## EDR Report

|  |  |
| :--- | :--- |
| File Information | Value |
| VIN | 5 YJYGDEE5LF000000 |
| Retrieval Date | $2020 / 11 / 23$ 23:15:40 (UTC) |
| Retrieval User Comments |  |
| Retrieval Program Information |  |
| EDR Report Information | Tesla EDR Reporting Service v20.40.1 |
| Report Date | 2020/12/04 02:01:28 (GMT) |
| Number Of Events | 1 |
| Time From Event 1 To 2 (seconds) | N/A |
| Ignition Cycle At Retrieval | 167 |

## Model Y Data Limitations

## General Data Limitations

This report represents data from a Tesla Event Data Recorder (EDR). The report was generated using EDR data that was uploaded to the Tesla EDR Report Service at https://edr.tesla.com. This service is periodically updated using the most current vehicle information available and report users should always ensure that the report was generated by the most recent version of the Report Service.

The Tesla EDR Retrieval Program and Tesla EDR Report Service are designed for vehicles configured for the North American market region only. Report elements found in this report may not have not been validated for vehicles configured for regions outside of North America.

The EDR is part of the vehicle's Restraints Control Module (RCM). When the EDR senses a crash or crash-like event, it may record a short period of data related to vehicle dynamics and safety systems. This recorded data may assist in understanding the crash or crash-like event. EDR data will only be recorded by a Tesla vehicle if the EDR senses a crash or crash-like event; no data is recorded by the EDR under normal driving conditions.

EDR data should only be used as part of a thorough and competent review of the human, vehicle, and environmental information associated with an event. The data recorded by the EDR has limitations including the number of items recorded, the time period of the recording, the data sampling interval, and the data range and resolution. Additionally, EDR data may be limited by sensor capabilities or the availability of 12 V DC power at the RCM. For these and other potential reasons, the EDR data may not capture an entire event, and the data elements captured may not fully represent all aspects of a given event.

Tesla has made all reasonable efforts to include sufficient information in this report's Data Limitations section to clarify terminology and data elements found in this document to assist the end user in understanding the recorded data. Tesla reserves the right to update, change or modify this information.

## Event Data Recorder

An Event Data Recorder is defined as a device or function in a vehicle that records the vehicle's dynamic time-series data during the time period just prior to a crash event (e.g., vehicle speed vs. time) or during a crash event (e.g., delta-V vs. time), intended for retrieval after the crash event. For the purposes of this definition, the event data do not include audio and video data (49 CFR Part 563).

## Data Synchronization

Pre-crash and crash data are recorded in discrete intervals and may be asynchronous.
Events
The Model Y RCM can store up to two events: Event 1 and Event 2. The conditions for triggering the recording of an event differs depending on event type.

## Time Zero

Time Zero, as indicated throughout the event record, is the point where the restraint control algorithm is activated in any sensing direction.

## Recording duration

The end of an event is typically the moment at which the cumulative delta-V within a 20 ms time period does not change by more than $0.8 \mathrm{~km} / \mathrm{h}$ or the moment at which the crash detection algorithm of the RCM resets. Some events may lead to the recording of different duration data as provided for by 49 CFR Part 563.

Deployment events
A deployment event may be recorded when the RCM commands the deployment of a device (e.g. airbag, pretensioner, or High Voltage (HV) battery disconnect). Airbag deployment events are always locked in memory and are never overwritten. Pretensioner/HV disconnect only deployments may not be locked and may be overwritten.

## Non-deployment events

A non-deployment event may be recorded when the RCM senses a physical occurrence triggering the recording of an event but does not command the deployment of a device (e.g. airbag, pretensioner, High Voltage (HV) battery disconnect). A non-deployment event is recorded if one of the two event memory locations is available (not locked). Non-deployment events are not locked in memory. A nondeployment event is overwritten by another non-deployment event or a deployment event.

## Data polarity

Where applicable, the data in this report follows the polarity conventions found in SAE J1733 and J211. For example, forward longitudinal acceleration and resultant delta- $V$ are positive and left-to-right lateral acceleration and resultant delta- $V$ are positive. Positive roll angle is rotation about the vehicle's longitudinal axis using the right hand rule (clockwise vehicle roll when viewed from the rear of the vehicle). Positive steering wheel angle is clockwise rotation of the steering wheel (steering to the right from straight).

Signal Not Available (SNA)
Signal Not Available (SNA) indicates a data element which is not available due to a fault or network communication disruption with the sensor that supplies the data to the EDR.

## Data Element Definitions

## Vehicle Identification Number (VIN)

The Vehicle Identification Number (VIN) is stored in the RCM when it is installed at the Tesla Fremont Factory or by Tesla Service. The last 6 digits of the VIN can be anonymized by selecting the "Save without VIN sequence number" option in the Tesla EDR Retrieval Program.

Number Of Events
The Number Of Events represents the total number of events that are stored in the RCM memory. The maximum number of events that can be recorded is two.

Time From Event 1 to 2 (seconds)
The Time From Event 1 to 2 is the amount of time elapsed between the Time Zero of two linked events (if applicable). Linked events must occur within 5 seconds and in the same ignition cycle. Non-linked events will report " $N / A$ " in the Time From Event 1 to 2 value. The value is reported to the nearest 0.5 seconds.

## Retrieval Date

The Retrieval Date is the calendar date and time when the data was retrieved from the RCM. This date and time is sourced from the computer that was used to retrieve the data. This is not the date and time of an event.

Retrieval User Comments
The Retrieval User Comments is an open field that can be used by the Tesla EDR Retrieval operator to record text comments at the time of retrieval.

