

Please repeat the applicable request verbatim above each response. After VW's response to each request, identify the source of the information and indicate the last date the information was gathered.

1. State, by model and model year, the number of subject vehicles VW has manufactured for sale or lease or operation in the United States. Separately, for each subject vehicle manufactured to date by VW, state the following:
 - a. Vehicle identification number (VIN);
 - b. Model;
 - c. Model Year;
 - d. Subject component trade / trim name, part number and design version installed as original equipment; including:
 - i) Software version;
 - ii) Firmware version;
 - iii) Hardware version;
 - e. Date of manufacture;
 - f. Date warranty coverage commenced;
 - g. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease);
 - h. Latest known vehicle mileage and commensurate date;
 - i. Cumulative mileage covered with the subject system engaged; and
 - j. Date and identities of the most recent software, firmware, and hardware updates.

Provide the table in Microsoft Access 2010, or a compatible format, entitled "PRODUCTION DATA."

Response 1

In response to this request, Volkswagen provides the population of the subject vehicles equipped with the subject system(s) identified in the peer review. It is noted that Volkswagen Group of America, Inc. has not yet released the 2022 MY Volkswagen Golf R, GTI and Jetta models for sale or lease in the US market and therefore, the population of those models are excluded from this response.

Population data is provided for certain 2018-2022 Model Year (MY) Audi vehicles and certain 2020-2022 MY Volkswagen vehicles manufactured for sale or lease in the United States, including, but not limited to, the District of Columbia and current U.S. territories and possessions. A table containing the subject vehicles is provided as Attachment 1 to this response.

Please reference the files entitled "PRODUCTION DATA_AU_new.zip" and "PRODUCTION DATA_VW.zip" for the subject vehicles, in response to subparagraphs "a" through "j," in the folder attached hereto as Exhibit to Request 1.

Source: Business Objects Vehicles Universe

Date Gathered: Through the date of the inquiry (September 13, 2021)

2. State the number of each of the following, received by VW, or of which VW is otherwise aware, which relate to, or may relate to the subject system in the subject vehicles:
 - a. Consumer Complaints;
 - b. Field Reports;
 - c. Reports involving a subject crash, injury or fatality;
 - d. Property damage claims;
 - e. Third-party arbitration proceedings where VW is or was a party to the arbitration; and
 - f. Lawsuits, both pending and closed, in which VW is or was a defendant or codefendant.

For subparts “a” through “f” state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

In addition, for items “e” and “f”, provide a summary description of the alleged problem and causal and contributing factors and VW’s assessment of the problem, with a summary of the significant underlying facts and evidence. For items “e” and “f,” identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Response 2

Volkswagen notes that the following responses to items “a” through “f” include multiple reporting about the same underlying incident; the counts are not additive, as a false total count would result.

- a. In response to this inquiry, Volkswagen has identified 1,784 consumer complaints on 1,447 unique VINs, which relate to, or may relate to, the subject system in the subject vehicles;

Category	Screening Category	Total
Consumer Complaints	Information Request	521
	Other/Ambiguous	234
	System Unavailable/Non-Functioning	551
	Unexpected Behavior	308
	Warning Light	170

- b. In response to this inquiry, Volkswagen has identified 360 field reports on 320 unique VINs, which relate to, or may relate to, the subject system in the subject vehicles;

Category	Screening Category	Total
Field Reports	Other/Ambiguous	50
	System Unavailable/Non-Functioning	196
	Unexpected Behavior	27
	Warning Light	87

- c. In response to this inquiry, Volkswagen has identified three reports that allege a crash and two reports that allege an injury. Volkswagen has not received any or notices/claims of death alleging or proving that a death was caused by, or alleged to have been caused by, the subject system in the subject vehicles;
- d. In response to this inquiry, Volkswagen has identified three reports that allege property damage;
- e. In response to this inquiry, Volkswagen has identified two records involving third-party arbitration proceedings where Volkswagen is or was a party to the arbitration;
- f. In response to this inquiry, Volkswagen has not identified any lawsuits, pending or closed, in which Volkswagen is or was, a defendant or codefendant.

Source: Business Objects – Customer Care, FRED, FTIS,
ATA/VTA, PAG

Date Gathered: Through the date of the inquiry (September 13, 2021)

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:
 - a. VW's file number or other identifier used;
 - b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
 - c. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;
 - d. Vehicle's VIN;
 - e. Vehicle's model and model year;
 - f. Vehicle's mileage at time of incident;
 - g. Software, firmware, and hardware versions in place at the time of the incident, along with vehicle and mileage and date of installation;
 - h. Incident date;
 - i. Report or claim date;
 - j. Whether a crash is alleged;
 - k. Description of the crash including:
 - i) Time of day and local time zone;
 - ii) Crash site coordinates (latitude and longitude);
 - iii) Listing of involved vehicles, objects and persons;
 - iv) Speed and direction of the subject vehicle;
 - v) Documented subject vehicle driver impairment;
 - vi) Location / orientation of the subject vehicle in relation to other involved vehicles, objects, persons at the time of impact;
 - vii) Timing of subject system engagement / disengagement over the 30 second period leading to the subject crash and, if not:
 - (1) Description and timing of driver control inputs that may have overridden the subject system;
 - viii) Description of the intervention of:
 - (1) crash warning or avoidance systems (e.g., AEB, FCW)
 - (2) subject system logic intended to detect first responder vehicles / scenes on or off the roadway;
 - l. Description and timing of the last driver engagement warning prior to the subject crash;
 - m. Duration (minutes) and distance (miles) of the drive cycle that led to the subject crash;
 - n. Whether property damage is alleged;
 - o. Number of alleged injuries, if any; and
 - p. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA."

Response 3

Responses to items "a" through "p" are provided in files entitled, "REQUEST NUMBER TWO DATA_AU_new.xlsx" and "REQUEST NUMBER TWO DATA_VW.xlsx", in the folder attached hereto as Exhibit to Request 3. Records are organized chronologically by case number, then by category.

