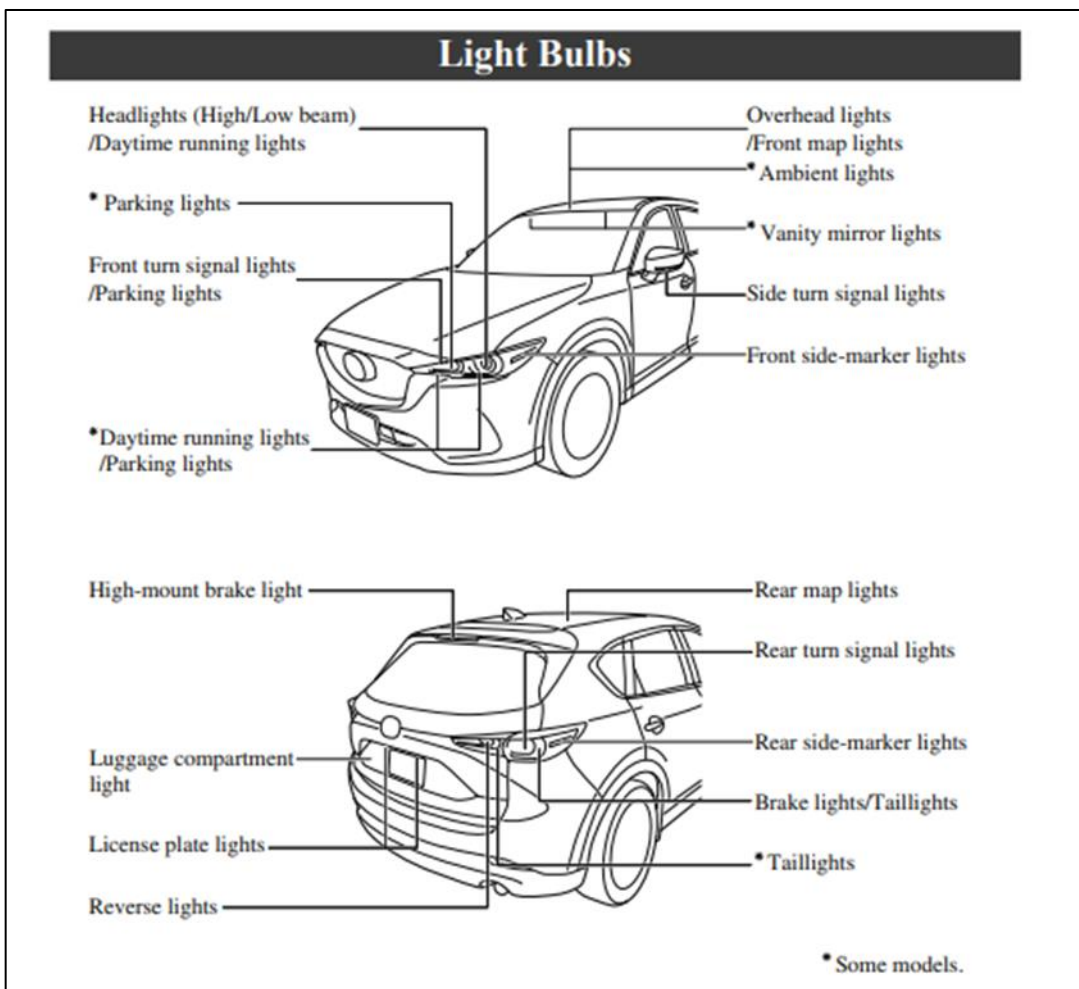
21. For example, Defendant has and continues to directly infringe at least claim 1 of the '803 Patent by making, using, offering to sell, selling, and/or importing the Accused Vehicles into the United States that include LED headlights, or equivalent thereof, such as the Mazda CX-5, among other products.

22. The Mazda CX-5 comprises a system for projecting a pattern of light (e.g., through incorporation LED headlight system):

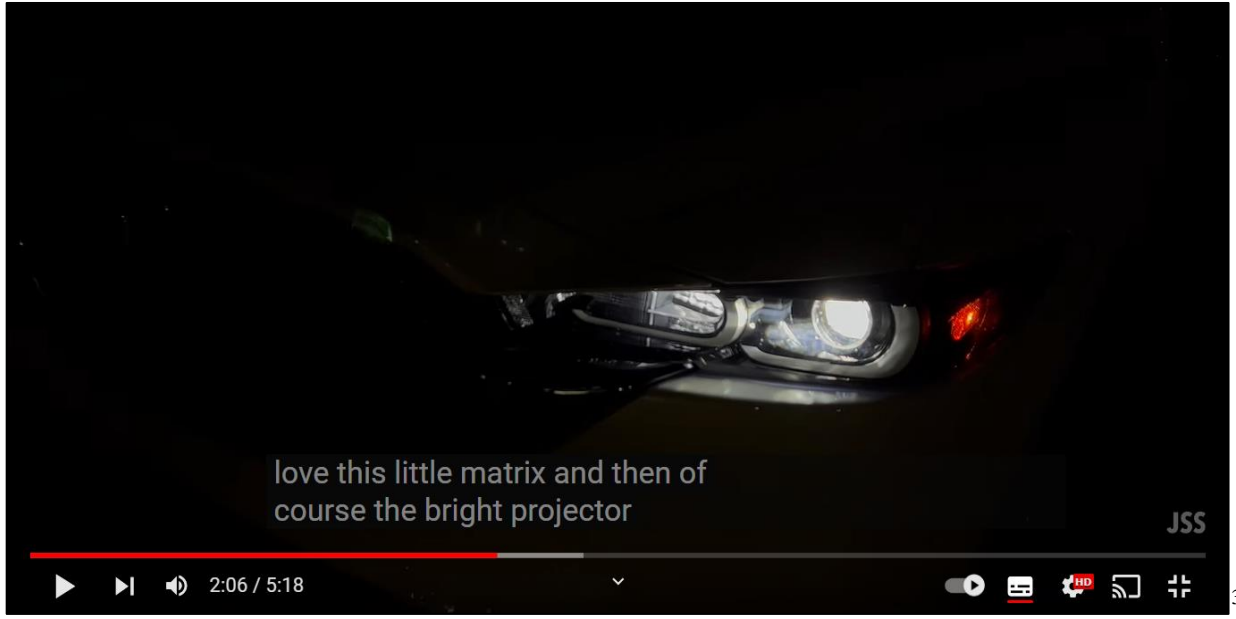


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<sup>1</sup> [https://news.mazdausa.com/2021-09-14-2022-Mazda-CX-5-Receives-Elegant-Enhancements#assets\\_all](https://news.mazdausa.com/2021-09-14-2022-Mazda-CX-5-Receives-Elegant-Enhancements#assets_all).



<sup>2</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/2022/cx-5/2022-cx-5-owners-manual.pdf>.



<sup>3</sup> <https://www.youtube.com/watch?v=KzlcxHM6q2o>.

<sup>4</sup> [https://www.youtube.com/watch?v=8Y2QBS\\_4PA4&ab\\_channel=Autogef%C3%BChl](https://www.youtube.com/watch?v=8Y2QBS_4PA4&ab_channel=Autogef%C3%BChl).



## Light Bulbs

### Exterior light

All the light bulbs are the LED type.

The LED bulb cannot be replaced. Consult an Authorized Mazda Dealer when the replacement is necessary.

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dimensional texture. The rear features new bumper and tailgate designs that are complemented by larger dual tailpipes. The headlights and taillights receive significant design changes with each lamp featuring a pair of horizontally spaced, rectangular LED lights that create a sleek, eye-catching expression.

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## High Beam Control System (HBC) (Some Models)

The HBC determines the conditions in front of the vehicle using the Forward Sensing Camera (FSC) while driving in darkness to automatically switch the headlights between high and low beams.

Refer to Forward Sensing Camera (FSC) ([Search](#)).

While driving the vehicle at a speed of about 30 km/h (19 mph) or more, the headlights are switched to high beams when there are no vehicles ahead or approaching in the opposite direction.

The system switches the headlights to low beams when one of the following occurs:

- The system detects a vehicle or the headlights/lights of a vehicle approaching in the opposite direction.
- The vehicle is driven on roads lined with streetlamps or on roads in well-lit cities and towns.
- The vehicle is driven at less than about 20 km/h (12 mph).

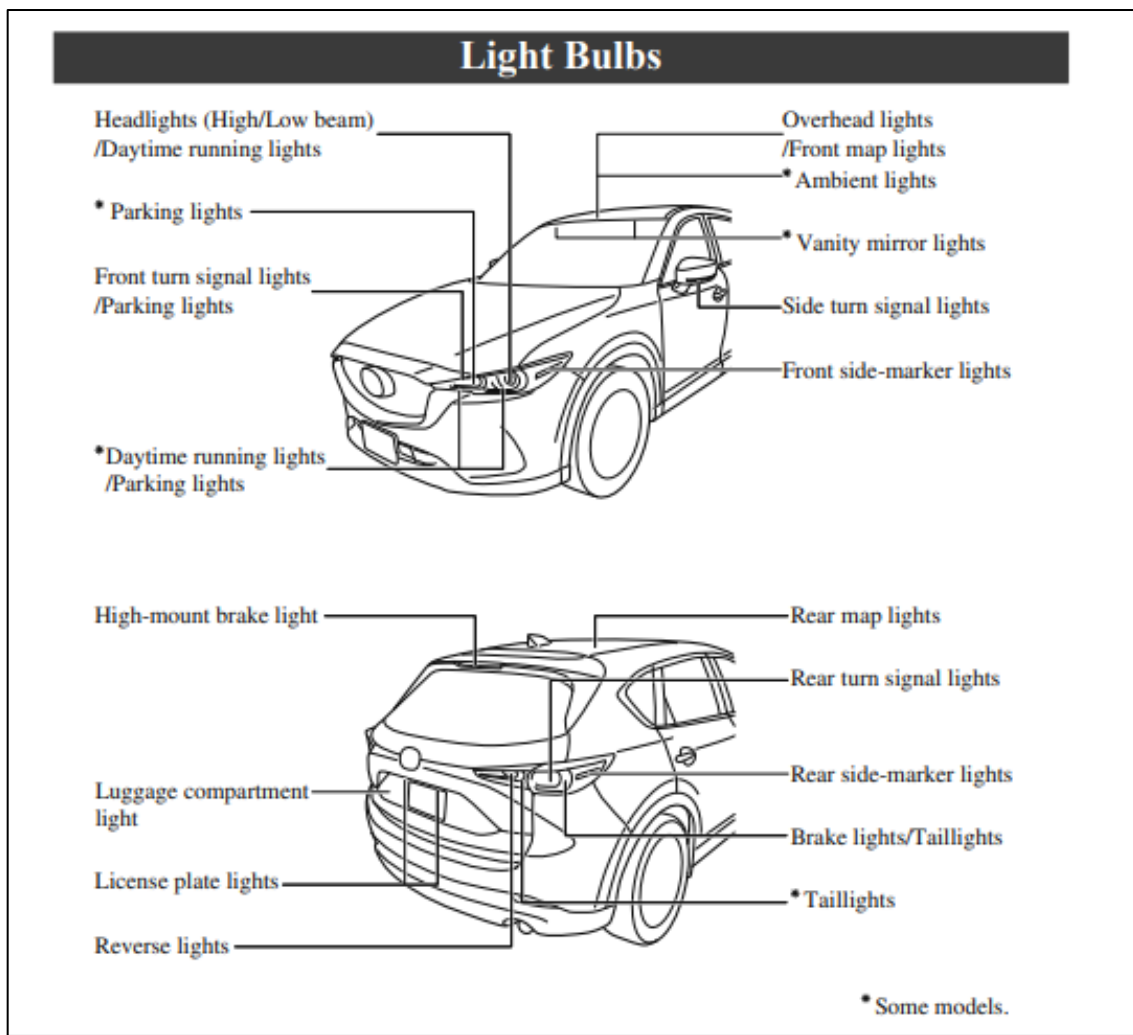
7

23. The Mazda CX-5 comprises a light source (e.g., the LED lights) including a plurality of emitters configured to emit light, the plurality of emitters arranged in a pattern (e.g., a horizontal row):

<sup>5</sup> <https://www.mazdausa.com/static/manuals/2022/cx-5/contents/10020108.html>.

<sup>6</sup> <https://news.mazdausa.com/2021-11-30-2022-Mazda-CX-5-Pricing-and-Packaging>.

<sup>7</sup> <https://www.mazdausa.com/static/manuals/2022/cx-5/contents/10020108.html>.



<sup>8</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/2022/cx-5/2022-cx-5-owners-manual.pdf>.



dimensional texture. The rear features new bumper and tailgate designs that are complemented by larger dual tailpipes. The headlights and taillights receive significant design changes with each lamp featuring a pair of horizontally spaced, rectangular LED lights that create a sleek, eye-catching expression.

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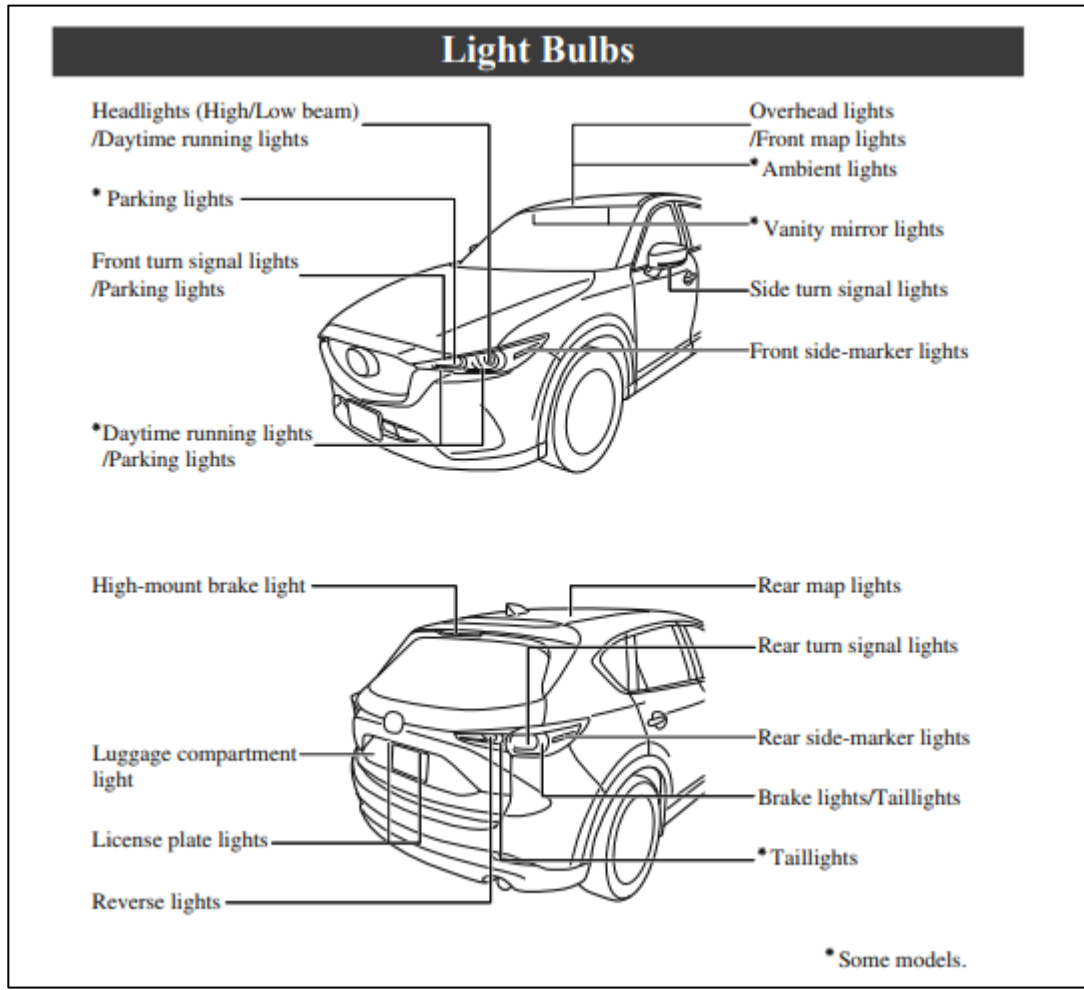
24. The Mazda CX-5 comprises a cluster of lenses located in front of the light source, wherein each lens of the cluster of lenses is configured to receive light from the plurality of emitters and the cluster of lenses is configured to concurrently focus and project light (e.g., control and

<sup>9</sup> <https://www.youtube.com/watch?v=BB4nMscmjJ4>.