## Retrieval Program Information

The Retrieval Program Information is the version number of the Tesla EDR Retrieval Program that was used to retrieve the EDR data from the RCM.

## EDR Report Information

The EDR Report Information identifies the version of the Tesla EDR Report Service.

## Report Date

Report Date is the calendar date when the online Tesla EDR Report Service was used to generate the report. The source of this data element is the Tesla server.

## Ignition Cycle At Retrieval

The Ignition Cycle At Retrieval is the number of times that the RCM had been powered on as reported at the time that the Tesla EDR Retrieval Program was used to retrieve the data from the RCM. The maximum value for ignition cycles is over 4 billion.

Maximum Delta-V, Longitudinal/Lateral (km/h)
The Maximum Delta- $V$, Longitudinal/Lateral is the maximum magnitude of the recorded delta-V during the event. The value is reported to the nearest kilometer per hour. The range for Maximum Delta-V is $-100 \mathrm{~km} / \mathrm{h}$ to $+100 \mathrm{~km} / \mathrm{h}$. The source of the data is the internal calculation (integration) of the sensor data inside of the RCM.

Time to Maximum Delta-V, Longitudinal/Lateral (ms)
The Time to Maximum Delta-V, Longitudinal/Lateral is the time from Time Zero to the maximum magnitude of the recorded delta- $V$ during the event. The maximum value is 300 ms and the value is reported to the nearest millisecond.

Time to Maximum Delta-V, Resultant (ms)
The Time to Maximum Delta-V, Resultant is the time from Time Zero to the calculated maximum resultant of the longitudinal and lateral delta-V components. The maximum value is 300 ms and the value is reported to the nearest millisecond.

Ignition Cycle At Event
The Ignition Cycle At Event is the number of times that the RCM had been powered on as reported at Time Zero. The maximum value for ignition cycles is over 4 billion.

Ignition Cycle Runtime
Ignition Cycle Runtime is the total cumulated time from when the RCM was powered on to Time Zero for a given event. The maximum value of Ignition Cycle Runtime is over 70 million minutes and the resolution is 0.1 minutes.

## Odometer At Event Time Zero

Odometer At Event Time Zero is the value of the vehicle's lifetime mileage accumulation at Time Zero. The maximum value for this data element is over 1 million kilometers and the resolution is 0.1 kilometers.

## Airbag Warning Lamp Status

Airbag Warning Lamp Status indicates the commanded state of the warning lamp as "on" or "off" within approximately the last second before Time Zero.

ABS Warning Indicator Status
ABS Warning Indicator Status indicates the commanded state of the warning lamp as "on" or "off" within approximately the last second before Time Zero.

## Vehicle Drive Mode

Vehicle Drive Mode is the status of the vehicle's powertrain setting within approximately the last second before Time Zero. Possible values for this data element include Park, Reverse, Neutral and Drive.

Driver/Passenger Safety Belt Status
The Driver/Passenger Safety Belt Status is the recorded status of the safety belt at the time of the event. This data element is recorded one second before Time Zero.

Occupant Classification In Front Passenger Seat
The Occupant Classification data element indicates the detected occupant type in the front passenger seat. Values include: Empty, Child, Small Adult, Large Adult.

## Rear occupant seat status

The Model Y may record data associated with the second row seat occupancy and seat belt status. Seat occupancy status may not identify small occupants or child seats. The possible values for occupancy status include: Not Occupied or Occupied, or Not Available. The possible values for rear occupant seat belt status are Buckled, Not Buckled, or Not Available.

Driver Airbag Deployment 2nd Stage Disposal
This data element indicates if the driver airbag second stage was commanded to deploy (either for occupant restraint or propellant disposal purposes).'

Right Front Passenger Airbag Deployment 2nd Stage Disposal
This data element indicates if the passenger airbag second stage was commanded to deploy (either for occupant restraint or propellant disposal purposes).

## Complete File Recorded

Complete File Recorded indicates whether or not the complete data set available to the EDR was successfully recorded.

## Deployment Summary

The Deployment Summary table indicates which of the deployable safety devices (if any) were commanded to deploy and at what time (relative to the event Time Zero). The possible values for the status of each device is "Deployment Commanded" or "Deployment Not Commanded". The deployment commanded time is to the nearest millisecond.

## Time Series Data

All time references are based on the event definition of Time Zero.

Vehicle Speed
Vehicle Speed is calculated using the four wheel speed signals as well as inertial acceleration measurements. This speed will be reported either in kilometers per hour or miles per hour, depending on vehicle configuration. The minimum value for vehicle speed is 0 and the maximum value is greater than $200 \mathrm{~km} / \mathrm{h}(124 \mathrm{mph})$. The resolution of Vehicle Speed is to the nearest kilometer per hour or mile per hour, depending on vehicle configuration.

## Accelerator Pedal (\%)

Accelerator Pedal (\%) is the percent of full application of the accelerator pedal. The resolution of Accelerator Pedal (\%) is to the nearest percent.

## Rear Motor Speed (rpm)

Rear Motor Speed is the rate of rotation of the rear drive motor. The maximum value for Rear Motor Speed is 17,900 rpm (revolutions per minute). The resolution of Rear Motor Speed is to the nearest 1 rpm . Positive RPM values indicate that the vehicle motor is rotating negatively about the vehicle's lateral ( $y$ ) axis, which provides forward motive force.

## Service Brake

Service Brake indicates the status of the driver's application of the brake pedal as reported by the brake booster. The possible values for Service Brake are "On" (pedal being applied by driver) and "Off" (pedal not being applied by driver).