Source, Date Gathered: See Response 2

4. Produce copies of all documents, telematics reports / data, and data logs related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method VW used for organizing the documents. Describe in detail the search methods and search criteria used by VW to identify the items in response to Request No. 2.

In addition, provide a full copy of any expert report that has been produced by VW or received from another party in a lawsuit, arbitration, or a pre-suit claim regarding the incidents identified in Request Number 2. This includes any reports produced or exchanged for experts designated by any party in such litigation, including VW, plaintiff(s), or co-defendants. This does not include reports that VW has never produced to another party, to the extent VW claims a privilege exists for such a report.

Response 4

In response to this inquiry, the following search criteria were used to identify items in response to Request 2:

- Identify certain 2017-2022 Model Year (MY) Audi vehicles and 2020-2022 MY Volkswagen vehicles manufactured and sold to Volkswagen Group of America, Inc. for resale or lease in the United States; and
- Identify vehicles equipped with Level 2 Advanced Driver Assistance Systems (ADAS) that can control both steering and braking/accelerating simultaneously under some circumstances; and
- Inclusive of any other related systems on or off the vehicle that contributes to the conferral of any Level 2 capabilities on any Volkswagen vehicle, including but not limited to the various PreSense packages

The individual records were manually screened to identify those that contained comments which relate to, or may relate to the function / operation of the subject system in the subject vehicles.

Documents are provided in Adobe Acrobat files contained in the files, entitled “REQUEST NUMBER TWO DATA_Hard Copies_AU_new.zip” and “REQUEST NUMBER TWO DATA_Hard Copies_VW_new.zip”, in the folder attached hereto as Exhibit to Request 4. Records are organized chronologically by case number, then by category.

Source, Date Gathered: See Response 2

5. For each trade name / trim level of the subject system available in the subject vehicles, state its name and designation including:
 - a. Describe the ODD specified to the customer by VW for the intended use of the system, including but not limited to:
 - i) Types of roads, road marking, weather conditions, etc. the system is intended to be used on and the types of roads on which the system should not be used;
 - ii) List the methods and technologies used to prevent subject system usage outside the ODD specified to the customer by VW; and
 - iii) If the subject system can be engaged (or remain engaged) outside of the ODD specified to the customer by VW, state the reasons for this capability and describe any performance restrictions or modifications to the subject system's operational characteristics in such an environment (e.g. slower maximum speeds or control authority, additional driver warnings, adjustments to the driver engagement system).
 - b. Describe the subject system's maximum control authority over steering (steering angle (degrees), rate (degrees / sec), lateral acceleration (g)), braking (g), and acceleration (g) functions during routine and crash-imminent operations. Separately include any additional conditions and control authority values that VW deems appropriate.
 - c. List and describe the information, system status, alerts, warnings, and graphics communicated by the subject vehicle to its driver during the DDT (e.g., warning lights, instrument panel animations, aural warnings, haptic warnings) during the following subject system operational conditions:
 - i) Routine subject system operation;
 - ii) Scenarios where the vehicle requires driver intervention (e.g., driver engagement needed, imminent ODD exit, system fault); and
 - iii) When the subject vehicle detects that a crash is imminent.
 - d. Furnish an overview of VW's approach to the enforcement of driver engagement / attentiveness during the subject system's operation in the subject vehicles. Include a description of all means of detecting (both through direct measurement and inference) / monitoring driver engagement / attentiveness including:
 - i) The technological means and related logic (including direct measurement or inference) used to sense driver engagement / attentiveness;
 - ii) Minimum contact or detected engagement duration and time between contact / detected engagement required to satisfy the driver engagement / attentiveness logic including changes based on variations in driving conditions such as vehicle speed or presence of a lead vehicle;
 - iii) Describe any warning strategies or messaging and timing associated with each system identified above in subpart (ii) (include pictures/videos of all audible & visual warnings/alerts); and
 - iv) Describe any escalation or lockout strategies used to address either unresponsive drivers or repeated engagement warnings in any given drive cycle.

- e. Describe subject system responses to driver control inputs that could cancel or override one or more of its Level 2 functions. For each driver input, include:
 - i) Driver input description and minimum threshold (e.g., minimum steering angle or rate);
 - ii) List the Level 2 functions disabled and permitted to continue operation following a driver override;
 - iii) Describe / illustrate warnings and messages to the driver concerning the system status following a driver override; and
 - iv) Explain which, if any, of the disabled Level 2 functions resume operation on their own after the override input and under what conditions.

- f. List the conditions / events / alerts that may prompt an operating subject system to require a “take-over” by the driver. For each such condition, list:
 - i) Sequence of events and timing for each; and
 - ii) Intended vehicle behavior in the instance where a driver take-over is not detected.

- g. Describe the subject system OEDR capabilities within the ODD specified to the customer by VW. List the objects and events that the system is designed to detect (e.g., particular vehicle aspects, pedestrians, road signs, drivable space limitations, environmental (weather / road surface / lighting) conditions, path predictions, object classifications). For each item, list:
 - i) Subject system behavior;
 - ii) Limitations on detection; and
 - iii) Subject system interaction with crash avoidance technologies.

Response 5

Documents containing Volkswagen’s response to items “a” through “g. (iii)” are provided under request for confidential treatment to NHTSA’s Office of General Counsel.

Redacted copies of each document (listed below) are provided in an Adobe Acrobat file format, in the folder attached hereto as Exhibit to Request 5_NON-CONFID.