<sup>10</sup> *Id.*

<sup>11</sup> <https://news.mazdausa.com/2021-11-30-2022-Mazda-CX-5-Pricing-and-Packaging>.

direct the emitted light) from each of the emitters (e.g., multiple LEDs) in a plurality of directions:



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<sup>12</sup> <https://www.youtube.com/watch?v=KzlcxHM6q2o>.

<sup>13</sup> <https://www.youtube.com/watch?v=NVryeUcWC84>.



25. The Mazda CX-5 comprises a condenser lens (e.g., a projector lens) located between the light source (e.g., LEDs) and the cluster of lenses, wherein the condenser lens is configured to concentrate light from each of the plurality of emitters towards a center of the cluster of lenses (e.g., to enhance light concentration and shapes the beam pattern):

dimensional texture. The rear features new bumper and tailgate designs that are complemented by larger dual tailpipes. The headlights and taillights receive significant design changes with each lamp featuring a pair of horizontally spaced, rectangular LED lights that create a sleek, eye-catching expression.

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<sup>14</sup> *Id.*

<sup>15</sup> <https://news.mazdausa.com/2021-11-30-2022-Mazda-CX-5-Pricing-and-Packaging>.



<sup>16</sup> <https://www.youtube.com/watch?v=NVryeUcWC84>.

<sup>17</sup> *Id.*

**High Beam Control System (HBC) (Some Models)**

The HBC determines the conditions in front of the vehicle using the Forward Sensing Camera (FSC) while driving in darkness to automatically switch the headlights between high and low beams.

Refer to Forward Sensing Camera (FSC) ([Search](#)).

While driving the vehicle at a speed of about 30 km/h (19 mph) or more, the headlights are switched to high beams when there are no vehicles ahead or approaching in the opposite direction.

The system switches the headlights to low beams when one of the following occurs:

- The system detects a vehicle or the headlights/lights of a vehicle approaching in the opposite direction.
- The vehicle is driven on roads lined with streetlamps or on roads in well-lit cities and towns.
- The vehicle is driven at less than about 20 km/h (12 mph).

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26. Defendant has and continues to indirectly infringe one or more claims of the '803 Patent by knowingly and intentionally inducing others, including Mazda customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

27. Defendant, with knowledge that these products, or the use thereof, infringe the '803 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continue to knowingly and intentionally induce, direct infringement of the '803 Patent by providing these products to customers and end-users for use in an infringing manner. Alternatively, on information and belief, Defendant has adopted a policy of not reviewing the patents of others, including specifically those related to Defendant's specific industry, thereby remaining willfully blind to the Patent-in-Suits at least as early as the issuance of the Patent-in-Suits.

28. Defendant has and continues to induce infringement by others, including customers and end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '803 Patent,

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<sup>18</sup> <https://www.mazdausa.com/static/manuals/2022/cx-5/contents/10020108.html>.

but while remaining willfully blind to the infringement. Defendant has and continues to induce infringement by its customers and end-users by supplying them with instructions on how to operate the infringing technology in an infringing manner, while also making publicly available information on the infringing technology via Defendant's websites, product literature and packaging, and other publications.<sup>19</sup>

29. LAG has suffered damages as a result of Defendant's direct and indirect infringement of the '803 Patent in an amount to be proved at trial.

30. LAG has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '803 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

**COUNT II**  
**(Infringement of the '002 Patent)**

31. Paragraphs 1 through 17 are incorporated by reference as if fully set forth herein.

32. LAG has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '002 Patent.

33. Defendant has and continues to infringe the '002 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by one or more of making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '002 Patent. Such products include, but are not limited to, the MyMazda App working in connection with Mazda Connected services, included in vehicles, in all trims and configurations, including the Accused Vehicles, such as the Mazda CX-30.

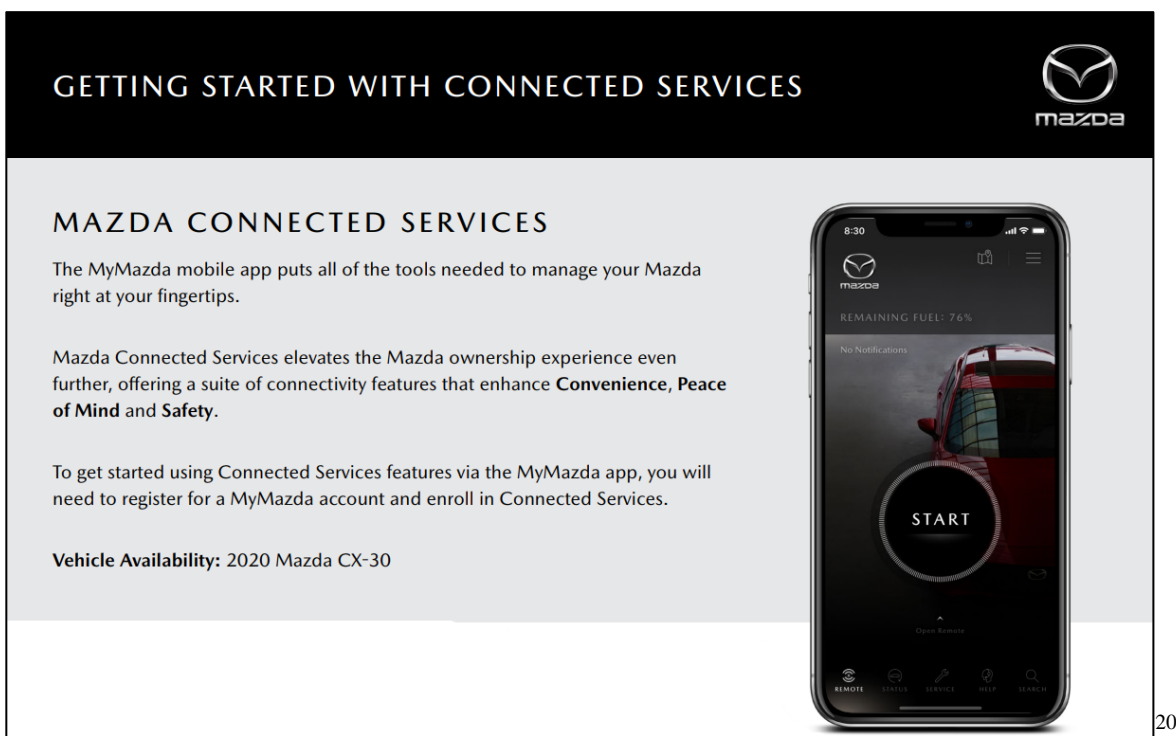
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<sup>19</sup> See Mazda CX-5 Owner's Manual and other materials, available at: <https://www.mazdausa.com/owners/how-to-use-my-mazda>.



34. For example, Defendant has and continues to directly infringe at least Claim 15 of the '002 Patent by making, using, offering to sell, selling, and/or importing into the United States products that include the MyMazda App working in connection with Mazda Connected services, included in vehicles, in all trims and configurations, including the Accused Vehicles, such as the Mazda CX-30.

35. The Mazda CX-30 comprises a monitoring system (e.g., through the implementation of the My Mazda App and the Mazda Connected Services servers):



<sup>20</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/mazda-connect-and-connected-services-user-guide.pdf>.

This Connectivity Privacy Policy describes how Mazda Motor of America, Inc., d/b/a Mazda North American Operations (“us”, “our”, or “we”) may collect, use, share, store, and secure data collected from your Mazda vehicle equipped with an activated, factory-installed telematics system (“Connected Vehicle”), which data is remotely transmitted to us for certain business purposes, and to provide you with available connected services (collectively, “Connectivity”). For clarity, the term Connectivity, as it is used throughout this Connectivity Privacy Policy, refers to both our automatic collection and use of Default Data, as defined below, along with our collection and use of data and information if you elect to use our optional, subscription-based offering available on your Connected Vehicle, “Mazda Connected Services.”

This Connectivity Privacy Policy only applies to the collection and use of data obtained from Connected Vehicles and information you provide related to Mazda Connected Services, and does not apply to: our other websites, applications, and online services that we provide (“Online Services”); any third-party websites or applications that we do not own, operate, or control; or features available through your Connected Vehicle’s Mazda Connect infotainment system. For information regarding our Online Services, please review our Online Services [Terms and Conditions](#) and [Privacy Policy](#). For details regarding Mazda Connect, please refer to your Owner’s Manual.

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#### What Default Data We Collect

All of our Connected Vehicles contain an in-vehicle Telematics Control Unit (TCU), which is activated on or before the Connected Vehicle’s delivery to a Mazda Dealer, and allows us to collect and transmit certain Default Data from the Connected Vehicle. The Default Data is generated within the Connected Vehicle, collected by either the TCU or other in-vehicle system (excluding the Electronic Data Recorder (EDR)), and transmitted to us via the TCU.

**WE AUTOMATICALLY COLLECT CERTAIN DEFAULT DATA FROM THE CONNECTED VEHICLE ON AN ONGOING BASIS. ONLY WE CAN DEACTIVATE THE TCU AND DISABLE OUR COLLECTION OF ALL DEFAULT DATA. NOTE THAT THE SALE, TRANSFER, OR LEASE TERMINATION OF A CONNECTED VEHICLE WILL NOT DISABLE AUTOMATIC DEFAULT DATA COLLECTION.**

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<sup>21</sup> <https://www.mazdausa.com/site/privacy-connectedservices>.

<sup>22</sup> *Id.*

## ENJOY THESE CONNECTED FEATURES WITH YOUR NEW MAZDA:

- Prepare your vehicle from the comfort of your home with remote start and stop
- Lock or unlock your vehicle's doors remotely
- Check vehicle status, such as fuel level, from your phone
- Use the vehicle finder feature to locate your parked vehicle
- Receive alerts when your vehicle needs servicing
- Take advantage of available in-vehicle Wi-Fi<sup>2</sup> capabilities
- Experience the peace of mind of automatic 911 dialing<sup>3</sup>

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### VIEWING VEHICLE STATUS

- To view vehicle status, **tap the STATUS icon** on the bottom menu bar.

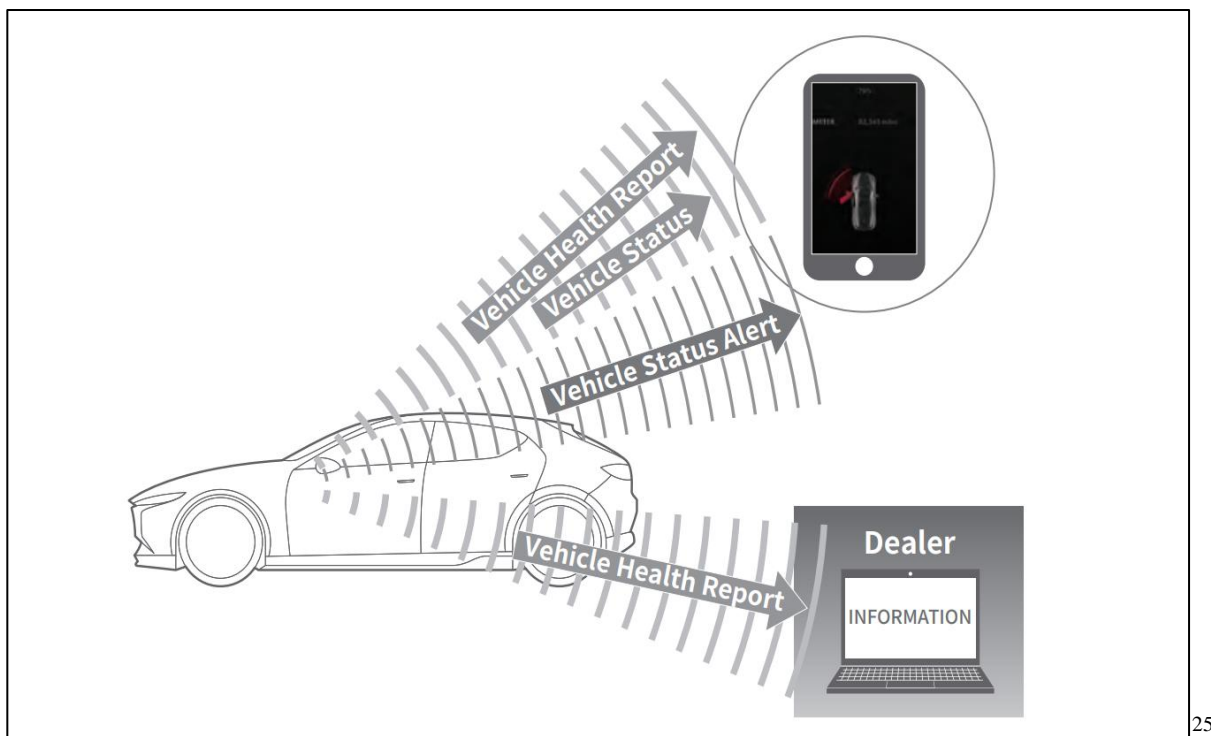
The Vehicle Status Preview window will pop up at the bottom of the screen, displaying any active vehicle status alerts, as well as current fuel level and odometer information. *Note: Vehicle Status is not updated in real time. It may take several minutes for status to refresh.*

- Pull up on the carat icon (^)** to view more detailed vehicle status information, including tire pressure and a summary of vehicle status information.

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<sup>23</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/enroll-in-mazda-connected-services.pdf>.

<sup>24</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/mazda-connect-and-connected-services-user-guide.pdf>.



25

36. The Mazda CX-30 comprises a plurality of monitoring units (e.g., the implementation of the My Mazda App and the Mazda Connected Services servers) configured to communicate with at least one interface unit (e.g., the telematics control unit (TCU)) using a first protocol (e.g., a cellular network), wherein the at least one interface unit is communicably connected to a distributed control system (e.g., the vehicle's electronic control modules (ECUs), such as the Body Control Module (BCM) or Engine Control Module (ECM)), and the at least one interface unit is further configured to receive data values from the distributed control system using a second protocol (e.g., CAN communication):

<sup>25</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/2020-connected-owners-manual.pdf>.

Connected Service is a service achieved through a communication network, therefore the vehicle is equipped with a dedicated communication unit.