## Stability Control

Stability Control is the status of the Electronic Stability Control system (ESC). The possible values are "On" (meaning the ESC was enabled but not active), "Off" (meaning the ESC was turned off), and "Engaged" (meaning that the ESC was active).

ABS Activity
ABS Activity is the status of the Anti-lock Braking System (ABS). The possible values are "On" (meaning the ABS was active) and "Off" (meaning the ABS was not active). Active ABS status does not necessarily indicate that the ABS control unit was actively modulating braking at one or more wheels.

Steering Wheel Angle (deg)
Steering Wheel Angle represents the measured rotational angle of the steering wheel. The range of Steering Wheel Angle data is -819 deg to +819 deg. The resolution of steering wheel angle is to the nearest degree. Data is recorded for 5 seconds prior to Time Zero every 0.1 seconds.

## Lateral/Longitudinal Pre-Crash Acceleration

Lateral and Longitudinal Pre-Crash Acceleration data is the measured physical acceleration of the vehicle as measured at the RCM during the 5 seconds prior to (and including) Time Zero.

## Roll/Yaw Rate Pre-Crash Data

Roll and Yaw Rate Pre-Crash data is the measured angular velocity of the RCM for the 5 seconds prior to (and including) Time Zero. The resolution of this data element is to the nearest 0.1 degrees/second and the samples are recorded every 0.1 seconds.

## Longitudinal/Lateral Delta-V data

Longitudinal and Lateral Time Series Delta-V Data indicates the change in velocity of the vehicle. The source of the data is the internal calculation (integration) of the sensor data inside of the RCM. The resolution of Delta-V data is to the nearest kilometer per hour and the data is reported every 10 ms after Time Zero. The range for delta-V data is $-100 \mathrm{~km} / \mathrm{h}$ to $+100 \mathrm{~km} / \mathrm{h}$.

Longitudinal/Lateral Time Series Acceleration data
Longitudinal and Lateral Time Series Acceleration Data indicates the measured physical acceleration of the vehicle. The source of the data is the accelerometers located inside the RCM. The resolution of acceleration data is 0.8 g and the data is reported every 0.5 ms after Time Zero. The range of acceleration data is -96 g to +96 g .

Lateral/Longitudinal/Normal Pre-Crash Acceleration data
Lateral, Longitudinal and Normal Pre-Crash Acceleration data is the measured physical acceleration of the vehicle as measured at the RCM. The resolution of acceleration data is 0.04 g and the data is reported every 100 ms 5 seconds prior to (and including) Time Zero. The range of acceleration data is -5 g to +5 g .

Roll Angle
Roll Angle indicates the vehicle roll angle at a specific time before and/or after Time Zero. The source of the data is the internal calculation (integration) of the sensor data inside of the RCM. The recording time for Roll Angle Data is 1 second before and 5 seconds after Time Zero and is sampled every 100 ms . The range of roll angle data is $-1,270$ deg to $+1,270$ deg and the resolution of roll angle data is to the nearest 10 deg.

Serial Numbers
Serial numbers are the sensor identification numbers that are stored in the RCM. These values are stored when the RCM is powered up (each ignition cycle).

## Hexadecimal Data

The Hexadecimal Data found in this report represents the original, raw data and identifying information retrieved from the RCM accessed to ultimately generate this report. The binary data is represented in hexadecimal format as a matter of convenience. While it represents all the raw data retrieved from the subject RCM not all of that raw data may be used in a given report or application.

## Event 1 Data Record

| Data Element | Value |
| :--- | :--- |
| Maximum Delta-V, Longitudinal (km/h) | -9 |
| Time To Maximum Delta-V, Longitudinal (ms) | 90.0 |
| Maximum Delta-V, Lateral (km/h) | 33 |
| Time To Maximum Delta-V, Lateral (ms) | 70.0 |
| Time To Maximum Delta-V, Resultant (ms) | 90.0 |
| Ignition Cycle At Event | 167 |
| Ignition Cycle Runtime (minutes) | 19.1 |
| Odometer At Event Time Zero (km) | 111.7 |
| Airbag Warning Lamp Status | Off |
| ABS Warning Indicator Status | Off |
| Driver Safety Belt Status | Belted |
| Passenger Safety Belt Status | Not Belted |
| Second Row Left Safety Belt Status | Not Belted |
| Second Row Center Safety Belt Status | Not Belted |
| Second Row Right Safety Belt Status | Not Belted |
| Occupant Classification Status In Front Passenger Seat | Not Adult |
| Second Row Left Seat Occupancy Status | Not Occupied |
| Second Row Center Seat Occupancy Status | Not Occupied |
| Second Row Right Seat Occupancy Status | Not Occupied |
| Passenger Seat Track Position | Forward |
| Vehicle Drive Mode | Neutral |
| Driver Airbag Deployment 2nd Stage Disposal | No |
| Right Front Passenger Airbag Deployment 2nd Stage Disposal | No |
| Complete File Recorded | Yes |