- ADAS_Level_2_VW_ACC_with_lane_centering_Atlas_Cross Sport_PUBLIC.pdf
- ADAS_Level_2_VW_Travel_Assist_Atlas_Arteon_Tiguan_Taos_PUBLIC.pdf
- ADAS_Level_2_VW_Travel_Assist_ID.4_PUBLIC.pdf
- ADAS_Level_2_AU_ACA_A3, A6/A7, A8, Q3, Q7 PI, Q8, e-tron, e-tron GT_PUBLIC.pdf
- ADAS_Level_2_AU_ACC_AALA_TJA_A4, A5, Q5, Q7 pre-PI_PUBLIC.pdf
- ADAS_Level_2_AU_Remote Park Assist_etrone GT_PUBLIC.pdf

6. Produce copies of all instructional, service, warranty, marketing, and other documents that relate to, or may relate to, the operation of each trade name / trim level of the subject system in the subject vehicles, that VW has issued to any customers, dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, digital messages on a subject vehicle display, or other documents or communications, with the exception of standard shop manuals. Also, include the latest draft copy of any communication that VW is planning to issue within the next 120 days.

Response 6

Copies of requested service, warranty, marketing, and other documents that relate to, or may relate to, the operation of each trade name / trim level of the subject system in the subject vehicles, are provided by category, by brand, as listed below, in the folder attached hereto as Exhibit to Request 6_PUBLIC.

- Tech Tips
- Technical Bulletins
- Videos

Copies of requested instructional materials that relate to, or may relate to, the operation of each trade name / trim level of the subject system in the subject vehicles, are provided under request for confidential treatment to NHTSA's Office of General Counsel.

Redacted copies of the instructional materials are provided in an Adobe Acrobat file format, in the folder attached hereto as Exhibit to Request 6_NON-CONFID.

- Self-Study Programs

Volkswagen has not identified any specific communication(s) related to the subject systems in the subject vehicles that is / are planned for issue within the next 120 days.

As noted, Volkswagen took efforts to fairly construe the Agency's information requests and to provide comprehensive responses. Some of the materials provided in response to Request No. 6 may be beyond the scope originally intended by the Agency, but Volkswagen has included these materials in an effort to provide comprehensive answers.

7. For each trade name / trim level of the subject system available in the subject vehicles, describe all modifications or changes made by, or on behalf of, VW in the design, material composition, manufacture, quality control, supply, function, or installation of the subject system, from the start of production to date, which relate to, or may relate to driver engagement / attentiveness and OEDR by the subject system in the subject vehicles. For each such modification or change, provide the following information:
 - a. The date or approximate date on which the modification or change was incorporated into vehicle production;
 - b. A detailed description of the modification or change;
 - c. The reason(s) for the modification or change;
 - d. The hardware, firmware, and software names and numbers of the original version;
 - e. The hardware, firmware, and software names and numbers of the modified version;
 - f. Primary distribution method of related firmware and software updates (over the air or in-person service); and
 - g. When the modified version / update was made available as a service component.

Also, provide the above information for any modification or change that Volkswagen is aware of which may be incorporated into vehicle production or pushed to subject vehicles in the field within the next 120 days.