- The communication unit conforms to radio wave laws and telecommunications business law standards, and transmits with the Connected Service system using the mobile phone network. Disassembly or modification of the communication unit may be punishable by law.
- If the communication unit in the vehicle has difficulty receiving mobile phone network radio waves, Connected Service may not function normally or instructed commands may not be executed.
- The communication unit equipped on your vehicle uses free software/open source software. Both or either one of the used free/open source software licensing information and source code is available at the following URL:  
<https://www.denso-ten.com/support/source/oem/najptcu/>
- The communication unit for Connected Service equipped on the vehicle may perform a NAD (Network Accessible Device) online update via the communication carrier. This update rarely happens, but takes approximately 3 minutes after the vehicle's engine has been turned off for 30 minutes and occurs between 3 o'clock and 5 o'clock in the morning. During this update, a part of the functions such as Remote Control are unusable.

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This Connectivity Privacy Policy describes how Mazda Motor of America, Inc., d/b/a Mazda North American Operations ("us", "our", or "we") may collect, use, share, store, and secure data collected from your Mazda vehicle equipped with an activated, factory-installed telematics system ("Connected Vehicle"), which data is remotely transmitted to us for certain business purposes, and to provide you with available connected services (collectively, "Connectivity"). For clarity, the term Connectivity, as it is used throughout this Connectivity Privacy Policy, refers to both our automatic collection and use of Default Data, as defined below, along with our collection and use of data and information if you elect to use our optional, subscription-based offering available on your Connected Vehicle, "Mazda Connected Services."

This Connectivity Privacy Policy only applies to the collection and use of data obtained from Connected Vehicles and information you provide related to Mazda Connected Services, and does not apply to: our other websites, applications, and online services that we provide ("Online Services"); any third-party websites or applications that we do not own, operate, or control; or features available through your Connected Vehicle's Mazda Connect infotainment system. For information regarding our Online Services, please review our Online Services [Terms and Conditions](#) and [Privacy Policy](#). For details regarding Mazda Connect, please refer to your Owner's Manual.

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<sup>26</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/2020-connected-owners-manual.pdf>.

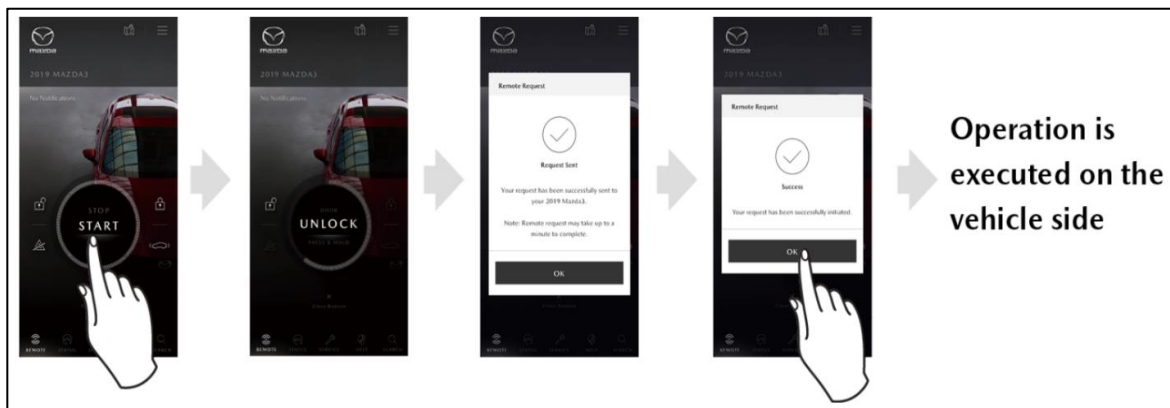
<sup>27</sup> <https://www.mazdausa.com/site/privacy-connectedservices>.

What Default Data We Collect

All of our Connected Vehicles contain an in-vehicle Telematics Control Unit (TCU), which is activated on or before the Connected Vehicle's delivery to a Mazda Dealer, and allows us to collect and transmit certain Default Data from the Connected Vehicle. The Default Data is generated within the Connected Vehicle, collected by either the TCU or other in-vehicle system (excluding the Electronic Data Recorder (EDR)), and transmitted to us via the TCU.

**WE AUTOMATICALLY COLLECT CERTAIN DEFAULT DATA FROM THE CONNECTED VEHICLE ON AN ONGOING BASIS. ONLY WE CAN DEACTIVATE THE TCU AND DISABLE OUR COLLECTION OF ALL DEFAULT DATA. NOTE THAT THE SALE, TRANSFER, OR LEASE TERMINATION OF A CONNECTED VEHICLE WILL NOT DISABLE AUTOMATIC DEFAULT DATA COLLECTION.**

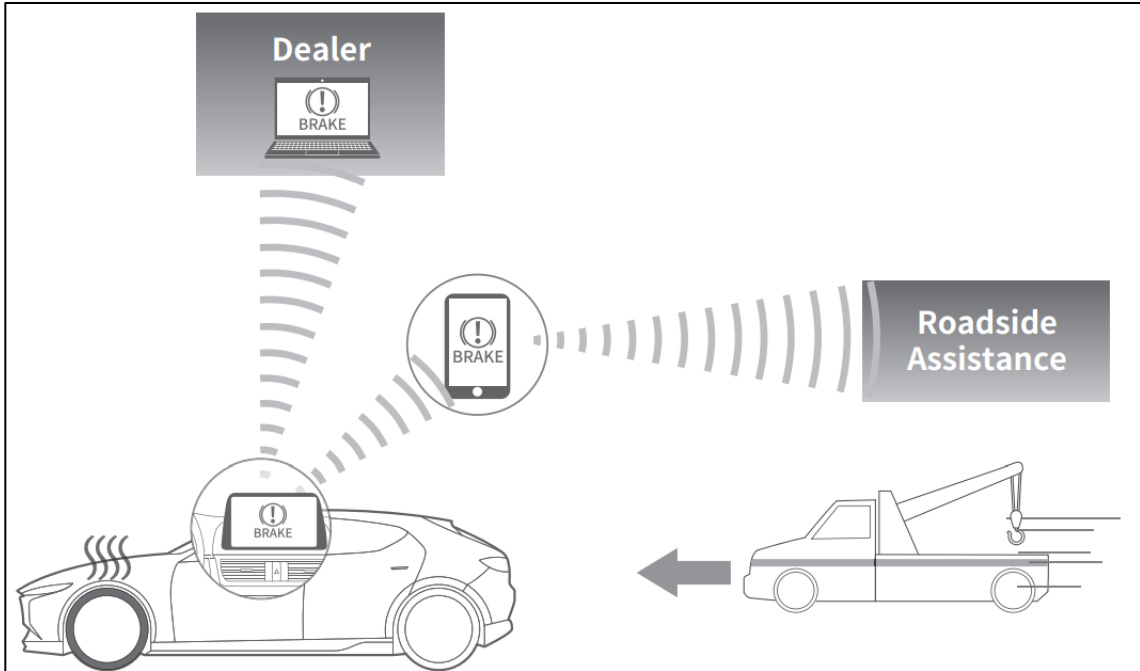
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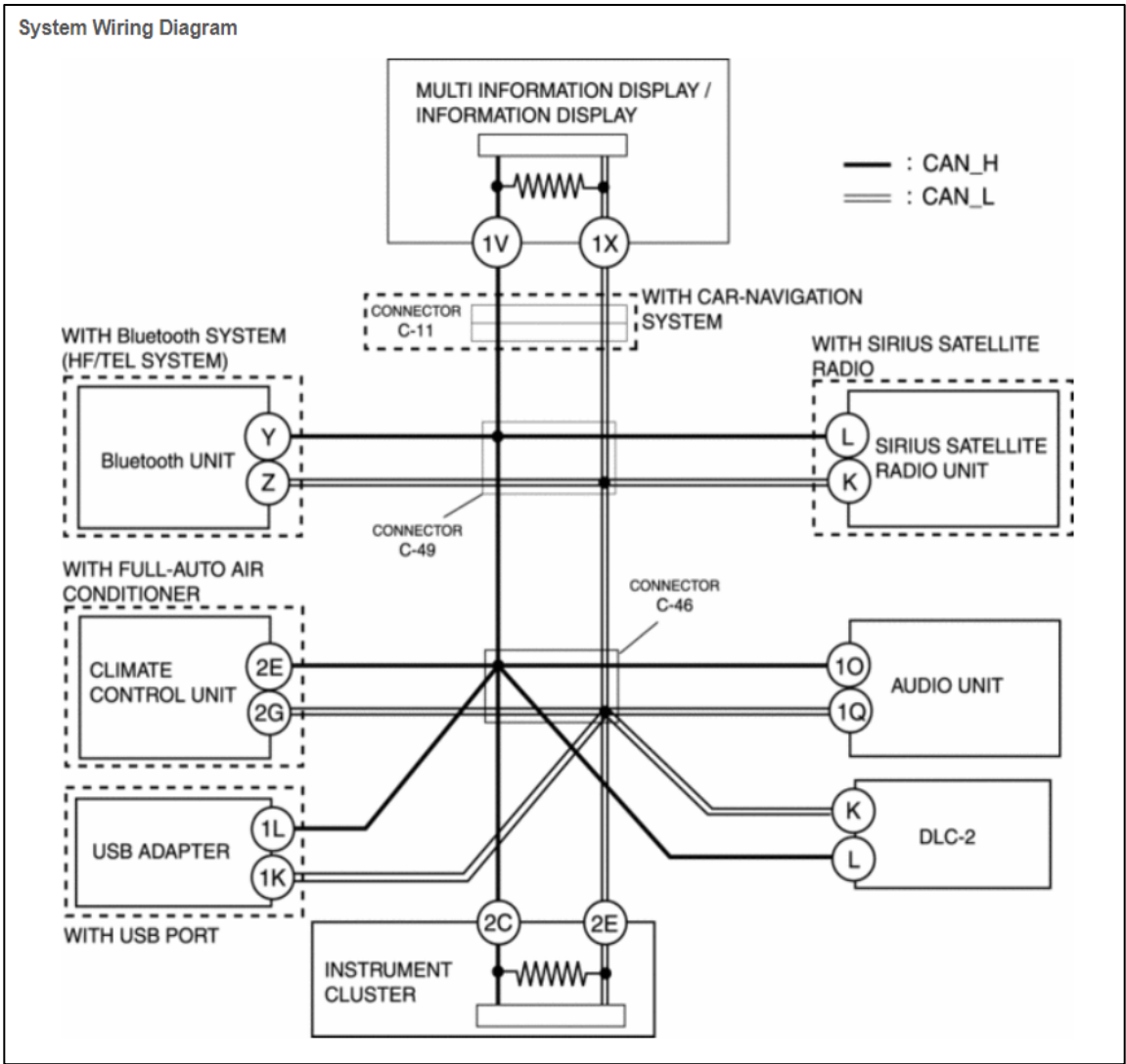
<sup>28</sup> <https://www.mazdausa.com/site/privacy-connectedservices>.

<sup>29</sup> <https://www.mazdausa.com/static/manuals/mazda-connected-service/chapter4/section3.html>.



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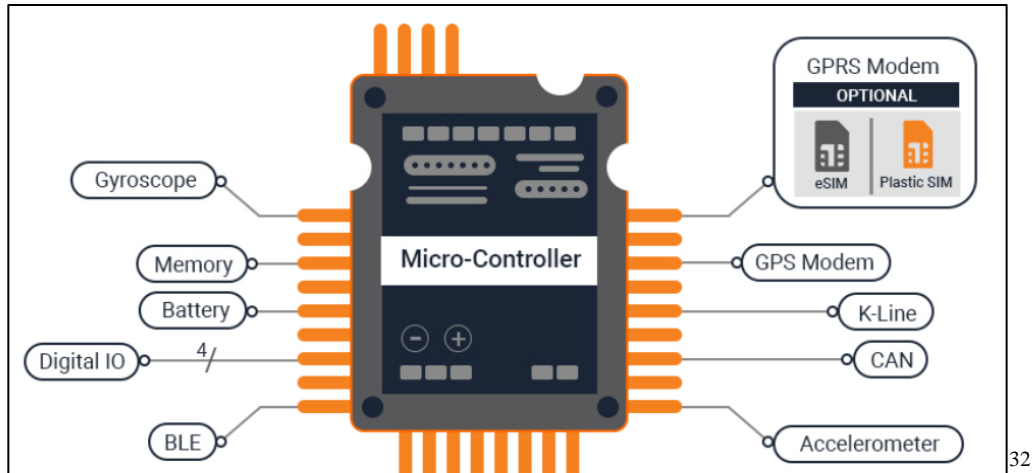
<sup>30</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/2020-connected-owners-manual.pdf>.



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<sup>31</sup> [https://www.mazda3tech.com/controller\\_area\\_network\\_can\\_system-1144.html](https://www.mazda3tech.com/controller_area_network_can_system-1144.html).





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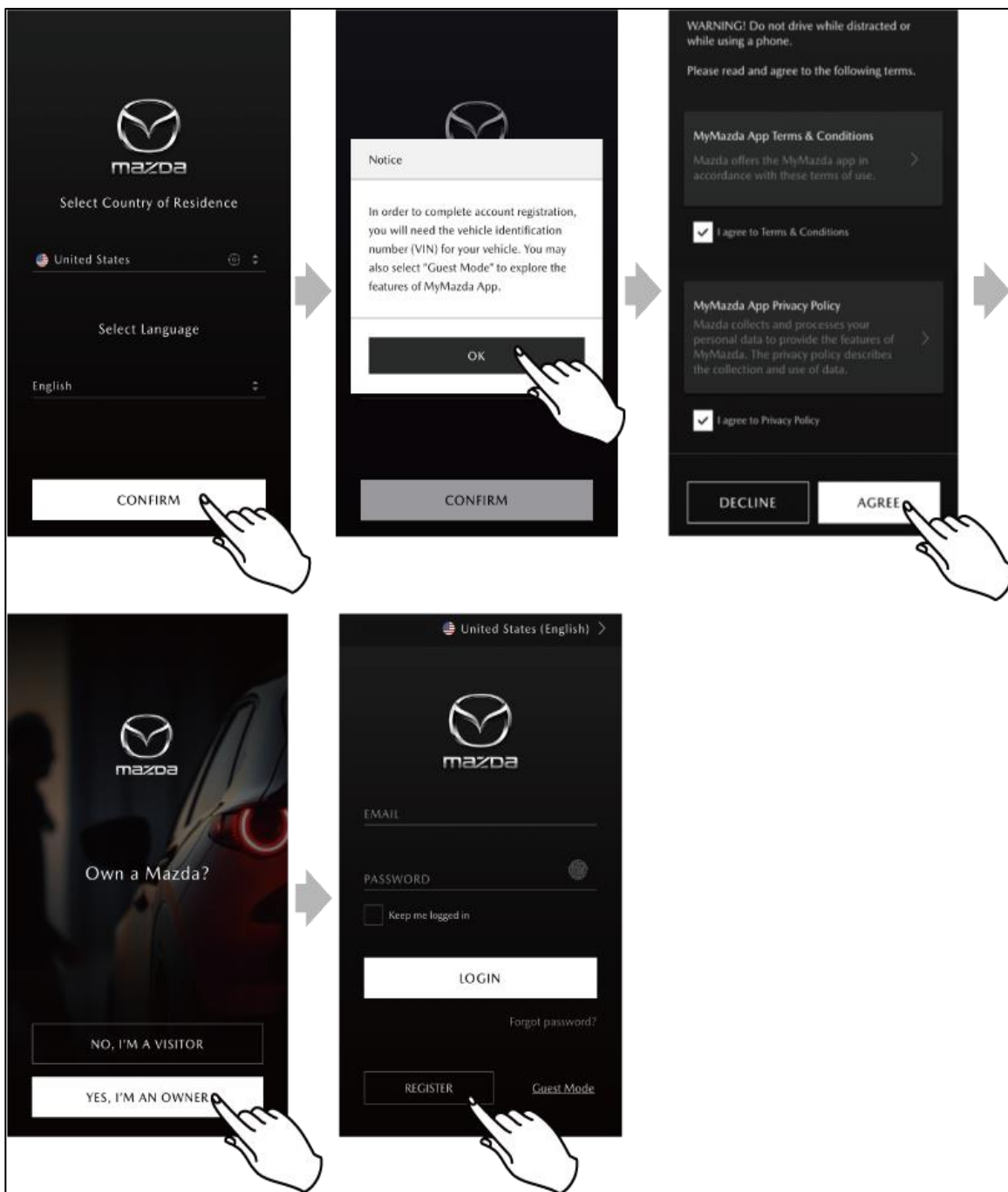
- A **CAN Bus** module that manages all the communication with the vehicle ECUs. Many of the commercially available telematics devices also support OBD II, MOST, LIN interfaces. The TCU communicates with the vehicle ECUs through CAN bus and fetches crucial information such as engine performance, vehicle speed, data from the Tire Pressure measuring Sensors, etc. A telematics system may also use K/Line bus to alert the user about theft (by notifying the user if the vehicle is switched on by anyone), or to enable remote locking and unlocking of the vehicle.