## Deployment Summary (Event 1)

| Device |  | Status |
| :--- | :---: | :---: |
| Driver Front Airbag Stage 1 | Deployment Commanded | Deployment Command Time (ms) |
| Driver Front Airbag Stage 2 | Deployment Commanded | 34 |
| Driver Front Airbag Active Vent | Deployment Commanded | 39 |
| Driver Knee Airbag | Deployment Commanded | 219 |
| Passenger Front Airbag Stage 1 | Deployment Not Commanded | 34 |
| Passenger Front Airbag Stage 2 | Deployment Not Commanded |  |
| Passenger Front Airbag Active Vent | Deployment Not Commanded |  |
| Passenger Knee Airbag | Deployment Not Commanded |  |
| 1st Row Left Seat Side Airbag | Deployment Commanded |  |
| Left Curtain Airbag (1st Row) | Deployment Commanded | 6 |
| 1st Row Left Retractor Pre-tensioner | Deployment Commanded | 6 |
| 1st Row Left Outboard Lap Pre-tensioner | Deployment Commanded | 6 |
| 1st Row Left Load Limiter | Deployment Commanded | 6 |
| 1st Row Right Seat Side Airbag | Deployment Not Commanded | 64 |
| Right Curtain Airbag (1st Row) | Deployment Commanded | 34 |
| 1st Row Right Retractor Pre-tensioner | Deployment Not Commanded |  |
| 1st Row Right Outboard Lap Pre-tensioner | Deployment Not Commanded |  |
| 1st Row Right Load Limiter | Deployment Not Commanded |  |
| 2nd Row Left Seat Side Airbag | Deployment Not Commanded |  |
| 2nd Row Left Curtain Airbag | Deployment Not Commanded |  |
| 2nd Row Left Retractor Pre-tensioner | Deployment Not Commanded |  |
| 2nd Row Right Seat Side Airbag | Deployment Not Commanded |  |
| 2nd Row Right Curtain Airbag | Deployment Not Commanded |  |
| 2nd Row Right Retractor Pre-tensioner | Deployment Not Commanded |  |

Event Data (Event 1)

| Time (sec) | Service Brake | Stability Control | ABS Activity |
| :---: | :---: | :---: | :---: |
| -5.0 | Off | Not Engaged | Off |
| -4.8 | Off | Not Engaged | Off |
| -4.6 | Off | Not Engaged | Off |
| -4.4 | Off | Not Engaged | Off |
| -4.2 | Off | Not Engaged | Off |
| -4.0 | Off | Not Engaged | Off |
| -3.8 | Off | Not Engaged | Off |
| -3.6 | Off | Not Engaged | Off |
| -3.4 | Off | Not Engaged | Off |
| -3.2 | Off | Not Engaged | Off |
| -3.0 | Off | Not Engaged | Off |
| -2.8 | Off | Not Engaged | Off |
| -2.6 | Off | Not Engaged | Off |
| -2.4 | Off | Not Engaged | Off |
| -2.2 | Off | Not Engaged | Off |
| -2.0 | Off | Not Engaged | Off |
| -1.8 | Off | Not Engaged | Off |
| -1.6 | Off | Not Engaged | Off |
| -1.4 | Off | Not Engaged | Off |
| -1.2 | Off | Not Engaged | Off |
| -1.0 | Off | Not Engaged | Off |
| -0.8 | Off | Not Engaged | Off |
| -0.6 | Off | Not Engaged | Off |
| -0.4 | Off | Not Engaged | Off |
| -0.2 | Off | Not Engaged | Off |
| 0.0 | Off | Not Engaged | Off |
| Time (sec) | Vehicle Speed (mi/h) | Accelerator Pedal (\%) | Rear Motor Speed (rpm) |
| -5.0 | 0.0 | 0.0 | 0 |
| -4.8 | 0.0 | 0.0 | 1 |
| -4.6 | 0.0 | 0.0 | 0 |
| -4.4 | 0.0 | 0.0 | 0 |
| -4.2 | 0.0 | 0.0 | 0 |
| -4.0 | 0.0 | 0.0 | 0 |
| -3.8 | 0.0 | 0.0 | 0 |
| -3.6 | 0.0 | 0.0 | 0 |
| -3.4 | 0.0 | 0.0 | 0 |
| -3.2 | 0.0 | 0.0 | 1 |
| -3.0 | 0.0 | 0.0 | 0 |
| -2.8 | 0.0 | 0.0 | 1 |
| -2.6 | 0.0 | 0.0 | 1 |
| -2.4 | 0.0 | 0.0 | 0 |
| -2.2 | 0.0 | 0.0 | 1 |
| -2.0 | 0.0 | 0.0 | SNA |
| -1.8 | 0.0 | 0.0 | 0 |
| -1.6 | 0.0 | 0.0 | SNA |
| -1.4 | 0.0 | 0.0 | 0 |
| -1.2 | 0.0 | 0.0 | SNA |
| -1.0 | 0.0 | 0.0 | 1 |
| -0.8 | 0.0 | 0.0 | SNA |
| -0.6 | 0.0 | 0.0 | 1 |
| -0.4 | 0.0 | 0.0 | 0 |
| -0.2 | 0.0 | 0.0 | 0 |
| 0.0 | 0.0 | 0.0 | SNA |

Steering Wheel Angle (Event 1)

Steering Wheel Angle (deg)


| Time (sec) | Angle (deg) | Time (sec) | Angle (deg) |
| :---: | :---: | :---: | :---: |
| -5.0 | -3 | -3.7 | -3 |
| -4.9 | -3 | -3.6 | -3 |
| -4.8 | -3 | -3.5 | -3 |
| -4.7 | -3 | -3.4 | -3 |
| -4.6 | -3 | -3.3 | -3 |
| -4.5 | -3 | -3.2 | -3 |
| -4.4 | -3 | -3.1 | -3 |
| -4.3 | -3 | -3.0 | -3 |
| -4.2 | -3 | -2.9 | -3 |
| -4.1 | -3 | -2.8 | -3 |
| -4.0 | -3 | -2.7 | -3 |
| -3.9 | -3 | -2.6 | -3 |
| -3.8 | -3 | -2.5 | -3 |