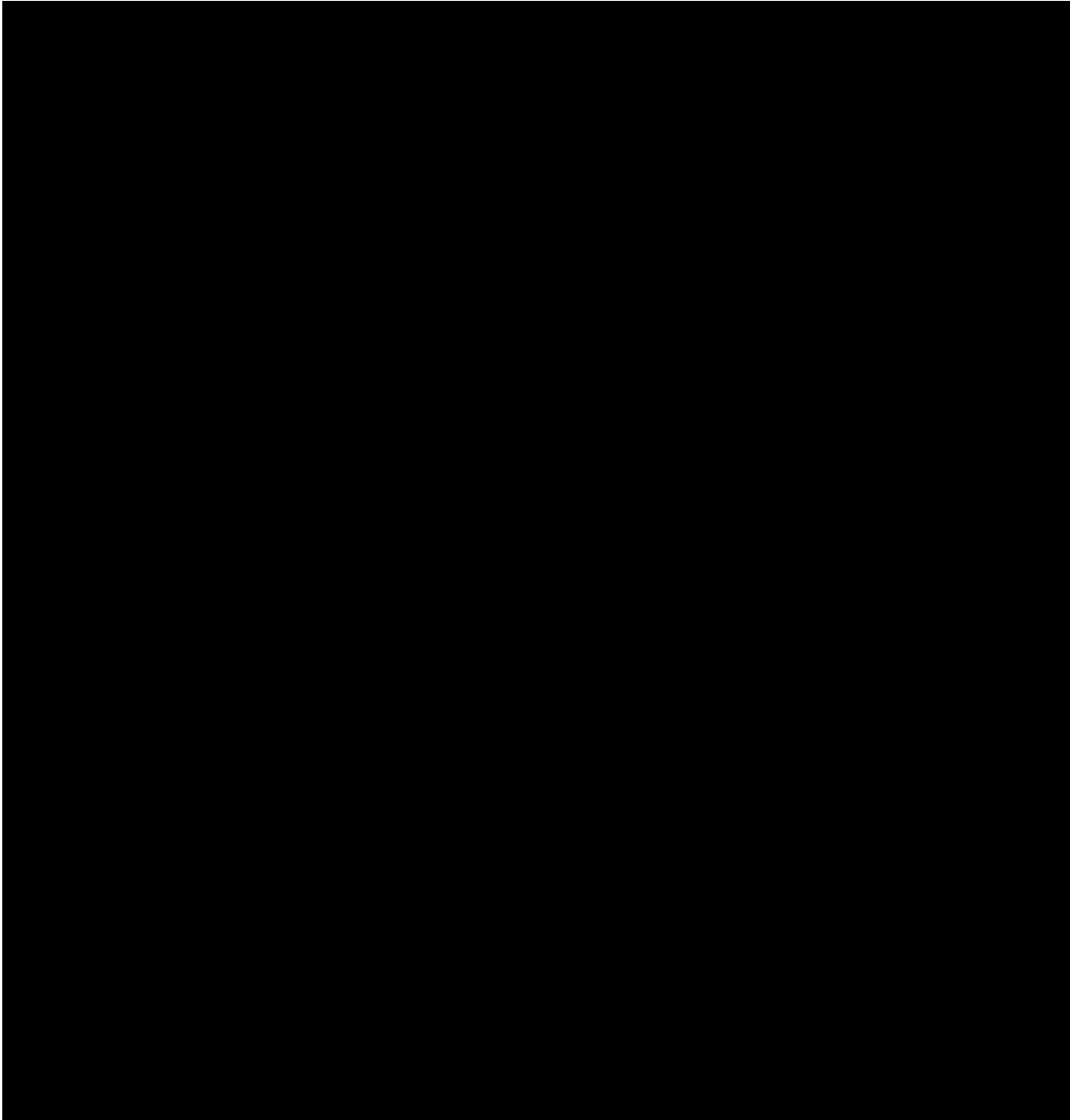
Response 7

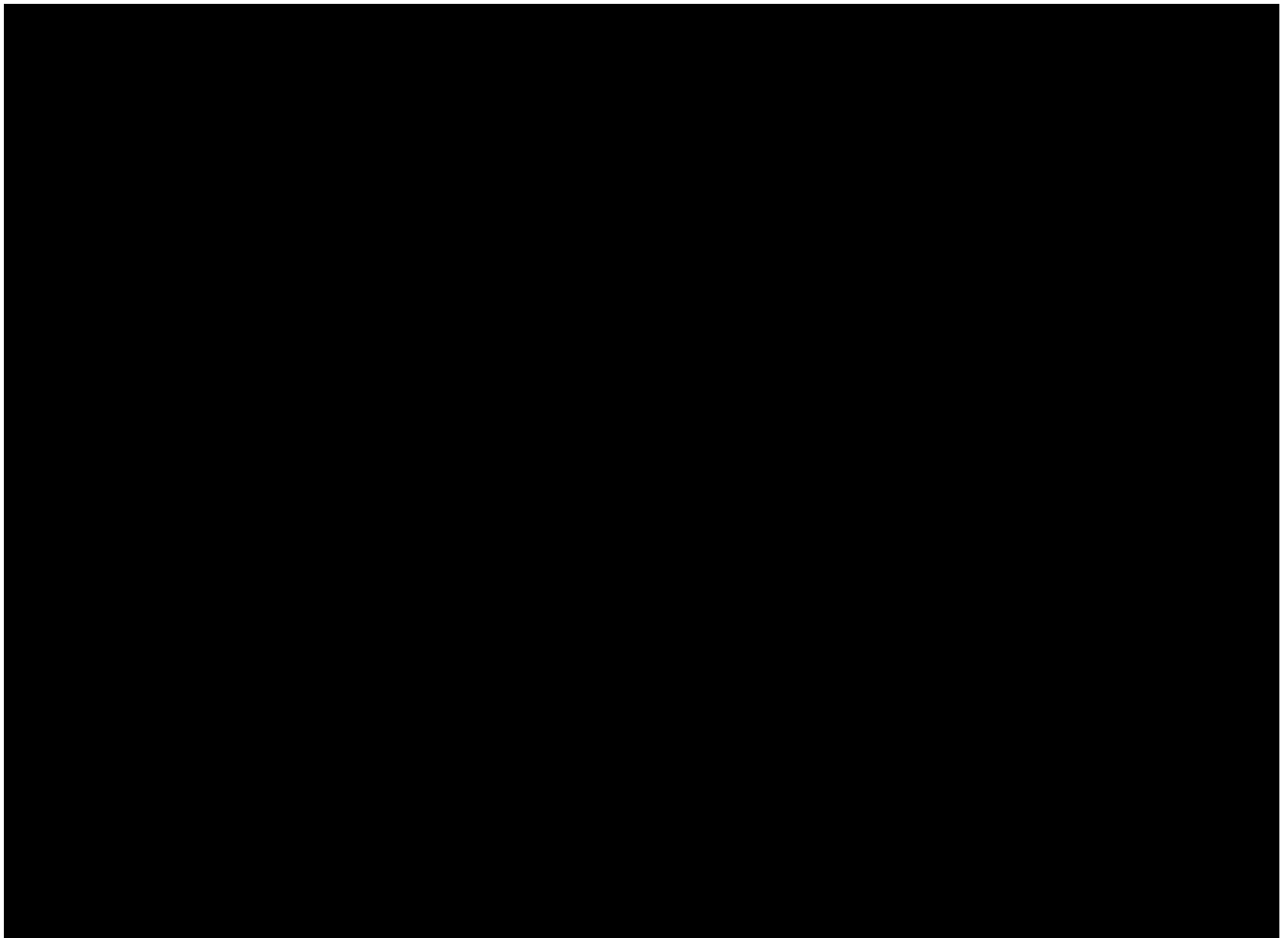
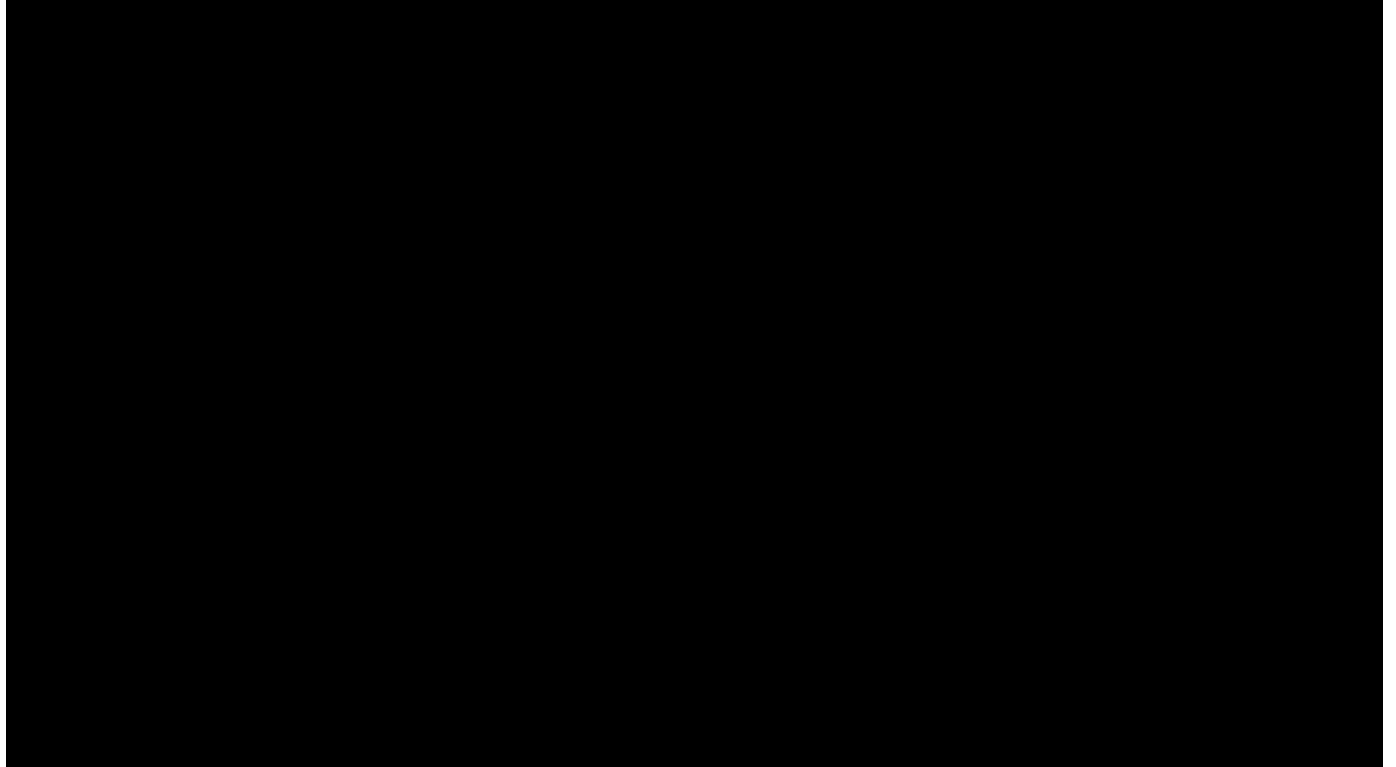
Response to items “a.” through “g.” is provided under request for confidential treatment to NHTSA’s Office of General Counsel.