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37. The Mazda CX-30 comprises a plurality of monitoring units configured to communicate with at least one interface unit using a first protocol, wherein the at least one interface unit is communicably connected to a distributed control system, and the at least one interface unit is further configured to receive data values from the distributed control system using a second protocol; wherein the plurality of monitoring units comprises at least one complex monitoring unit (e.g., the Mazda server platform) and at least one basic monitoring unit (e.g., the MyMAzda App with Mazda Connected Services):

<sup>32</sup> <https://www.embitel.com/blog/embedded-blog/tech-behind-telematics-explained-how-does-a-vehicle-telematics-solution-work>.

<sup>33</sup> *Id.*



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<sup>34</sup> <https://www.mazdausa.com/static/manuals/mazda-connected-service/chapter3/section1.html>.

Connected Service is a service achieved through a communication network, therefore the vehicle is equipped with a dedicated communication unit.

- The communication unit conforms to radio wave laws and telecommunications business law standards, and transmits with the Connected Service system using the mobile phone network. Disassembly or modification of the communication unit may be punishable by law.
- If the communication unit in the vehicle has difficulty receiving mobile phone network radio waves, Connected Service may not function normally or instructed commands may not be executed.
- The communication unit equipped on your vehicle uses free software/open source software. Both or either one of the used free/open source software licensing information and source code is available at the following URL:  
<https://www.denso-ten.com/support/source/oem/najptcu/>
- The communication unit for Connected Service equipped on the vehicle may perform a NAD (Network Accessible Device) online update via the communication carrier. This update rarely happens, but takes approximately 3 minutes after the vehicle's engine has been turned off for 30 minutes and occurs between 3 o'clock and 5 o'clock in the morning. During this update, a part of the functions such as Remote Control are unusable.

35

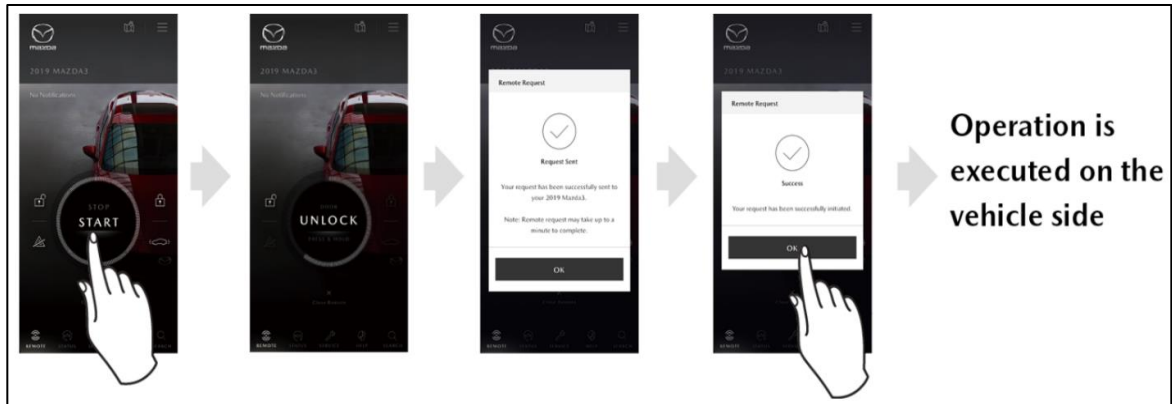
This Connectivity Privacy Policy describes how Mazda Motor of America, Inc., d/b/a Mazda North American Operations ("us", "our", or "we") may collect, use, share, store, and secure data collected from your Mazda vehicle equipped with an activated, factory-installed telematics system ("Connected Vehicle"), which data is remotely transmitted to us for certain business purposes, and to provide you with available connected services (collectively, "Connectivity"). For clarity, the term Connectivity, as it is used throughout this Connectivity Privacy Policy, refers to both our automatic collection and use of Default Data, as defined below, along with our collection and use of data and information if you elect to use our optional, subscription-based offering available on your Connected Vehicle, "Mazda Connected Services."

This Connectivity Privacy Policy only applies to the collection and use of data obtained from Connected Vehicles and information you provide related to Mazda Connected Services, and does not apply to: our other websites, applications, and online services that we provide ("Online Services"); any third-party websites or applications that we do not own, operate, or control; or features available through your Connected Vehicle's Mazda Connect infotainment system. For information regarding our Online Services, please review our Online Services [Terms and Conditions](#) and [Privacy Policy](#). For details regarding Mazda Connect, please refer to your Owner's Manual.

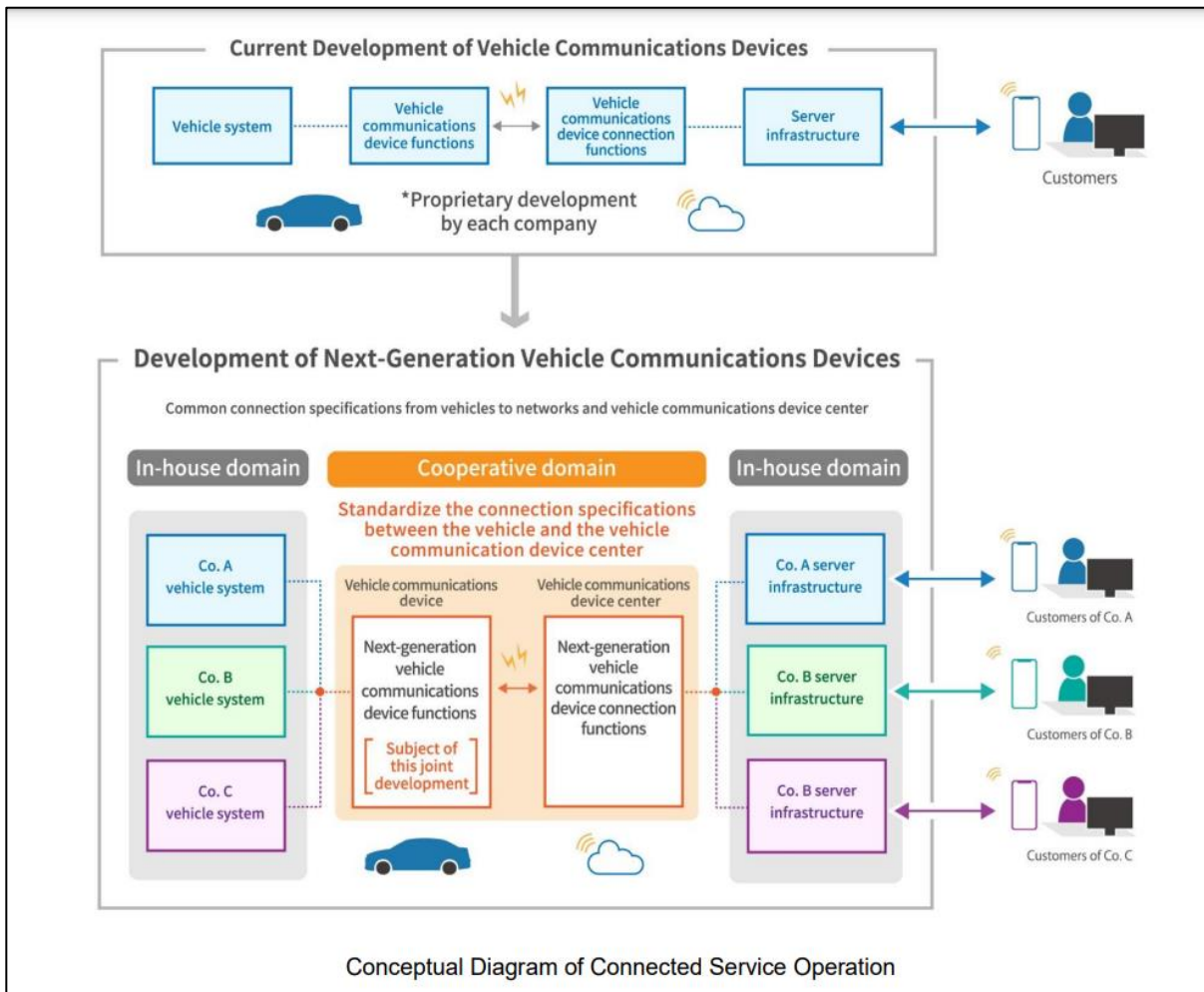
36

<sup>35</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/2020-connected-owners-manual.pdf>.

<sup>36</sup> <https://www.mazdausa.com/site/privacy-connectedservices>.



37



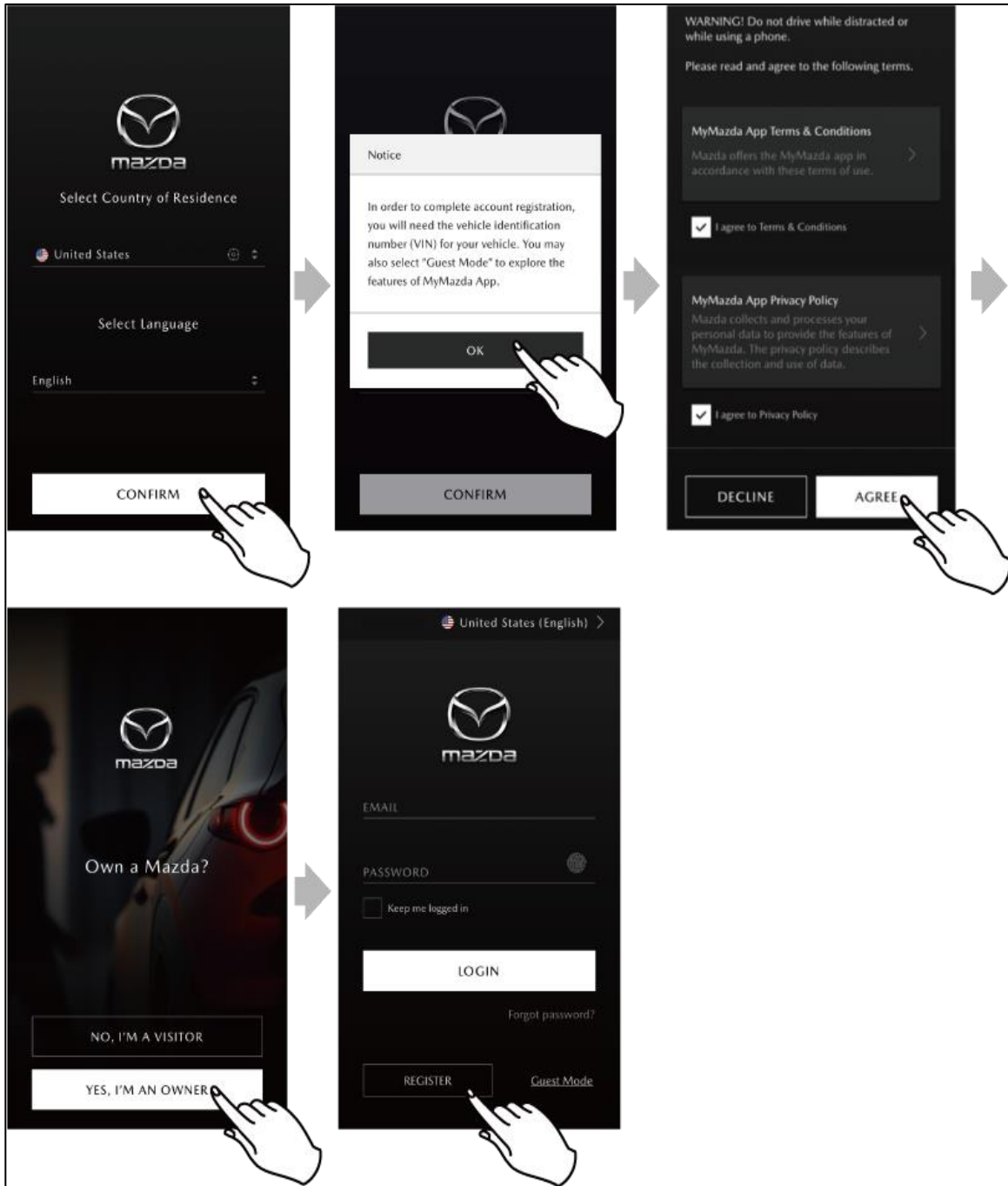
38

38. The Mazda CX-30 comprises a plurality of monitoring units configured to

<sup>37</sup> <https://www.mazdausa.com/static/manuals/mazda-connected-service/chapter4/section3.html>.

<sup>38</sup> <https://newsroom.mazda.com/en/publicity/release/2021/202104/210427a.pdf>.

communicate with at least one interface unit using a first protocol, wherein the at least one interface unit is communicably connected to a distributed control system, and the at least one interface unit is further configured to receive data values from the distributed control system using a second protocol; wherein the at least one complex monitoring unit (e.g., the Mazda server platform) is configured to receive a plurality of data values (e.g., engine performance, vehicle speed, and other data) from the at least one interface unit (e.g., the TCU) using the first protocol (e.g., cellular and/or Bluetooth) and to generate programmatic instructions for the at least one basic monitoring unit (e.g., the MyMazda App):



39

<sup>39</sup> <https://www.mazdausa.com/static/manuals/mazda-connected-service/chapter3/section1.html>.

Connected Service is a service achieved through a communication network, therefore the vehicle is equipped with a dedicated communication unit.