Lateral Pre-Crash Acceleration (Event 1)


| Time (s) | Acceleration (g) | Time (s) | Acceleration (g) | Time (s) | Acceleration (g) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -5.0 | 0.0 | -3.3 | 0.0 | -1.6 | 0.0 |
| -4.9 | 0.0 | -3.2 | 0.0 | -1.5 | 0.0 |
| -4.8 | 0.0 | -3.1 | 0.0 | -1.4 | 0.0 |
| -4.7 | 0.0 | -3.0 | 0.0 | -1.3 | 0.0 |
| -4.6 | 0.0 | -2.9 | 0.0 | -1.2 | 0.0 |
| -4.5 | 0.0 | -2.8 | 0.0 | -1.1 | 0.0 |
| -4.4 | 0.0 | -2.7 | 0.0 | -1.0 | 0.0 |
| -4.3 | 0.0 | -2.6 | 0.0 | -0.9 | 0.0 |
| -4.2 | 0.0 | -2.5 | 0.0 | -0.8 | 0.0 |
| -4.1 | 0.0 | -2.4 | 0.0 | -0.7 | 0.0 |
| -4.0 | 0.0 | -2.3 | 0.0 | -0.6 | 0.0 |
| -3.9 | 0.0 | -2.2 | 0.0 | -0.5 | 0.0 |
| -3.8 | 0.0 | -2.1 | 0.0 | -0.4 | 0.0 |
| -3.7 | 0.0 | -2.0 | 0.0 | -0.3 | 0.0 |
| -3.6 | 0.0 | -1.9 | 0.0 | -0.2 | 0.0 |
| -3.5 | 0.0 | -1.8 | 0.0 | -0.1 | 0.0 |
| -3.4 | 0.0 | -1.7 | 0.0 | 0.0 | 0.0 |

Longitudinal Pre-Crash Acceleration (Event 1)

Longitudinal Acceleration (g)


| Time (s) | Acceleration (g) | Time (s) | Acceleration (g) | Time (s) | Acceleration (g) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -5.0 | 0.0 | -3.3 | 0.0 | -1.6 | 0.0 |
| -4.9 | 0.0 | -3.2 | 0.0 | -1.5 | 0.0 |
| -4.8 | 0.0 | -3.1 | 0.0 | -1.4 | 0.0 |
| -4.7 | 0.0 | -3.0 | 0.0 | -1.3 | 0.0 |
| -4.6 | 0.0 | -2.9 | 0.0 | -1.2 | 0.0 |
| -4.5 | 0.0 | -2.8 | 0.0 | -1.1 | 0.0 |
| -4.4 | 0.0 | -2.7 | 0.0 | -1.0 | 0.0 |
| -4.3 | 0.0 | -2.6 | 0.0 | -0.9 | 0.0 |
| -4.2 | 0.0 | -2.5 | 0.0 | -0.8 | 0.0 |
| -4.1 | 0.0 | -2.4 | 0.0 | -0.7 | 0.0 |
| -4.0 | 0.0 | -2.3 | 0.0 | -0.6 | 0.0 |
| -3.9 | 0.0 | -2.2 | 0.0 | -0.5 | 0.0 |
| -3.8 | 0.0 | -2.1 | 0.0 | -0.4 | 0.0 |
| -3.7 | 0.0 | -2.0 | 0.0 | -0.3 | 0.0 |
| -3.6 | 0.0 | -1.9 | 0.0 | -0.2 | 0.0 |
| -3.5 | 0.0 | -1.8 | 0.0 | -0.1 | 0.0 |
| -3.4 | 0.0 | -1.7 | 0.0 | 0.0 | 0.0 |

Roll Rate Pre-Crash Data (Event 1)

Roll Rate (deg/s)


| Time (s) | Roll Rate (deg/s) | Time (s) | Roll Rate (deg/s) | Time (s) | Roll Rate (deg/s) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -5.0 | 0.0 | -3.3 | 0.0 | -1.6 | 0.0 |
| -4.9 | 0.0 | -3.2 | 0.0 | -1.5 | 0.0 |
| -4.8 | -2.6 | -3.1 | 0.0 | -1.4 | 0.0 |
| -4.7 | 0.0 | -3.0 | 0.0 | -1.3 | 0.0 |
| -4.6 | 0.0 | -2.9 | 0.0 | -1.2 | 0.0 |
| -4.5 | 0.0 | -2.8 | 0.0 | -1.1 | 0.0 |
| -4.4 | -2.6 | -2.7 | 0.0 | -1.0 | 0.0 |
| -4.3 | 0.0 | -2.6 | 0.0 | -0.9 | 0.0 |
| -4.2 | 2.6 | -2.5 | 0.0 | -0.8 | 0.0 |
| -4.1 | 0.0 | -2.4 | 0.0 | -0.7 | 0.0 |
| -4.0 | -2.6 | -2.3 | 0.0 | -0.6 | 0.0 |
| -3.9 | 0.0 | -2.2 | 0.0 | -0.5 | 0.0 |
| -3.8 | 2.6 | -2.1 | 0.0 | -0.4 | 0.0 |
| -3.7 | 0.0 | -2.0 | 0.0 | -0.3 | 0.0 |
| -3.6 | -2.6 | -1.9 | 0.0 | -0.2 | 0.0 |
| -3.5 | 0.0 | -1.8 | 0.0 | -0.1 | 0.0 |
| -3.4 | 0.0 | -1.7 | 0.0 | 0.0 | 0.0 |