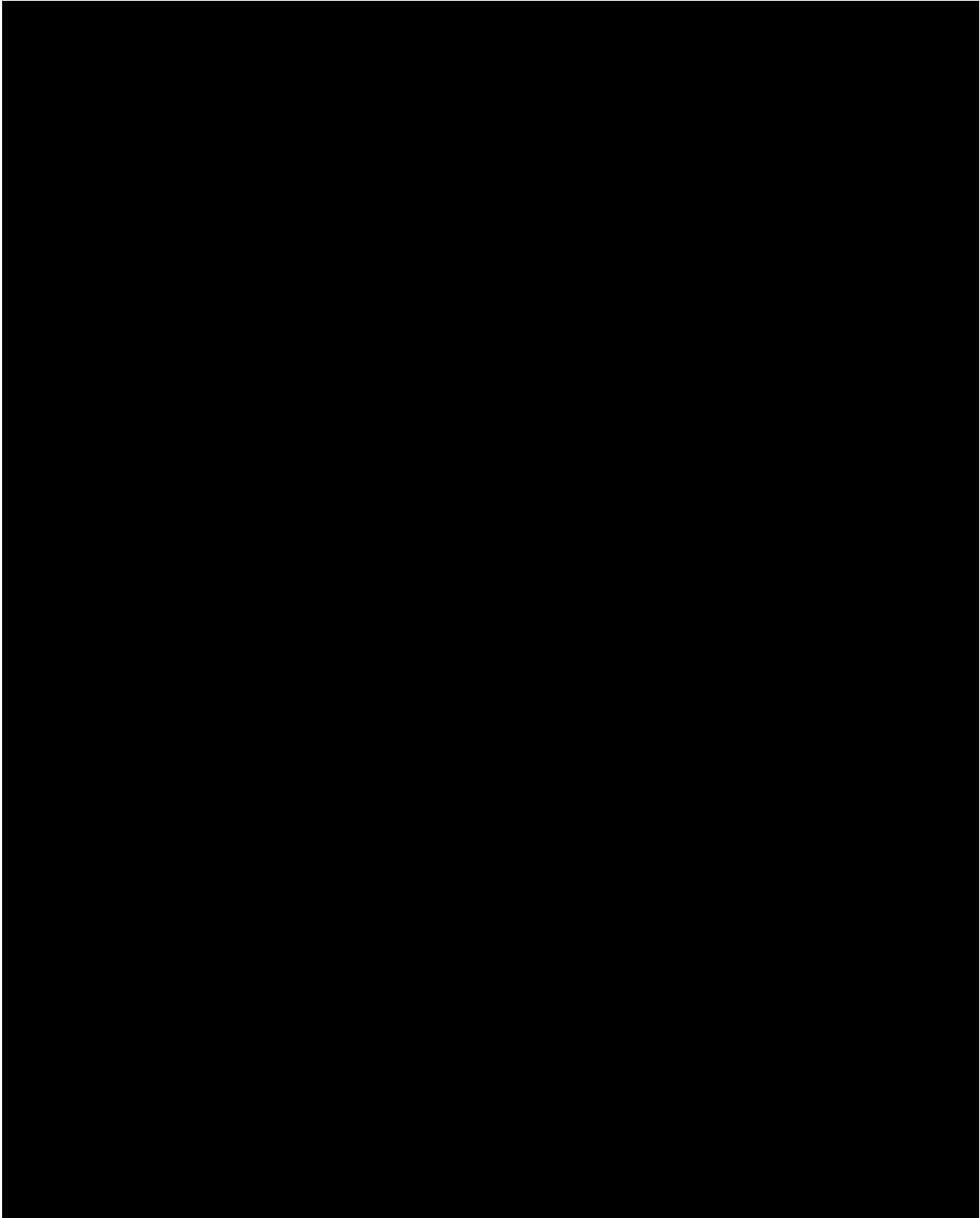
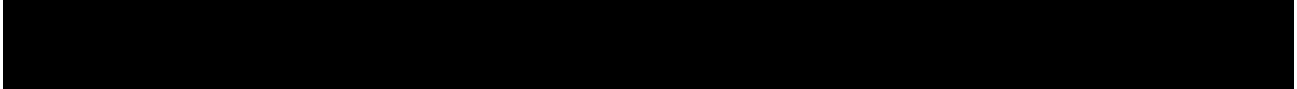
A redacted copy of the document is provided in an Adobe Acrobat file format, entitled “RESPONSE NUMBER SEVEN_PUBLIC.pdf”, in the folder attached hereto as Exhibit to Request 7.