- The communication unit conforms to radio wave laws and telecommunications business law standards, and transmits with the Connected Service system using the mobile phone network. Disassembly or modification of the communication unit may be punishable by law.
- If the communication unit in the vehicle has difficulty receiving mobile phone network radio waves, Connected Service may not function normally or instructed commands may not be executed.
- The communication unit equipped on your vehicle uses free software/open source software. Both or either one of the used free/open source software licensing information and source code is available at the following URL:  
<https://www.denso-ten.com/support/source/oem/najptcu/>
- The communication unit for Connected Service equipped on the vehicle may perform a NAD (Network Accessible Device) online update via the communication carrier. This update rarely happens, but takes approximately 3 minutes after the vehicle's engine has been turned off for 30 minutes and occurs between 3 o'clock and 5 o'clock in the morning. During this update, a part of the functions such as Remote Control are unusable.

40

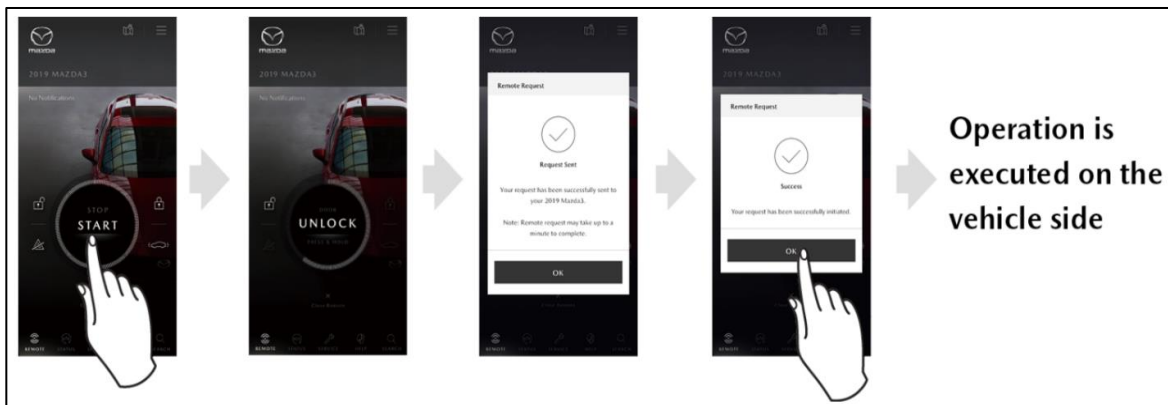
This Connectivity Privacy Policy describes how Mazda Motor of America, Inc., d/b/a Mazda North American Operations ("us", "our", or "we") may collect, use, share, store, and secure data collected from your Mazda vehicle equipped with an activated, factory-installed telematics system ("Connected Vehicle"), which data is remotely transmitted to us for certain business purposes, and to provide you with available connected services (collectively, "Connectivity"). For clarity, the term Connectivity, as it is used throughout this Connectivity Privacy Policy, refers to both our automatic collection and use of Default Data, as defined below, along with our collection and use of data and information if you elect to use our optional, subscription-based offering available on your Connected Vehicle, "Mazda Connected Services."

This Connectivity Privacy Policy only applies to the collection and use of data obtained from Connected Vehicles and information you provide related to Mazda Connected Services, and does not apply to: our other websites, applications, and online services that we provide ("Online Services"); any third-party websites or applications that we do not own, operate, or control; or features available through your Connected Vehicle's Mazda Connect infotainment system. For information regarding our Online Services, please review our Online Services [Terms and Conditions](#) and [Privacy Policy](#). For details regarding Mazda Connect, please refer to your Owner's Manual.

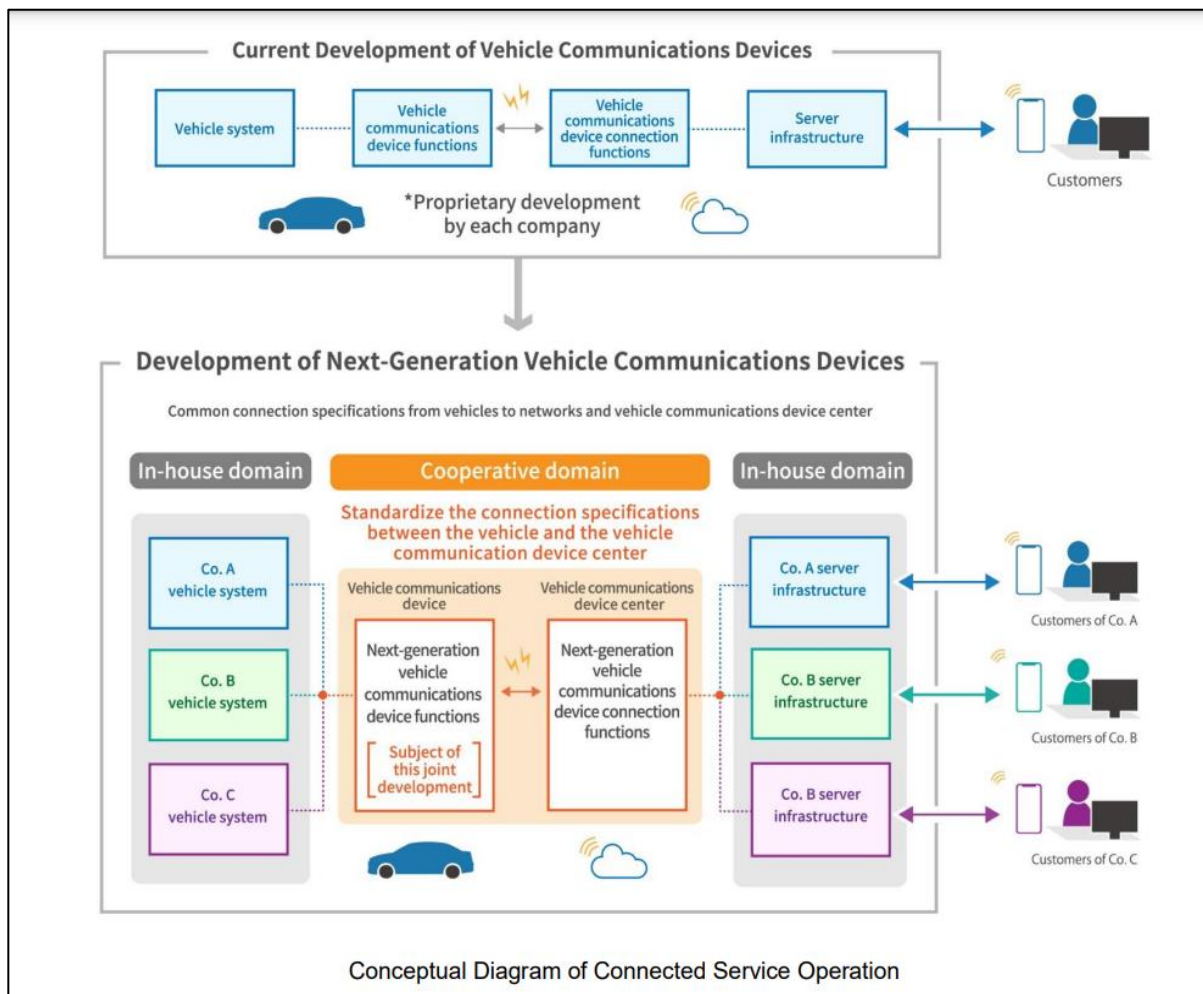
41

<sup>40</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/2020-connected-owners-manual.pdf>.

<sup>41</sup> <https://www.mazdausa.com/site/privacy-connectedservices>.



42



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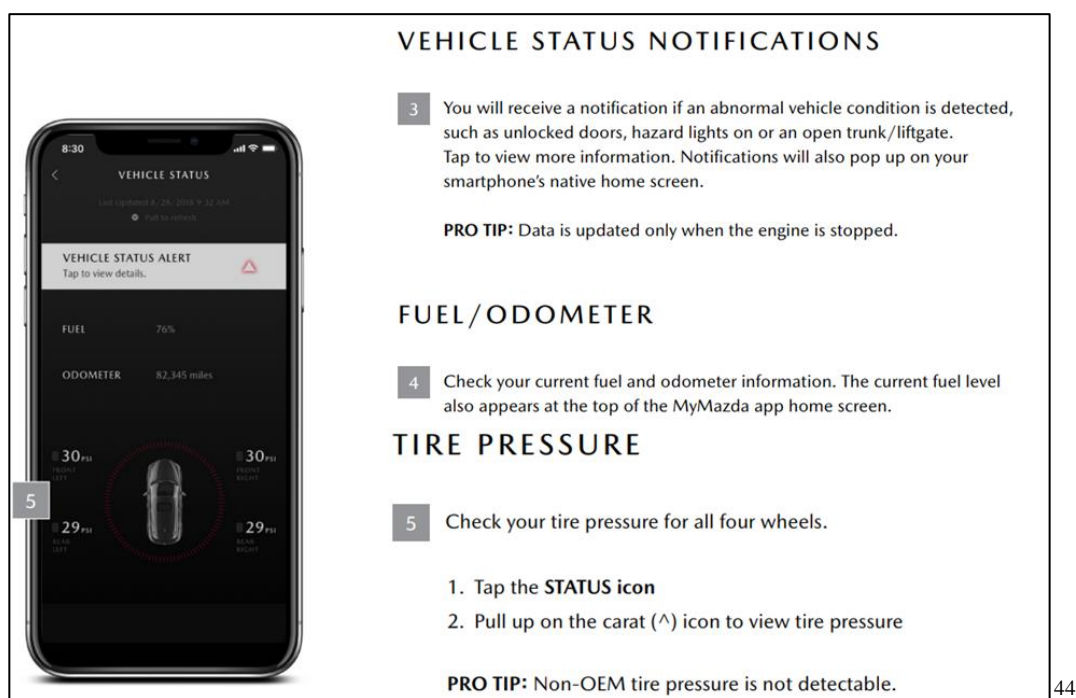
39. The Mazda CX-30 comprises a plurality of monitoring units configured to

<sup>42</sup> <https://www.mazdausa.com/static/manuals/mazda-connected-service/chapter4/section3.html>.

<sup>43</sup> <https://newsroom.mazda.com/en/publicity/release/2021/202104/210427a.pdf>.



communicate with at least one interface unit using a first protocol, wherein the at least one interface unit is communicably connected to a distributed control system, and the at least one interface unit is further configured to receive data values from the distributed control system using a second protocol; wherein the at least one basic monitoring unit (e.g., the MyMazda App) is configured to receive the programmatic instructions (e.g., vehicle status data) and in response thereto to receive a subset of the plurality of data values from the at least one interface unit (e.g., TCU) using the first protocol (e.g., cellular):



44

40. Defendant has and continues to indirectly infringe one or more claims of the '002 Patent by knowingly and intentionally inducing others, including Mazda customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

<sup>44</sup> <https://www.mazdausa.com/siteassets/pdf/owners-optimized/optimized-connected-vehicle/mazda-connect-and-connected-services-user-guide.pdf>.

41. Defendant, with knowledge that these products, or the use thereof, infringe the '002 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '002 Patent by providing these products to customers and end-users for use in an infringing manner. Alternatively, on information and belief, Defendant has adopted a policy of not reviewing the patents of others, including specifically those related to Defendant's specific industry, thereby remaining willfully blind to the Patents-in-Suit at least as early as the issuance of the Patents-in-Suit.

42. Defendant has and continues to induce infringement by others, including customers and end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '002 Patent, but while remaining willfully blind to the infringement. Defendant has and continues to induce infringement by its customers and end-users by supplying them with instructions on how to operate the infringing technology in an infringing manner, while also making publicly available information on the infringing technology via Defendant's websites, product literature and packaging, and other publications.<sup>45</sup>

43. LAG has suffered damages as a result of Defendant's direct and indirect infringement of the '002 Patent in an amount to be proved at trial.

44. LAG has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '002 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

**COUNT III**  
**(Infringement of the '238 Patent)**

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<sup>45</sup> See Mazda CX-30 Owner's Manual and other materials, available at: <https://www.mazdausa.com/owners/how-to-use-my-mazda>.

45. Paragraphs 1 through 17 are incorporated by reference as if fully set forth herein.

46. LAG has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '238 Patent.

47. Defendant has and continues to infringe the '238 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by one or more of making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '238 Patent. Such products include, but are not limited to, Mazda vehicles with direct injection engines, in all trims and configurations, including the Accused Vehicles, such as the Skyactiv-G 2.5-liter, four-cylinder naturally aspirated engine, direct injection diesel engine, in the Mazda CX-30.

48. For example, Defendant has and continues to directly infringe at least Claim 1 of the '238 Patent by making, using, offering to sell, selling, and/or importing into the United States products that include Mazda vehicles with direct injection engines, in all trims and configurations, including the Accused Vehicles, such as Skyactiv-G 2.5-liter, four-cylinder naturally aspirated engine, in the Mazda CX-30.

49. Mazda CX-30 comprises a directly injecting internal combustion engine (e.g., Skyactiv-G 2.5-liter, four-cylinder naturally aspirated engine), comprising at least one cylinder which has a combustion space (e.g., combustion chambers in the four-cylinder engine):

The standard CX-30 2.5 S features Mazda's updated Skyactiv-G 2.5-liter, four-cylinder naturally-aspirated engine. This efficient powertrain delivers 191 horsepower and 186 lb-ft of torque with any fuel grade and is paired with a quick-shifting six-speed automatic transmission with manual mode and sport mode.

All CX-30 models are equipped with the latest i-Activ AWD which continuously monitors weight distribution and shifts power to the appropriate wheels, providing drivers a near instant response to inputs. In addition, all CX-30 models are equipped with G-Vectoring Control Plus and Off-Road Traction Assist as standard.

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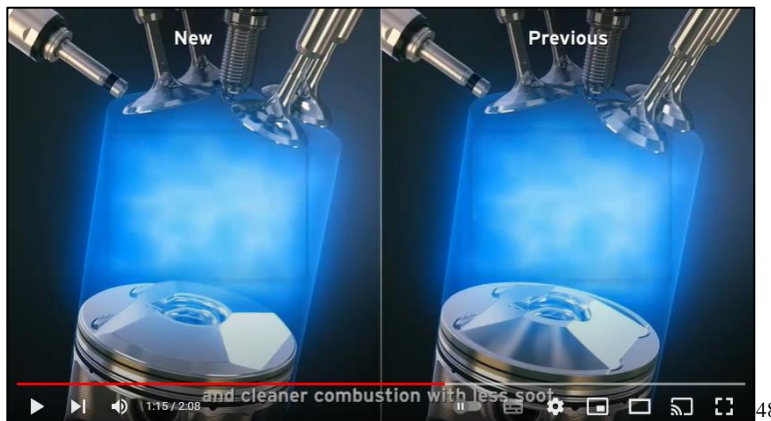
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<sup>46</sup> <https://news.mazdausa.com/2023-09-19-2024-Mazda-CX-30-Pricing-and-Packaging>.

A SMARTER APPROACH TO MAKING DRIVING BETTER.

When Driving Matters, excellent fuel efficiency should never come at the cost of performance. So, of course, our driving-obsessed engineers found a way to enhance both. It's called SKYACTIV® TECHNOLOGY<sup>1</sup>. Every aspect of the vehicle is engineered to maximize driving dynamics and efficiency: from body construction and engine technology, to the chassis and transmission. Offering impressive EPA-estimated MPG ratings. Without compromising performance. SKYACTIV TECHNOLOGY is just one of the ways Mazda makes driving better.