Yaw Rate Pre-Crash Data (Event 1)


| Time (s) | Yaw Rate (deg/s) | Time (s) | Yaw Rate (deg/s) | Time (s) | Yaw Rate (deg/s) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -5.0 | 0.0 | -3.3 | 0.0 | -1.6 | 0.0 |
| -4.9 | 0.0 | -3.2 | 0.0 | -1.5 | 0.0 |
| -4.8 | 0.0 | -3.1 | 0.0 | -1.4 | 0.0 |
| -4.7 | 0.0 | -3.0 | 0.0 | -1.3 | 0.0 |
| -4.6 | 0.0 | -2.9 | 0.0 | -1.2 | 0.0 |
| -4.5 | 0.0 | -2.8 | 0.0 | -1.1 | 0.0 |
| -4.4 | 0.0 | -2.7 | 0.0 | -1.0 | 0.0 |
| -4.3 | 0.0 | -2.6 | 0.0 | -0.9 | 0.0 |
| -4.2 | 0.0 | -2.5 | 0.0 | -0.8 | 0.0 |
| -4.1 | 0.0 | -2.4 | 0.0 | -0.7 | 0.0 |
| -4.0 | 0.0 | -2.3 | 0.0 | -0.6 | 0.0 |
| -3.9 | 0.0 | -2.2 | 0.0 | -0.5 | 0.0 |
| -3.8 | 0.0 | -2.1 | 0.0 | -0.4 | 0.0 |
| -3.7 | 0.0 | -2.0 | 0.0 | -0.3 | 0.0 |
| -3.6 | 0.0 | -1.9 | 0.0 | -0.2 | 0.0 |
| -3.5 | 0.0 | -1.8 | 0.0 | -0.1 | 0.0 |
| -3.4 | 0.0 | -1.7 | 0.0 | 0.0 | 0.0 |

Longitudinal Delta-V (Event 1)


| Time (ms) | Delta-V (km/h) | Time (ms) | Delta-V (km/h) |
| :---: | :---: | :---: | :---: |
| 0 | 0 | 130 | -9 |
| 10 | 0 | 140 | -9 |
| 20 | -1 | 150 | -9 |
| 30 | -2 | 160 | -9 |
| 40 | -5 | 170 | -9 |
| 50 | -7 | 180 | -9 |
| 60 | -8 | 190 | -9 |
| 70 | -8 | 200 | -9 |
| 80 | -8 | 210 | -9 |
| 90 | -9 | 220 | -9 |
| 100 | -9 | 230 | -9 |
| 110 | -9 | 240 | -9 |
| 120 | -9 | 250 | -9 |

Lateral Delta-V (km/h)


Time (ms)
0
10
20
30
40
50
60
70

80

90
100
110
120

Delta-V (km/h)
0
5
9
14
25
28
31
33
33
33
33
33
33
33
33

Time (ms)
Delta-V (km/h)
130
32
140
150
32
32
160
170
180
190
200
210
220
230
240
250

32
32
32
32
32
32
32
32
32
32

Longitudinal Acceleration (Event 1)


Longitudinal Acceleration Values (Event 1)

| Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -5.0 | -0.1 | 17.0 | -5.0 | 39.0 | 37.9 | 61.0 | 3.1 |
| -4.5 | -0.1 | 17.5 | 5.9 | 39.5 | 8.8 | 61.5 | 3.1 |
| -4.0 | -0.1 | 18.0 | -14.1 | 40.0 | -25.6 | 62.0 | -2.9 |
| -3.5 | -0.2 | 18.5 | -43.8 | 40.5 | -8.4 | 62.5 | -5.8 |
| -3.0 | -0.2 | 19.0 | -56.4 | 41.0 | -0.7 | 63.0 | -3.8 |
| -2.5 | -0.2 | 19.5 | -24.6 | 41.5 | -7.9 | 63.5 | 2.9 |
| -2.0 | -0.2 | 20.0 | 18.6 | 42.0 | 14.4 | 64.0 | 3.7 |
| -1.5 | -0.1 | 20.5 | 6.2 | 42.5 | -6.5 | 64.5 | -2.4 |
| -1.0 | -0.1 | 21.0 | 3.8 | 43.0 | -22.1 | 65.0 | -0.1 |
| -0.5 | -0.2 | 21.5 | -3.7 | 43.5 | -28.4 | 65.5 | 1.4 |
| 0.0 | -0.3 | 22.0 | -7.9 | 44.0 | 4.3 | 66.0 | 3.6 |
| 0.5 | -0.2 | 22.5 | 12.1 | 44.5 | 2.8 | 66.5 | 3.1 |
| 1.0 | -0.1 | 23.0 | 6.5 | 45.0 | -10.6 | 67.0 | -4.0 |
| 1.5 | -0.2 | 23.5 | -9.7 | 45.5 | -7.8 | 67.5 | -6.9 |
| 2.0 | -0.3 | 24.0 | -5.1 | 46.0 | -9.2 | 68.0 | -3.2 |
| 2.5 | -0.5 | 24.5 | 10.2 | 46.5 | -14.4 | 68.5 | 3.6 |
| 3.0 | -0.6 | 25.0 | 2.4 | 47.0 | -4.6 | 69.0 | 1.9 |
| 3.5 | -1.1 | 25.5 | -10.7 | 47.5 | -7.5 | 69.5 | -3.2 |
| 4.0 | -0.3 | 26.0 | -3.2 | 48.0 | -4.3 | 70.0 | -2.9 |
| 4.5 | 0.5 | 26.5 | 5.4 | 48.5 | -9.9 |  |  |
| 5.0 | -0.3 | 27.0 | -9.3 | 49.0 | -0.3 |  |  |
| 5.5 | -1.8 | 27.5 | -6.1 | 49.5 | -8.2 |  |  |
| 6.0 | -0.9 | 28.0 | -4.6 | 50.0 | -2.8 |  |  |
| 6.5 | 0.2 | 28.5 | -7.4 | 50.5 | 1.9 |  |  |
| 7.0 | -0.6 | 29.0 | 9.1 | 51.0 | -5.6 |  |  |
| 7.5 | -1.0 | 29.5 | -9.9 | 51.5 | 0.5 |  |  |
| 8.0 | -0.9 | 30.0 | -10.0 | 52.0 | 0.7 |  |  |
| 8.5 | -2.7 | 30.5 | -0.4 | 52.5 | -3.9 |  |  |
| 9.0 | -8.8 | 31.0 | -10.2 | 53.0 | -5.9 |  |  |
| 9.5 | 22.1 | 31.5 | -10.3 | 53.5 | -6.5 |  |  |
| 10.0 | 34.4 | 32.0 | 0.0 | 54.0 | -1.7 |  |  |
| 10.5 | 23.8 | 32.5 | -9.7 | 54.5 | -1.9 |  |  |
| 11.0 | 18.0 | 33.0 | -8.1 | 55.0 | -5.5 |  |  |
| 11.5 | 6.9 | 33.5 | -3.9 | 55.5 | -1.6 |  |  |
| 12.0 | -53.1 | 34.0 | -18.1 | 56.0 | 0.1 |  |  |
| 12.5 | -83.3 | 34.5 | -15.1 | 56.5 | 2.9 |  |  |
| 13.0 | 17.7 | 35.0 | 15.7 | 57.0 | -7.2 |  |  |
| 13.5 | 42.9 | 35.5 | -0.1 | 57.5 | -0.6 |  |  |
| 14.0 | 2.3 | 36.0 | -34.1 | 58.0 | 6.6 |  |  |
| 14.5 | -5.8 | 36.5 | 2.1 | 58.5 | -6.1 |  |  |
| 15.0 | 8.4 | 37.0 | 36.4 | 59.0 | -2.2 |  |  |
| 15.5 | -7.3 | 37.5 | -16.6 | 59.5 | -2.9 |  |  |
| 16.0 | 6.6 | 38.0 | -77.1 | 60.0 | -3.1 |  |  |
| 16.5 | -1.9 | 38.5 | -30.2 | 60.5 | 2.9 |  |  |