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of







[REDACTED]

[REDACTED]

■ The extent to which the processes, procedures, or policies for the testing and validation identified above differ, if at all, for updates to a subject system or feature (e.g. software updates) compared to the first release of the system or feature;

[REDACTED]

9d) The length of time that the processes, procedures, or policies for the testing and validation identified above have been in place; and

[REDACTED]

9e) Any processes, procedures, or policies in place to compare the performance of a subject system or feature in the field after a release with the design intent for the system or feature.

[REDACTED]

10. Describe VW's processes for identifying and investigating subject crashes in the subject vehicles with the subject system in operation including:
- a. Vehicle's Data collection/logging capabilities including vehicle's ability to wirelessly transmit data including:
 - i) The conditions in which a vehicle may send wireless data that may relate to a subject crash;
 - ii) The methods by which the data are sent (type of wireless system and location of involved components on the subject vehicles);
 - iii) A description of the data sent and related alerting within VW;
 - iv) Any limitations on such transmittal (e.g. poor wireless connectivity, etc.);
 - v) Countermeasures / alternate retrieval options when transmittal limitations apply;
 - b. Procedures for investigating customer concerns or safety incidents; and
 - c. Metrics used to assess safety performance.

Response 10

Volkswagen and Audi vehicles offering SAE Level 2 assistance systems follow a layered approach for data collection and logging.

- a. The following systems are capable of storing relevant data;

Event data recorder (EDR):

All subject vehicles are equipped with an Event Data Recorder (EDR) as defined in 49 CFR Part 563. The main purpose of an EDR is to record, in certain crash or near crash-like situations, such as an airbag deployment or hitting a road obstacle, data that will assist in understanding how a vehicle's system performed. The EDR is designed to record data related to vehicle dynamics and safety systems for five seconds. EDR data are recorded by the vehicle only if a non-trivial crash situation occurs. No data are recorded by the EDR under normal driving conditions.

To read data recorded by an EDR, special commercially available equipment is required, and access to the vehicle or the EDR is needed. In addition to the vehicle manufacturer, other parties, such as law enforcement, that have the special equipment, can read the information if they have access to the vehicle or the EDR. More details are also described in the owner's manuals.

Assist System Monitor (ASM):

The ASM collects data that is not stored by the EDR in the event of an accident. The main task of the ASM is to make it possible to understand the role and behavior of the assist systems in these accident situations. In addition to the data the EDR stores, the ASM records data related to the assist systems starting several seconds before the accident or near-accident. The data collected by the ASM depends on the equipment and may include the following information: status information of the assist systems (e.g. if they are switched on or off, system events, etc.), control interventions (e.g. by ESC, ABS, AEB, etc.) and assist systems settings (such as speed settings).

Special devices and access to the vehicle or to the ASM are necessary in order to read and interpret the data from the ASM memory.

Diagnostic trouble codes/DTC's:

Decentral (i.e., per control unit) workshop level diagnostic data. This data is not originally intended for use in accident analysis but may be helpful to identify possible system errors / warnings that may have occurred prior to an event. Accessible by proprietary (ODIS, VAS) as well as certain non-Volkswagen-group scan tools.

Decentral (per control unit) in-depth diagnostic data:

Logged in case of FCW/AEB warning or intervention, see Technical Service Bulletin 45-21-01. Download by proprietary (ODIS) scan tool, analysis requires further proprietary software.

Flexible Data Collector (Audi only):

Certain Audi vehicles are equipped with onboard components constituting a Flexible Data Collector to provide data over-the-air to a cloud-based central backend. This allows Audi to use data collection campaigns to collect and analyze data from onboard vehicle systems. Audi may collect data for the following purposes, for example: offer and product optimization, product safety, provision of Audi connect remote vehicle services and adaption to customer expectations.

For example, various technical function data, environmental data, driving data and usage data will be collected for a specific purpose and forwarded to Audi. The data will be sent from the vehicle at the time the data was collected. There are fixed processes, tools and guidelines to define the amount and the quality of data that shall be collected from the selected vehicle(s). The ability to configure the data to be collected over-the-air enables Audi to maximize the advantages for the customer.

The Flexible Data Collector is *not* used to explicitly collect data in the event of a vehicle crash, but e.g. for optimization of major components, optimization of the functional operational window, measure the effectiveness of customer software updates in response to complaints and internal process optimizations.

The customer/driver can deny data transmission to Audi by contacting an authorized Audi Dealer and also has the option to deactivate data transmission within the privacy settings. None of the above systems are capable of recording video streams.

Data storage for automated driving – Audi vehicles with park assist plus/remote parking (Audi e-tron GT)

When park assist plus is active, data is stored in a memory in the vehicle. This data is encrypted and is continuously overwritten by more current data after a few seconds. The data is erased when the ignition is switched off. In certain situations, such as if an airbag has deployed or a parking process has been ended, technical data about this may be stored in the data storage for automated driving. The data storage for automated driving is a read-only memory that has a limited amount of storage space. If the storage space is full, the oldest data will be overwritten with the newest data.

The following data is recorded with encryption: driver interactions (such as the driver pressing the brake pedal), vehicle dynamics (such as speed), status of automated systems, control requests, relevant measurements from monitoring the surroundings, image data from

monitoring the surroundings, system status, time stamp and vehicle location when activating/deactivating park assist plus.