47



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50. The Mazda CX-30 comprises a directly injecting internal combustion engine, comprising at least one cylinder which has a combustion space in which a piston executes an

<sup>47</sup> <https://www.mazdausa.com/why-mazda/skyactiv>.

<sup>48</sup> <https://www.youtube.com/watch?v=iJIVsXPrENc>.

<sup>49</sup> <https://www.youtube.com/watch?v=72q69lb3njo>.

oscillating movement (e.g., piston movement is oscillatory, increasing pressure and temperature in preparation for combustion, aided by injectors to maximize the benefits of higher fuel pressure), and an injection nozzle for injection of fuel into the combustion space:



51. The Mazda CX-30 comprises a directly injecting internal combustion engine, comprising at least one cylinder which has a combustion space in which a piston executes an oscillating movement, and an injection nozzle for injection of fuel into the combustion space wherein the piston has a piston recess, which, in a central region thereof, has an elevation extending

<sup>50</sup> <https://www.youtube.com/watch?v=iJIVsXPrENc>.

<sup>51</sup> *Id.*

in a cylinder head direction (e.g., the top of the cylinder with a recess shape), and a surface of the piston recess adjoining the elevation in a recess edge direction is connected to the elevation via a radius:



52. The Mazda CX-30 comprises a directly injecting internal combustion engine, comprising at least one cylinder which has a combustion space in which a piston executes an oscillating movement, and an injection nozzle for injection of fuel into the combustion space wherein the piston has a piston recess, which, in a central region thereof, has an elevation extending in a cylinder head direction, and a surface of the piston recess adjoining the elevation in a recess edge direction is connected to the elevation via a radius so that an injection jet impinging the surface and injected as early as possible is distributed both in an elevation direction and in the recess edge direction, and the surface is substantially planar and has an ascending gradient in the recess edge direction such that an injection jet injected as late as possible impinges onto the surface, the last-mentioned injection jet being distributed both in the elevation direction and in the recess edge direction:

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<sup>52</sup> <https://www.youtube.com/watch?v=72q691b3njo>.



53. Defendant has and continues to indirectly infringe one or more claims of the '238 Patent by knowingly and intentionally inducing others, including Mazda customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

54. Defendant, with knowledge that these products, or the use thereof, infringe the '238 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '238 Patent by providing these products to customers and end-users for use in an infringing manner. Alternatively, on information and belief, Defendant has adopted a policy of not reviewing the patents of others, including specifically those related to Defendant's specific industry, thereby remaining willfully blind to the Patents-in-Suit at least as early as the issuance of the Patents-in-Suit.

55. Defendant has and continues to induce infringement by others, including customers and end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '238 Patent,

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<sup>53</sup> <https://www.youtube.com/watch?v=72q691b3njo>.

but while remaining willfully blind to the infringement. Defendant has and continues to induce infringement by its customers and end-users by supplying them with instructions on how to operate the infringing technology in an infringing manner, while also making publicly available information on the infringing technology via Defendant's websites, product literature and packaging, and other publications.<sup>54</sup>

56. LAG has suffered damages as a result of Defendant's direct and indirect infringement of the '238 Patent in an amount to be proved at trial.

57. LAG has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '238 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

**COUNT IV**  
**(Infringement of the '353 Patent)**

58. Paragraphs 1 through 17 are incorporated by reference as if fully set forth herein.

59. LAG has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '353 Patent.

60. Defendant has and continues to infringe the '353 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by one or more of making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '353 Patent. Such products include, but are not limited to, Mazda's i-ACTIVSENSE system, included in vehicles, in all trims and configurations, including the Accused Vehicles, such as the Mazda CX-30.

61. For example, Defendant has and continues to directly infringe at least Claim 1 of


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<sup>54</sup> See Mazda CX-5 Owner's Manual and other materials, available at: <https://www.mazdausa.com/owners/how-to-use-my-mazda>.



the '353 Patent by making, using, offering to sell, selling, and/or importing into the United States products that include Mazda's i-ACTIVSENSE system, such as the Mazda CX-30.

62. The Mazda CX-30 performs a method of forming an image of a mobile object:



I-ACTIVSENSE<sup>®</sup>

An active approach to safety, i-ACTIVSENSE<sup>®</sup> uses milliwave radars and cameras to keep you in tune with your surroundings. While keeping you focused on the road. Get maximum confidence and enjoyment out of your drive knowing these available systems are constantly working to alert you to potential hazards, avert collisions, or reduce their severity when one is unavoidable. <sup>1</sup> It's another example of our Jinba Ittai philosophy of creating oneness between car and driver.

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**i-ACTIVSENSE**

i-ACTIVSENSE is a collective term covering a series of advanced safety and driver support systems which make use of cameras and sensors. The systems consist of active safety and pre-crash safety systems.

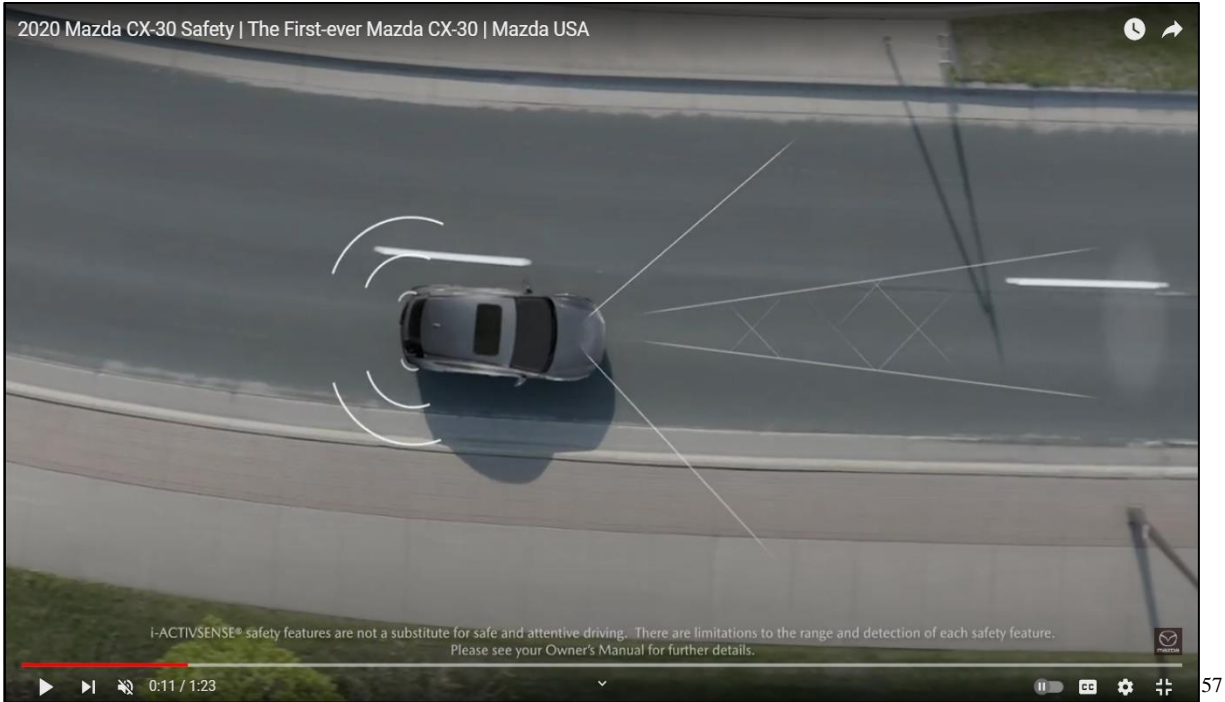
These systems are designed to assist the driver in safer driving by reducing the load on the driver and helping to avert collisions or reduce their severity. However, because each system has its limitations, always drive carefully and do not rely solely on the systems.

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<sup>55</sup> <https://www.mazdausa.com/why-mazda/safety>.

<sup>56</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.



#### Front Camera/Side Cameras/Rear Camera

Your vehicle is equipped with a front camera, side cameras, and a rear camera. The 360°View Monitor uses each camera.

Refer to 360°View Monitor ([Search](#)).

The front camera, side cameras, and rear camera shoot images of the area surrounding the vehicle.

Each camera is installed to the following positions.

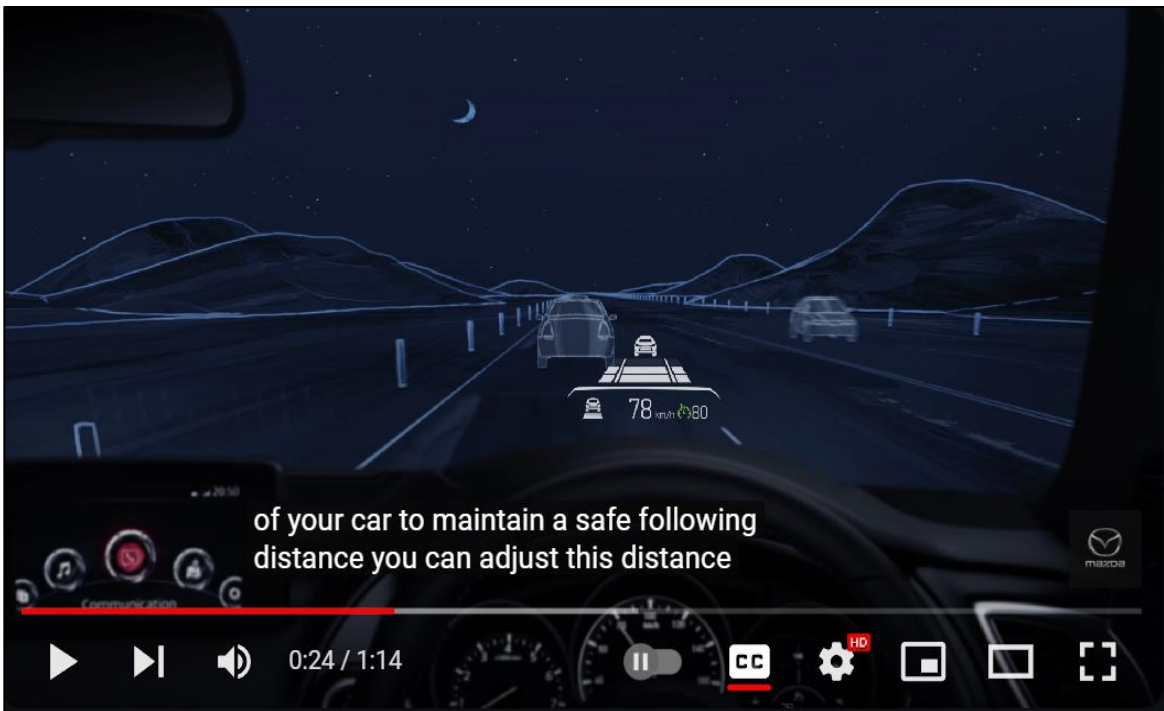
58

<sup>57</sup> <https://www.youtube.com/watch?v=WZe0oqTOTnU>.

<sup>58</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.



59



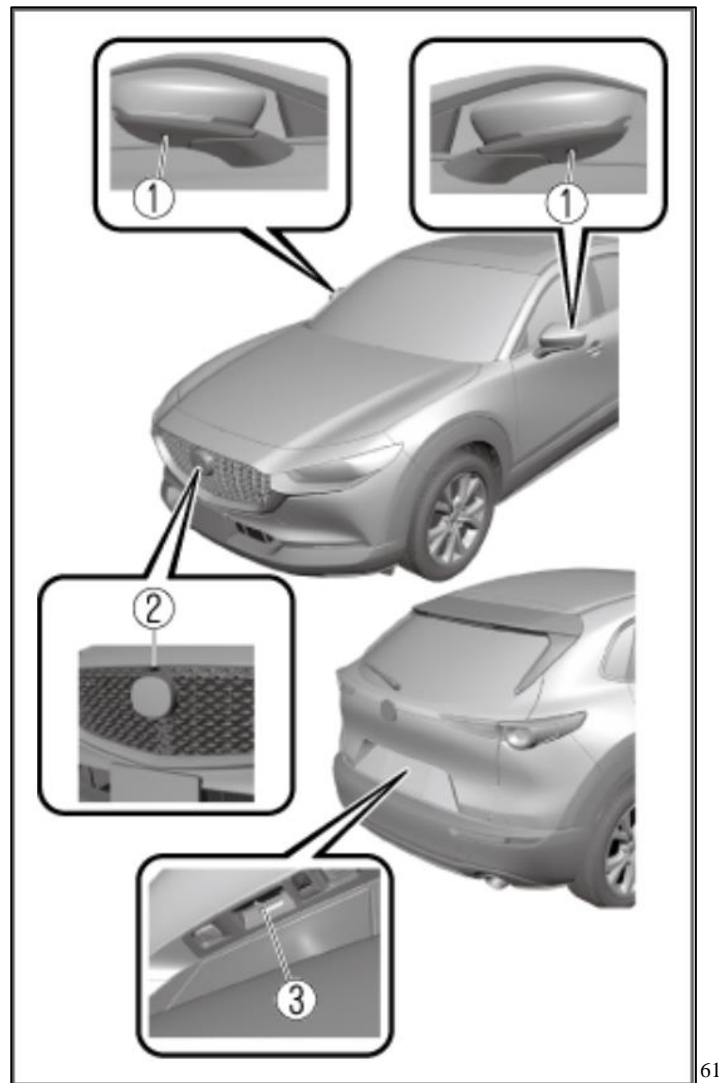
60

63. The Mazda CX-30 performs a method of obtaining a plurality of first images (e.g.,

<sup>59</sup> <https://youtu.be/kbh6P3yTIms?si=vqRFfIkL68FAfWZg>.

<sup>60</sup> [https://youtu.be/tkIBNuQ4JrE?si=-uSK\\_90MIDnZRYlo](https://youtu.be/tkIBNuQ4JrE?si=-uSK_90MIDnZRYlo).

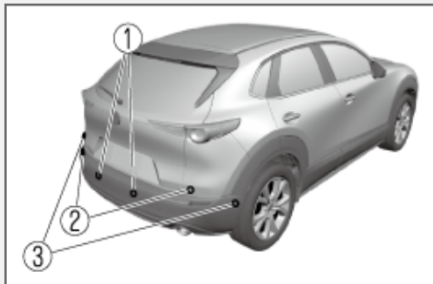
images the 360-degree image cameras) of the mobile object using a first imaging technique (e.g., 360-degree image camera processing) while obtaining a plurality of first measurements corresponding to movements of the mobile object using a first sensor system, the first sensor system (e.g., ultrasonic sensors) being independent from the first imaging technique:



<sup>61</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

#### Rear/Rear corner/Rear Side Ultrasonic Sensor

The ultrasonic sensors function by emitting ultrasonic waves which are reflected off obstructions at the rear and the returning ultrasonic waves are picked up by the ultrasonic sensors.



1. Rear ultrasonic sensor
2. Rear corner ultrasonic sensor
3. Rear side ultrasonic sensor

The ultrasonic sensors are mounted in the rear bumper.