## Lateral Acceleration Values (Event 1)

| Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -5.0 | 0.1 | 17.0 | -7.2 | 39.0 | 14.6 | 61.0 | 5.0 |
| -4.5 | 0.1 | 17.5 | -73.2 | 39.5 | 15.5 | 61.5 | 3.2 |
| -4.0 | 0.1 | 18.0 | -120.4 | 40.0 | -8.9 | 62.0 | 6.4 |
| -3.5 | 0.1 | 18.5 | -78.6 | 40.5 | 1.1 | 62.5 | 4.2 |
| -3.0 | 0.1 | 19.0 | -59.7 | 41.0 | 31.9 | 63.0 | 9.5 |
| -2.5 | 0.1 | 19.5 | -78.1 | 41.5 | 28.9 | 63.5 | 14.5 |
| -2.0 | 0.1 | 20.0 | -32.4 | 42.0 | 7.6 | 64.0 | 14.4 |
| -1.5 | 0.1 | 20.5 | 13.6 | 42.5 | 11.7 | 64.5 | 9.6 |
| -1.0 | 0.0 | 21.0 | 8.2 | 43.0 | 0.3 | 65.0 | 7.3 |
| -0.5 | -0.1 | 21.5 | 3.8 | 43.5 | -0.2 | 65.5 | 5.5 |
| 0.0 | 0.0 | 22.0 | 6.8 | 44.0 | 6.2 | 66.0 | 5.6 |
| 0.5 | 0.1 | 22.5 | 1.6 | 44.5 | 9.8 | 66.5 | 1.9 |
| 1.0 | 0.1 | 23.0 | 0.8 | 45.0 | 0.8 | 67.0 | -0.9 |
| 1.5 | 0.0 | 23.5 | 10.2 | 45.5 | 7.7 | 67.5 | 1.7 |
| 2.0 | -0.2 | 24.0 | 28.7 | 46.0 | 10.6 | 68.0 | 4.0 |
| 2.5 | 0.2 | 24.5 | 9.6 | 46.5 | 8.8 | 68.5 | 2.0 |
| 3.0 | 1.5 | 25.0 | 8.6 | 47.0 | 7.8 | 69.0 | 1.6 |
| 3.5 | 2.2 | 25.5 | 26.9 | 47.5 | 2.2 | 69.5 | 1.3 |
| 4.0 | 2.6 | 26.0 | 30.5 | 48.0 | -4.1 | 70.0 | 1.4 |
| 4.5 | 2.4 | 26.5 | 30.2 | 48.5 | 9.1 |  |  |
| 5.0 | 1.4 | 27.0 | 14.8 | 49.0 | 10.0 |  |  |
| 5.5 | -0.1 | 27.5 | 6.4 | 49.5 | 2.2 |  |  |
| 6.0 | -1.2 | 28.0 | 15.8 | 50.0 | 9.6 |  |  |
| 6.5 | -1.4 | 28.5 | 34.1 | 50.5 | 10.9 |  |  |
| 7.0 | -0.1 | 29.0 | 23.2 | 51.0 | 2.1 |  |  |
| 7.5 | 1.9 | 29.5 | 22.7 | 51.5 | 16.5 |  |  |
| 8.0 | 4.0 | 30.0 | 11.9 | 52.0 | 11.9 |  |  |
| 8.5 | 20.4 | 30.5 | 5.2 | 52.5 | 9.0 |  |  |
| 9.0 | 127.9 | 31.0 | 46.6 | 53.0 | 10.5 |  |  |
| 9.5 | 127.9 | 31.5 | 59.5 | 53.5 | 7.8 |  |  |
| 10.0 | 26.6 | 32.0 | 52.4 | 54.0 | 5.4 |  |  |
| 10.5 | 3.7 | 32.5 | 61.6 | 54.5 | 3.3 |  |  |
| 11.0 | 20.9 | 33.0 | 61.4 | 55.0 | 9.7 |  |  |
| 11.5 | -40.2 | 33.5 | 68.5 | 55.5 | 8.9 |  |  |
| 12.0 | -20.0 | 34.0 | 61.8 | 56.0 | 1.5 |  |  |
| 12.5 | -3.9 | 34.5 | 101.6 | 56.5 | 5.3 |  |  |
| 13.0 | -30.7 | 35.0 | 57.3 | 57.0 | 1.1 |  |  |
| 13.5 | 37.1 | 35.5 | 16.2 | 57.5 | 8.1 |  |  |
| 14.0 | 126.6 | 36.0 | 8.9 | 58.0 | 8.5 |  |  |
| 14.5 | 127.9 | 36.5 | 19.1 | 58.5 | 3.9 |  |  |
| 15.0 | 127.9 | 37.0 | 75.1 | 59.0 | 9.6 |  |  |
| 15.5 | 127.9 | 37.5 | 5.0 | 59.5 | 12.7 |  |  |
| 16.0 | 123.8 | 38.0 | -69.6 | 60.0 | 8.1 |  |  |
| 16.5 | 53.2 | 38.5 | -20.0 | 60.5 | 4.9 |  |  |