The data is processed and stored locally in the vehicle. It is not automatically transmitted to Audi or other third parties, for example through the cloud. The owner or driver is responsible for the data, Audi does not have access to it.

The data memory can be read out and exported to a USB stick. The settings depend on the vehicle equipment. Requirements: The vehicle must be stationary, the automated systems must not be active and the ignition must be switched on. A USB stick must be connected to the USB input.

The exact procedure is explained in the owner's manual.

i) The conditions in which a vehicle may send wireless data that may relate to a subject crash;

No past or current Volkswagen or Audi model is able to send such wireless crash data, except for the limited set of information used for Emergency Call Systems.

ii) The methods by which the data are sent (type of wireless system and location of involved components on the subject vehicles);

No past or current Volkswagen or Audi model is able to send such wireless crash data, except for the limited set of information used for Emergency Call Systems.

iii) A description of the data sent and related alerting within VW;

No past or current Volkswagen or Audi model is able to send such wireless crash data, except for the limited set of information used for Emergency Call Systems.

iv) Any limitations on such transmittal (e.g. poor wireless connectivity, etc.);

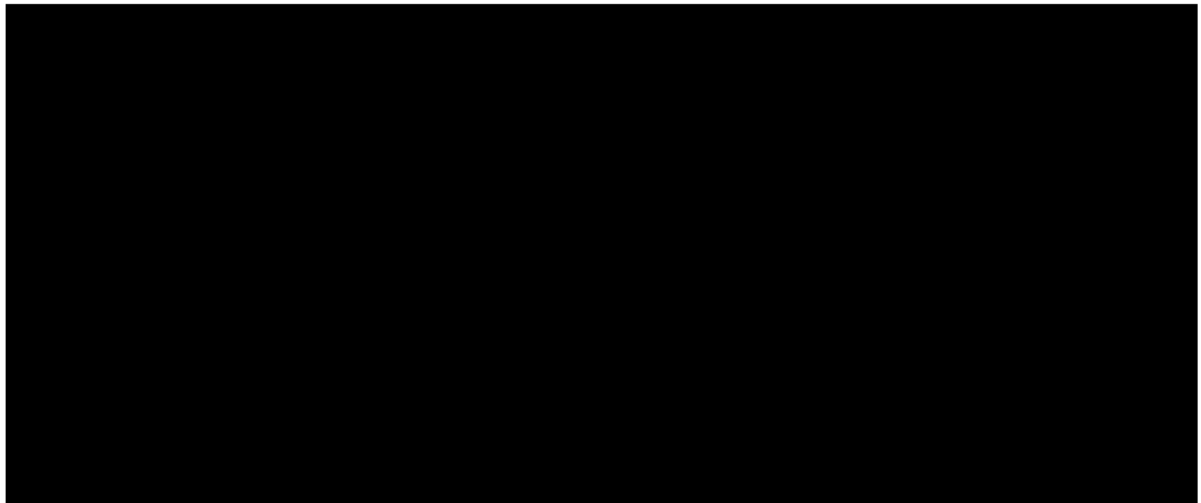
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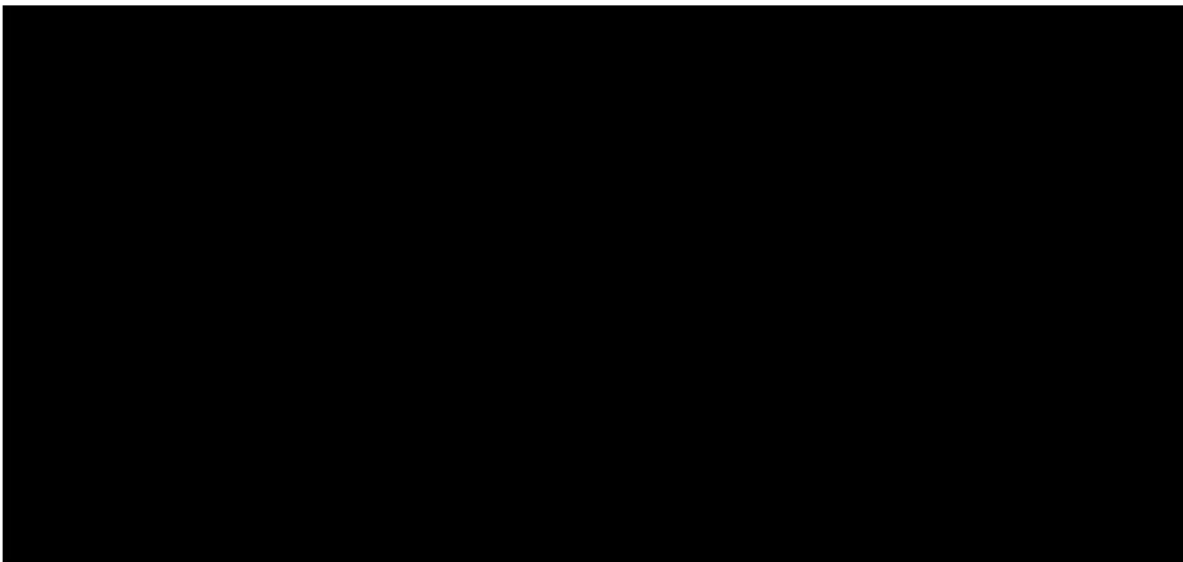
v) Countermeasures / alternate retrieval options when transmittal limitations apply;

No past or current Volkswagen or Audi model is able to send such wireless crash data, except for the limited set of information used for Emergency Call Systems.