62

64. The Mazda CX-30 performs a method of associating the plurality of first images (e.g., images from the 360-degree cameras) with first movement states of the mobile object using the first measurements (e.g., data from ultrasonic sensors):

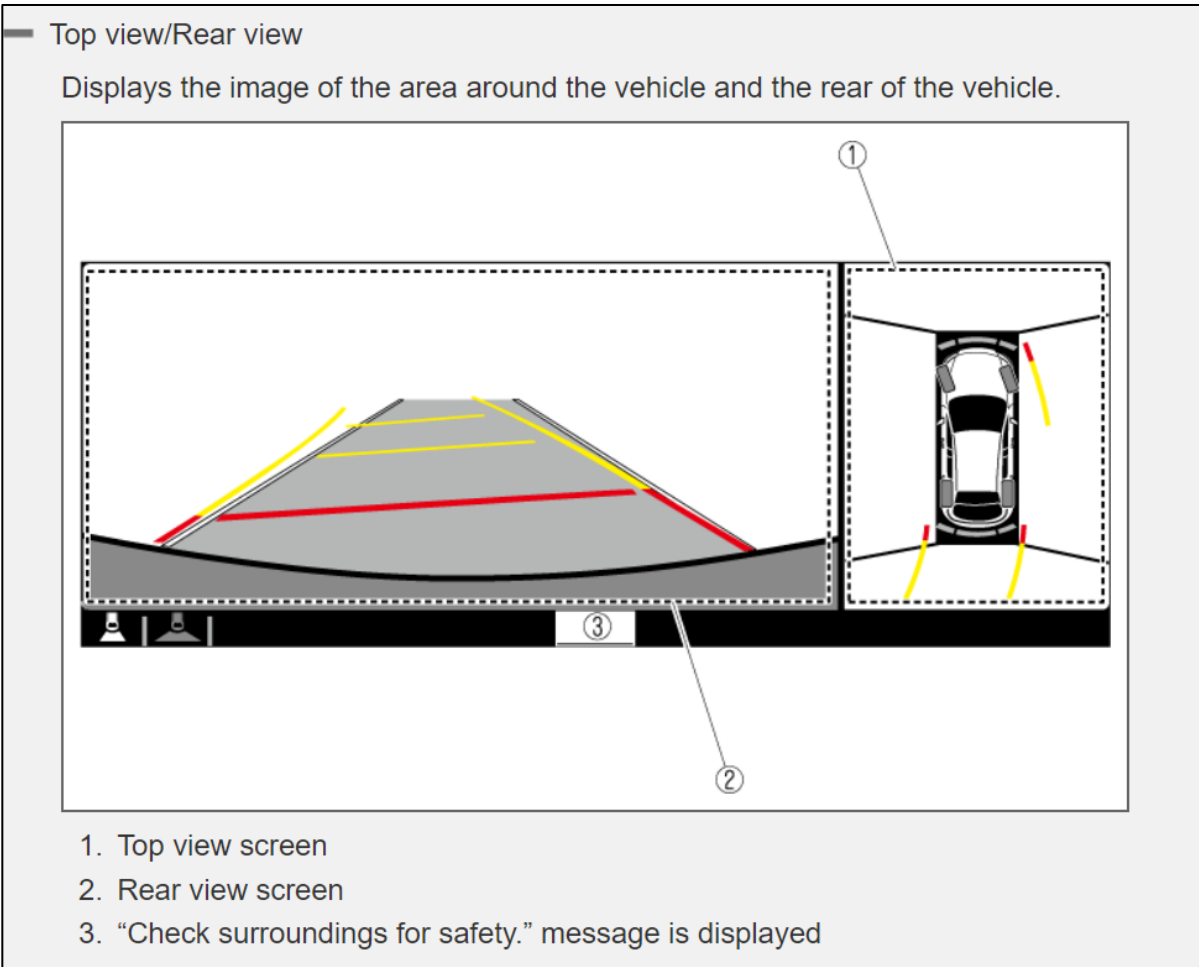
#### — In-vehicle data processing

Electronic control units are installed in your vehicle. These control units process data they, for example, receive from vehicle sensors, generate themselves or exchange with each other. Some control units are required for the safe operation of your vehicle, others provide you with support while driving (driver assistance systems) or enable comfort or infotainment functions.

63

<sup>62</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

<sup>63</sup> [https://owners-manual.mazda.com/gen/en/cx-30/cx-30\\_8hq1ee19i/contents/09130100.html](https://owners-manual.mazda.com/gen/en/cx-30/cx-30_8hq1ee19i/contents/09130100.html).



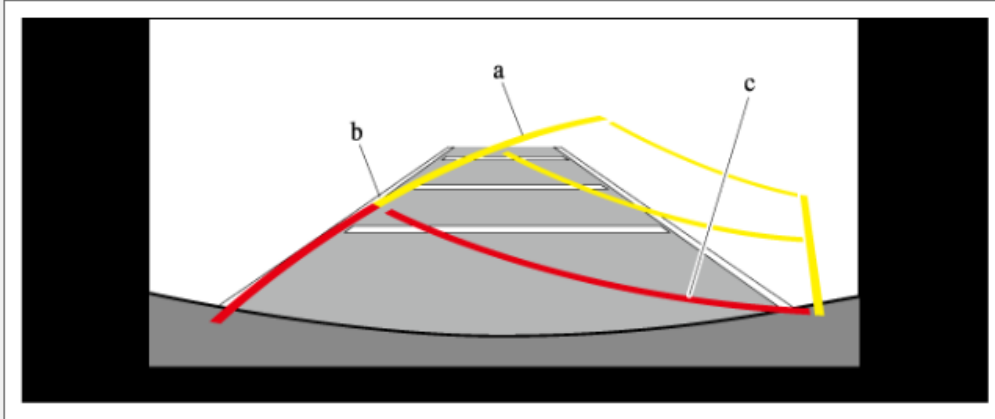
<sup>64</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

### Viewing the Display

#### — Predicted vehicle path assist lines display type

The projected path guidance mode displays the predicted path of the vehicle after you turn the steering wheel.

Use this mode for parking your vehicle in a parking space or garage.



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<sup>65</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05170100.html>.

a) Projected vehicle path (yellow)  
These lines are displayed as a reference for the projected path of the vehicle.  
The lines displaying the projected vehicle path change after you turn the steering wheel.

b) Extended vehicle width lines (blue)  
These lines indicate the vehicle's extended width.  
These lines are not displayed when the vehicle's wheels are in the straight-ahead position.

c) Distance guide lines (red)  
These lines indicate the approximate distance to a point measured from the vehicle's rear (from the end of the bumper).  
The blue line indicates the point about 50 cm (19 in) from the rear bumper.  
The red and yellow lines, which change position after you turn the steering wheel, indicate the points about 50 cm (19 in) for the red line and 100 cm (39.3 in) for the yellow lines from the rear bumper (at the center point of each of the lines).  
A degree of error occurs when the wheels are not in the straight-ahead position.  
In the above illustration, the right side of the vehicle is in a position closer to the actual distance displayed by the distance guide lines (red: about 50 cm (19 in) point, yellow: about 100 cm (39.3 in) point behind the rear bumper), whereas the left side is in a position farther away.

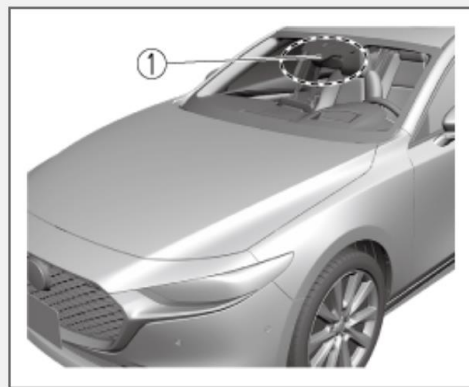
66

65. The Mazda CX-30 a method of obtaining a plurality of second images of the mobile object using a second imaging technique (e.g., images from the front camera image processing) while obtaining a plurality of second measurements corresponding to movements of the mobile object using a second sensor system (e.g. radar sensors), the second sensor system being independent from the second imaging technique:

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<sup>66</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05170100.html>.





1. Forward Sensing Camera (FSC)

The Forward Sensing Camera (FSC) determines the conditions ahead of the vehicle while traveling at night and detects traffic lanes. The distance in which the Forward Sensing Camera (FSC) can detect objects varies depending on the surrounding conditions.

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<sup>67</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

## Front Radar Sensor

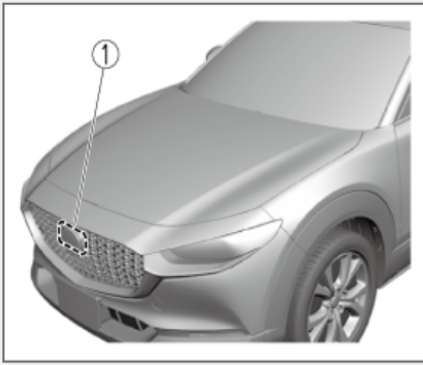
Your vehicle is equipped with a front radar sensor.

The following systems also use the front radar sensor.

- Distance & Speed Alert (DSA)
- Mazda Radar Cruise Control (MRCC)
- Mazda Radar Cruise Control with Stop & Go function (MRCC with Stop & Go function)
- Traffic Jam Assist (TJA)
- Smart Brake Support (SBS)

The front radar sensor functions by detecting the radio waves reflected off a vehicle ahead or an obstruction sent from the radar sensor.

The front radar sensor is mounted behind the front emblem.



1. Front radar sensor

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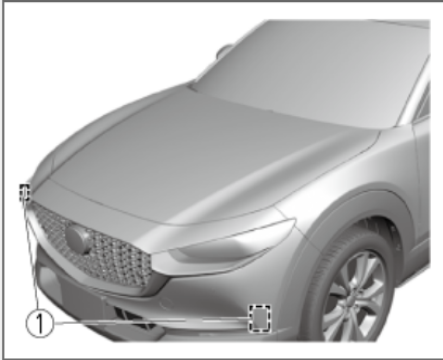
<sup>68</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

### Front Side Radar Sensor

Your vehicle is equipped with front side radar sensor. The following systems also use the front side radar sensor.

- Front Cross Traffic Alert (FCTA)

The front side radar sensor function by detecting the radio waves reflected off a vehicle approaching from the front or an obstruction sent from the radar sensor.



1. Front side radar sensor

The front side radar sensors are installed inside the front bumper, one on each side.

Always keep the surface of the front bumper near the front side radar sensors clean so that they operate normally. Also, do not apply items such as stickers.

69

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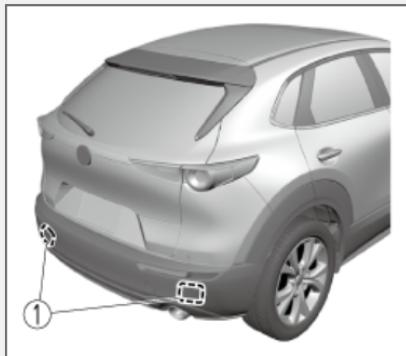
<sup>69</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

### Rear Side Radar Sensor

Your vehicle is equipped with rear side radar sensor. The following systems also use the rear side radar sensor.

- Blind Spot Monitoring (BSM)
- Rear Cross Traffic Alert (RCTA)
- Smart Brake Support [Rear Crossing] (SBS-RC)

The rear side radar sensors emit radio waves and detect the radio waves reflected off a vehicle approaching from the rear or an obstruction.



1. Rear side radar sensor

The rear side radar sensors are installed inside the rear bumper, one on each side.

Always keep the surface of the rear bumper near the rear side radar sensors clean so that they operate normally. Also, do not apply items such as stickers.

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66. The Mazda CX-30 performs a method of associating the plurality of second images (e.g., images from the front camera) with second movement states of the mobile object using the first measurements (e.g., the radar data with the ultrasonic sensor data):

#### — In-vehicle data processing

Electronic control units are installed in your vehicle. These control units process data they, for example, receive from vehicle sensors, generate themselves or exchange with each other. Some control units are required for the safe operation of your vehicle, others provide you with support while driving (driver assistance systems) or enable comfort or infotainment functions.

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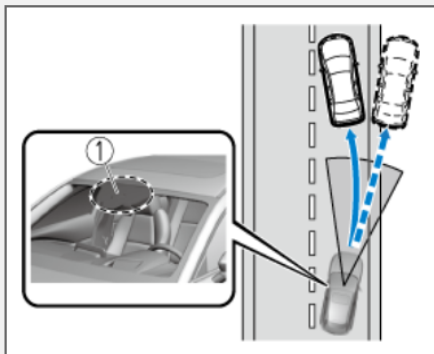
<sup>70</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

<sup>71</sup> [https://owners-manual.mazda.com/gen/en/cx-30/cx-30\\_8hq1ee19i/contents/09130100.html](https://owners-manual.mazda.com/gen/en/cx-30/cx-30_8hq1ee19i/contents/09130100.html).

### Lane-keep Assist System (LAS)

The LAS provides steering assistance to help the driver stay within the vehicle lane if the vehicle might be deviating.

The forward sensing camera (FSC) detects the white lines (yellow lines) of the vehicle lane in which the vehicle is traveling and if the system determines that the vehicle may deviate from its lane, it operates the electric power steering to assist the driver's steering operation. The system also alerts the driver by displaying an alert on the multi-information display and the active driving display. Use the system when you drive the vehicle on roads with white (yellow) lines such as expressways and highways.



1. Forward sensing camera (FSC)

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### Mazda Radar Cruise Control with Stop & Go function (MRCC with Stop & Go function)

The MRCC with Stop & Go function system is designed to maintain headway control<sup>\*1</sup> with a vehicle ahead according to your vehicle's speed using a front radar sensor to detect the distance to the vehicle ahead and a preset vehicle speed without you having to use the accelerator or brake pedals.

\*1 Headway Control: Control of the distance between your vehicle and the vehicle ahead detected by the Mazda Radar Cruise Control (MRCC) system.

Additionally, if your vehicle starts closing in on the vehicle ahead such as if the vehicle ahead brakes suddenly, a warning sound and a warning indication in the display are activated simultaneously to alert you to maintain a sufficient distance between the vehicles.

If the vehicle ahead stops while you are following behind it, your vehicle will stop and be held stopped automatically (stop hold control), and headway control will resume when you resume driving the vehicle such as by pressing the RES switch.

Also refer to the following before using the MRCC with Stop & Go function.