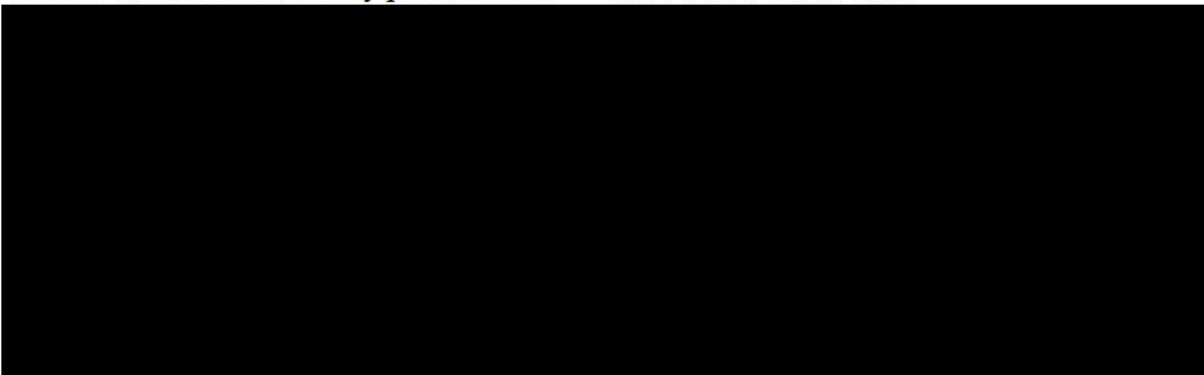
b. Procedures for investigating customer concerns or safety incidents; and

10b. CONFIDENTIAL





- c. Metrics used to assess safety performance. 10c. CONFIDENTIAL



- d. Furnish VW's assessment of the impact of the subject system on the crashes furnished in response to Request 2, including:
- a. The causal or contributory factor(s);
 - b. The failure mechanism(s);
 - c. The failure mode(s);
 - d. The risk to motor vehicle safety that they pose.

Response 11

Volkswagen provides the following information related to the impact of the subject system on the crashes furnished in response to Request 2, including:

- a. Causal or contributory factor(s): based on the information provided by the driver in each of the three cases, a sudden stop by a vehicle driving ahead led to a frontal collision of the ego vehicle.
- b. Failure mechanism(s): in each of the three cases, it was alleged that the vehicle could not stop soon enough—by neither the driver nor the ACC system—to prevent a collision with the vehicle driving ahead.

- c. Failure mode(s): in each of the three cases, an evaluation of the vehicle determined that the ACC functioned as intended and designed, and did not present any deficiencies with the camera, radar, or braking system.
- d. The ACC (Level 1) provides the driver with the convenience of maintaining a selected speed and set distance from the vehicle driving ahead, within the limitations of the system.

After inspecting the vehicles, collecting diagnostic data, and completing vehicle test drives, no pre-existing deficiencies with the overall system or individual components were found. Any further comment to the actual cause for the crash outside of the ACC would be speculative.

As referenced in the Owner's Manual, ACC is only an assist system, and the driver is still responsible for controlling the vehicle. The technology of the ACC cannot overcome the natural laws of physics and can operate only within the limits of the system.

The driver, as instructed, must adapt the speed and distance to vehicles driving ahead based on the visual, weather, road, and traffic conditions.

Evaluations of each vehicle have indicated that the ACC was operational and functioning as intended during use, and Volkswagen has not identified any defect in the ACC on the subject vehicles.

Moreover, the overall field performance of Volkswagen's ACC has not indicated an unreasonable risk to motor vehicle safety.

GLOSSARY OF TERMS

ABS – Antilock Brake System
ACA – Adaptive Cruise Assist
ACC – Adaptive Cruise Control
ACSF - Automatically Commanded Steering Function
ADAS – Advanced Driver Assistance System
AEB – Automatic Emergency Braking
AALA – Audi Active Lane Assist
ASM – Assist System Monitor
ASR – Anti-Slip Regulation
BCM - Body computer module
CCS – Cruise Control Selected
CSF - Corrective Steering Function
DTC – Diagnostic Trouble Code
EA – Emergency Assist
ECU- Electronic Control Unit
EDR – Event Data Recorder
EPB - Electronic Parking Brake
EPS - Electronic Power Steering
ESC – Electronic Stability Control
FCW – Forward Collision Warning
HIL – Hardware In the Loop
HMI - Human Machine Interface
KPM – Volkswagen Group’s problem management process
MIL – Model In the Loop
MMI - Multi Media Interface
ODIS – Onboard Diagnostic Information System
PEP – Name of Volkswagen’s higher-level product development process
PIL – Processor In the Loop
QFK- Lateral Guidance Coordinator
SIL – Software In the Loop
TA – Travel Assist
TJA – Traffic Jam Assist

Audi & Volkswagen Vehicle Population Overview

Brand	b_Model	Total Of a_VIN	2017	2018	2019	2020	2021	2022
Audi	A3 Sedan	337						337
	A4 allroad	3,165	510	805	360	399	1,091	
	A4 Sedan	17,893	2,724	2,006	1,592	2,411	9,044	116
	A5 Cabrio	5,278	523	1,071	856	615	2,136	77
	A5 Coupe	5,997	518	1,698	1,254	398	2,128	1
	A5 Sportback	24,145	811	5,795	6,342	1,153	9,702	342
	A6 allroad	1,637				671	929	37
	A6 Avant	1,439					1,352	87
	A6 Sedan	16,587			8,451	2,378	5,631	127
	A7 Sportback	8,792			4,106	1,273	3,284	129
	A8 Sedan	7,476			3,925	1,707	1,844	
	Audi Q3	14,781					12,369	2,412
	Audi Q5	72,418		13,426	7,999	7,183	41,315	2,495
	Audi Q5 Sportback	3,140					2,735	405
	Audi Q7	90,614	21,454	27,863	19,627	5,275	15,058	1,337
	Audi Q8	29,300			11,907	5,124	11,795	474
	e-tron GT / RS etron GT	840						840
	e-tron quattro	14,934			5,069	3,761	5,623	481
e-tron Sportback quattro	2,703				793	1,857	53	
		321,476						
Brand	b_Model	Total Of a_VIN				2020	2021	2022
Volkswagen	Arteon	3,700					3,700	
	Atlas	33,505					33,363	142
	Atlas Cross Sport	23,093				11,990	11,045	58
	ID4	15,251					15,251	
	Taos	13,173					13,173	
	Tiguan	3,642						3,642
		92,364						