- AUTOHOLD ([Search](#))
- Forward Sensing Camera (FSC) ([Search](#))
- Front radar sensor ([Search](#))

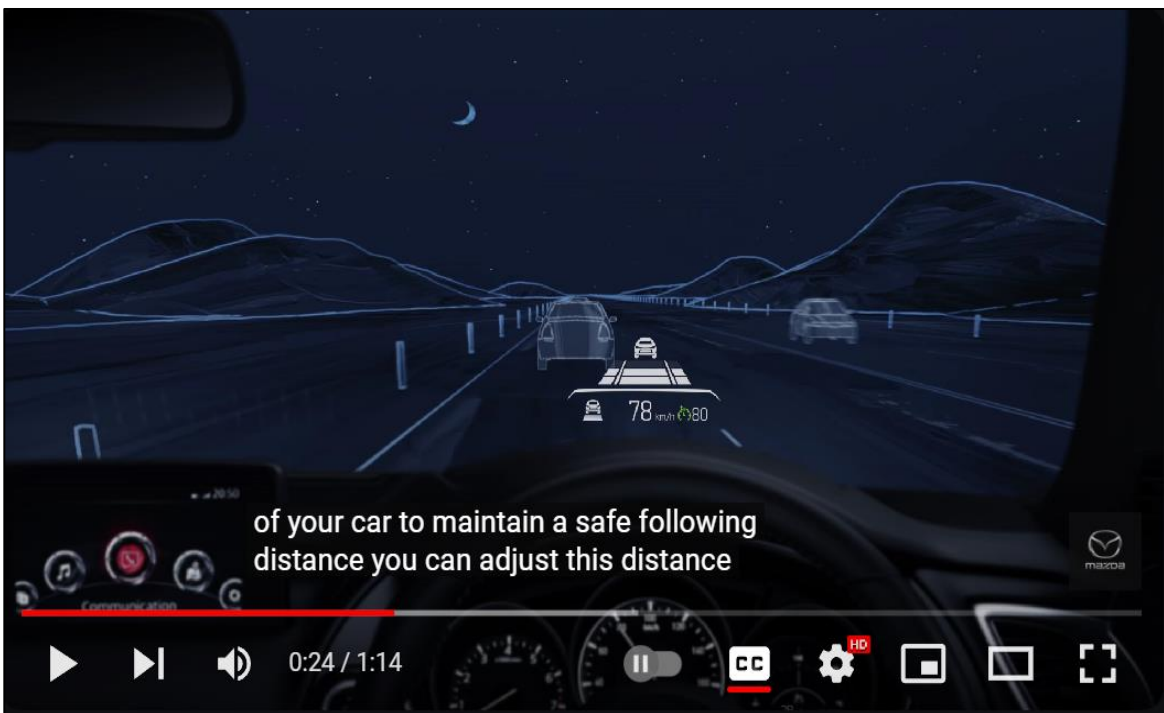
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<sup>72</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

<sup>73</sup> *Id.*



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67. The Mazda CX-30 performs a method of forming an image of the mobile object

<sup>74</sup> <https://youtu.be/kbh6P3yTIms?si=vqRFfIkL68FAfWZg>.

<sup>75</sup> [https://youtu.be/tkIBNuQ4JrE?si=-uSK\\_90MIDnZRYlo](https://youtu.be/tkIBNuQ4JrE?si=-uSK_90MIDnZRYlo).

based on said plurality of first images (e.g., images from the 360-degree cameras), said associated plurality of first movement measurements, and said first movement states (e.g., from the ultrasonic sensors) and on said plurality of second images (e.g., from the front camera), said associated plurality of second movement measurements, and said second movement states (e.g., from the radar sensors), wherein the first imaging technique (e.g., the 360-degree cameras) is different from the second imaging technique (e.g., the front camera):

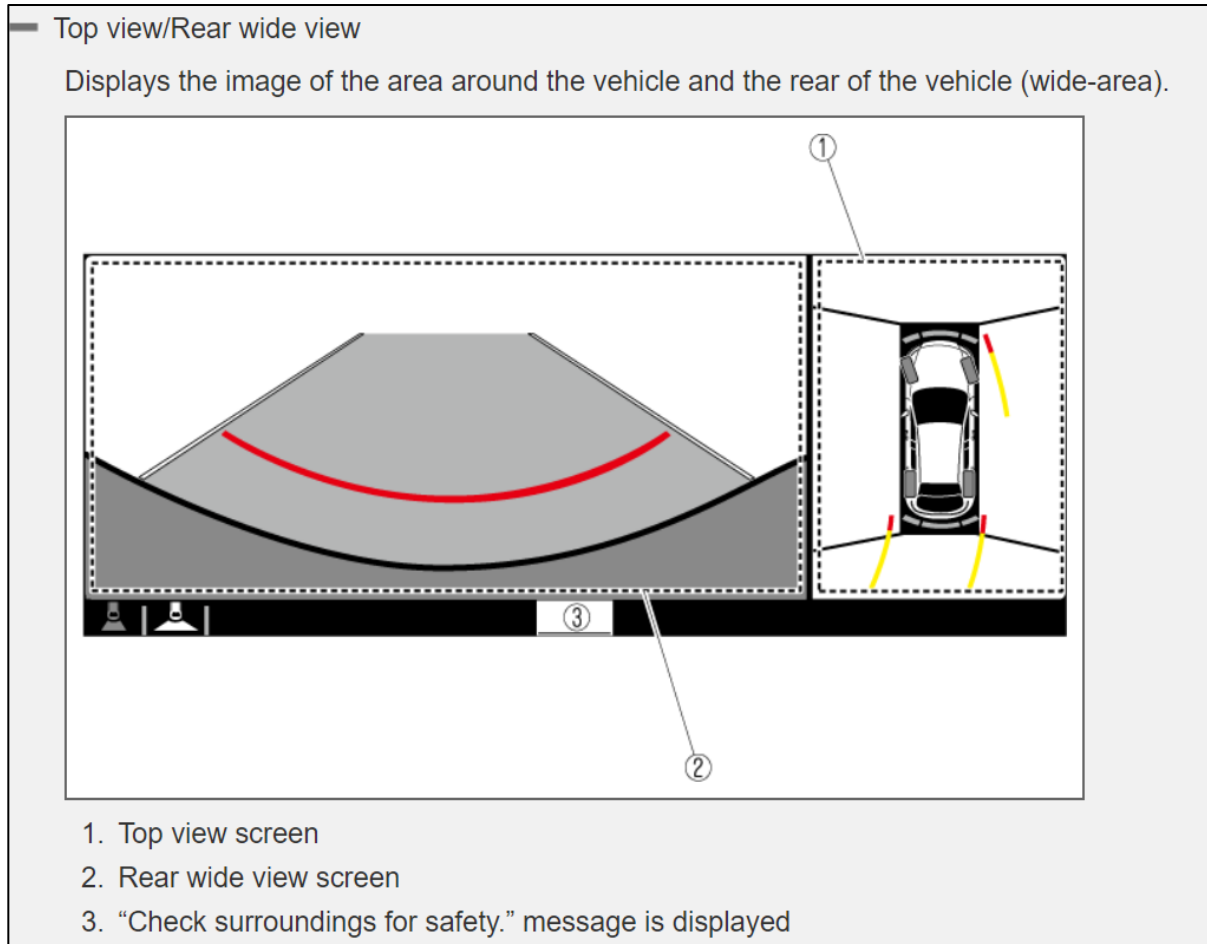
— In-vehicle data processing

Electronic control units are installed in your vehicle. These control units process data they, for example, receive from vehicle sensors, generate themselves or exchange with each other. Some control units are required for the safe operation of your vehicle, others provide you with support while driving (driver assistance systems) or enable comfort or infotainment functions.

<sup>76</sup>

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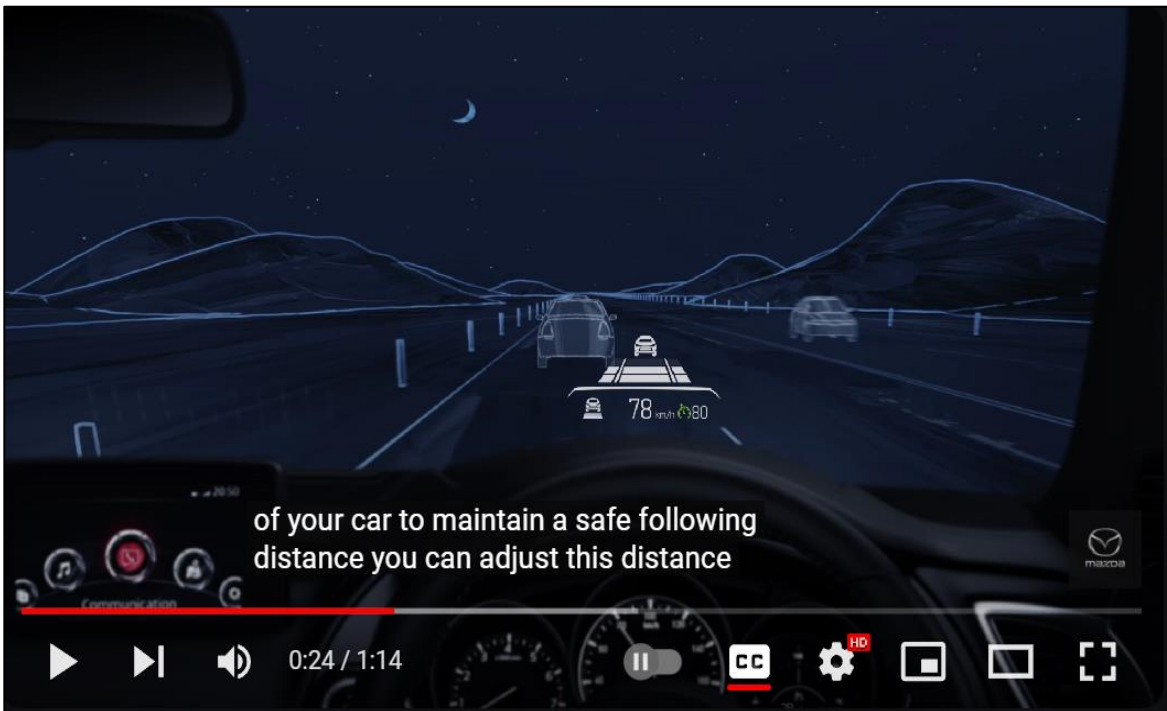
<sup>76</sup> [https://owners-manual.mazda.com/gen/en/cx-30/cx-30\\_8hq1ee19i/contents/09130100.html](https://owners-manual.mazda.com/gen/en/cx-30/cx-30_8hq1ee19i/contents/09130100.html).



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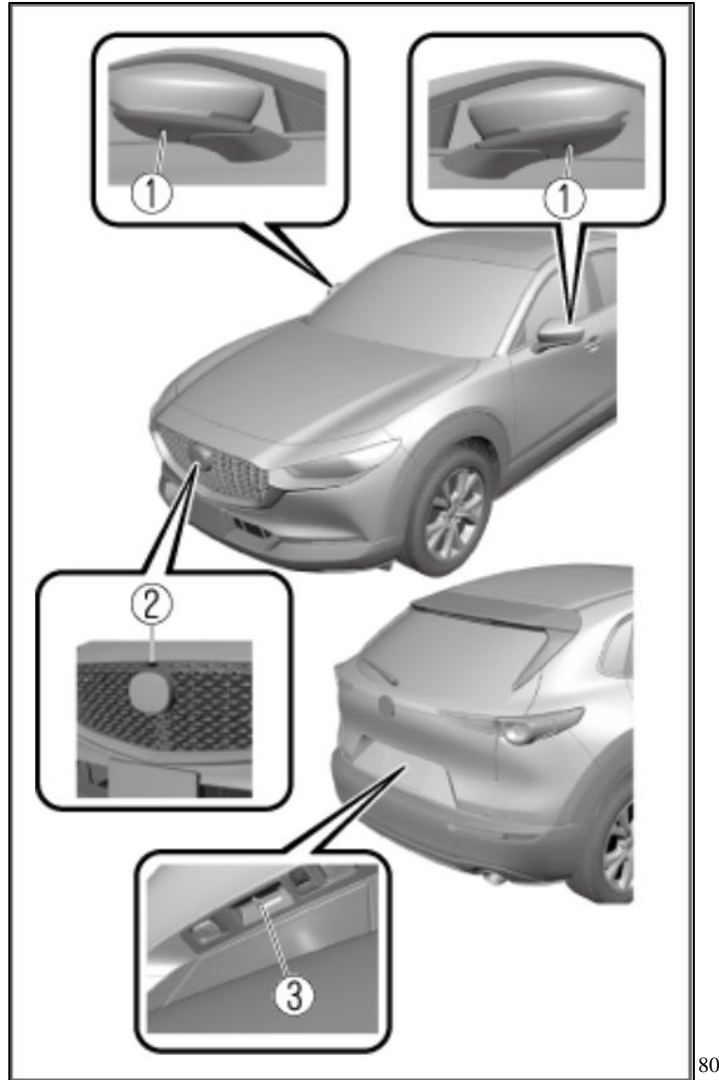
<sup>77</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.





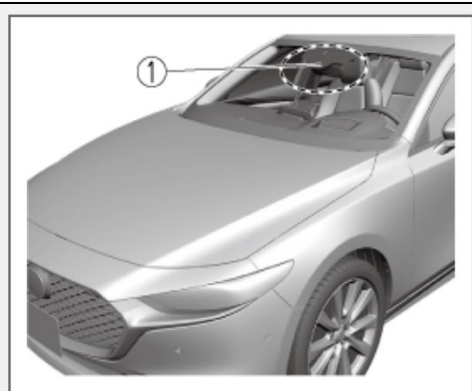
<sup>78</sup> <https://youtu.be/kbh6P3yTIms?si=vqRFflkL68FAfWZg>.

<sup>79</sup> [https://youtu.be/tkIBNuQ4JrE?si=-uSK\\_90MIDnZRYlo](https://youtu.be/tkIBNuQ4JrE?si=-uSK_90MIDnZRYlo).



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<sup>80</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.



1. Forward Sensing Camera (FSC)

The Forward Sensing Camera (FSC) determines the conditions ahead of the vehicle while traveling at night and detects traffic lanes. The distance in which the Forward Sensing Camera (FSC) can detect objects varies depending on the surrounding conditions.

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68. Defendant has and continues to indirectly infringe one or more claims of the '353 Patent by knowingly and intentionally inducing others, including Mazda customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

69. Defendant, with knowledge that these products, or the use thereof, infringe the '353 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '353 Patent by providing these products to customers and end-users for use in an infringing manner. Alternatively, on information and belief, Defendant has adopted a policy of not reviewing the patents of others, including specifically those related to Defendant's specific industry, thereby remaining willfully blind to the Patents-in-Suit at least as early as the issuance of the Patents-in-Suit.

70. Defendant has and continues to induce infringement by others, including customers and end-users, with the intent to cause infringing acts by others or, in the alternative, with the

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<sup>81</sup> <https://www.mazdausa.com/static/manuals/2020/cx-30/contents/05282201.html>.

belief that there was a high probability that others, including end-users, infringe the '353 Patent, but while remaining willfully blind to the infringement. Defendant has and continues to induce infringement by its customers and end-users by supplying them with instructions on how to operate the infringing technology in an infringing manner, while also making publicly available information on the infringing technology via Defendant's websites, product literature and packaging, and other publications.<sup>82</sup>

71. LAG has suffered damages as a result of Defendant's direct and indirect infringement of the '353 Patent in an amount to be proved at trial.

72. LAG has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '353 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

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

Plaintiff hereby demands a jury for all issues so triable.

#### **PRAYER FOR RELIEF**

WHEREFORE, LAG prays for relief against Defendant as follows:

- a. Entry of judgment declaring that Defendant has directly and/or indirectly infringed one or more claims of the Patents-in-Suit;
- b. An order pursuant to 35 U.S.C. § 283 permanently enjoining Defendant, its officers, agents, servants, employees, attorneys, and those persons in active concert or participation with them, from further acts of infringement of the Patents-in-Suit;
- c. An order awarding damages sufficient to compensate LAG for Defendant's

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<sup>82</sup> See Mazda CX-30 Owner's Manual and other materials, available at: <https://www.mazdausa.com/owners/how-to-use-my-mazda>.

infringement of the Patents-in-Suit, but in no event less than a reasonable royalty, together with interest and costs;

d. Entry of judgment declaring that this case is exceptional and awarding LAG its costs and reasonable attorney fees under 35 U.S.C. § 285; and

e. Such other and further relief as the Court deems just and proper.

Dated: August 20, 2024

Respectfully submitted,

/s/ Vincent J. Rubino, III

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