Normal Acceleration (Event 1)

Normal Acceleration (g)


| Normal Acceleration Values (Event 1) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) | Time (ms) | Acceleration (g) |
| -5000 | 0.1 | -3300 | 0.0 | -1600 | 0.0 |
| -4900 | 0.0 | -3200 | 0.0 | -1500 | 0.0 |
| -4800 | 0.0 | -3100 | 0.0 | -1400 | 0.0 |
| -4700 | 0.0 | -3000 | 0.0 | -1300 | 0.0 |
| -4600 | 0.1 | -2900 | 0.0 | -1200 | 0.0 |
| -4500 | 0.0 | -2800 | 0.0 | -1100 | 0.0 |
| -4400 | 0.0 | -2700 | 0.0 | -1000 | 0.0 |
| -4300 | 0.0 | -2600 | 0.0 | -900 | 0.0 |
| -4200 | 0.1 | -2500 | 0.1 | -800 | 0.1 |
| -4100 | 0.0 | -2400 | 0.0 | -700 | -0.1 |
| -4000 | 0.0 | -2300 | 0.0 | -600 | 0.0 |
| -3900 | 0.0 | -2200 | 0.0 | -500 | 0.0 |
| -3800 | 0.0 | -2100 | 0.0 | -400 | 0.0 |
| -3700 | 0.1 | -2000 | 0.1 | -300 | 0.1 |
| -3600 | 0.0 | -1900 | 0.0 | -200 | 0.0 |
| -3500 | 0.0 | -1800 | 0.0 | -100 | 0.0 |
| -3400 | 0.0 | -1700 | -0.1 | 0 | 0.0 |

Roll Angle Data (Event 1)

Roll Angle (deg)


Roll Angle Values (Event 1)

| Time (ms) | Angle (deg) | Time (ms) | Angle (deg) | Time (ms) | Angle (deg) | Time (ms) | Angle (deg) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -1000 | 0 | 800 | 0 | 2600 | 0 | 4400 | 0 |
| -900 | 0 | 900 | 0 | 2700 | 0 | 4500 | 0 |
| -800 | 0 | 1000 | 0 | 2800 | 0 | 4600 | 0 |
| -700 | 0 | 1100 | 0 | 2900 | 0 | 4700 | 0 |
| -600 | 0 | 1200 | 0 | 3000 | 0 | 4800 | 0 |
| -500 | 0 | 1300 | 0 | 3100 | 0 | 4900 | 0 |
| -400 | 0 | 1400 | 0 | 3200 | 0 | 5000 | 0 |
| -300 | 0 | 1500 | 0 | 3300 | 0 |  |  |
| -200 | 0 | 1600 | 0 | 3400 | 0 |  |  |
| -100 | 0 | 1700 | 0 | 3500 | 0 |  |  |
| 0 | 0 | 1800 | 0 | 3600 | 0 |  |  |
| 100 | 0 | 1900 | 0 | 3700 | 0 |  |  |
| 200 | 0 | 2000 | 0 | 3800 | 0 |  |  |
| 300 | 10 | 2100 | 0 | 3900 | 0 |  |  |
| 400 | 10 | 2200 | 0 | 4000 | 0 |  |  |
| 500 | 0 | 2300 | 0 | 4100 | 0 |  |  |
| 600 | 0 | 2400 | 0 | 4200 | 0 |  |  |
| 700 | 0 | 2500 | 0 | 4300 | 0 |  |  |

Serial Numbers

| Sensor Number | Sensor Type | Serial Number |
| :--- | :--- | :--- |
| 1 | RCM Serial Number | 2C40058778AB11 |
| 2 | Front Left Crash Sensor | D63292FOFFFF |
| 3 | Front Middle Left Crash Sensor | 614481DOFFFF |
| 4 | Front Middle Right Crash Sensor | 467546FOFFFF |
| 5 | Front Right Crash Sensor | 4671B470FFFF |
| 6 | Left Side Impact Crash Sensor (B-Pillar) | O47570AOFFFF |
| 7 | Right Side Impact Crash Sensor (B-Pillar) | O1E25030FFFF |
| 8 | Front Left Side Door Pressure Sensor | 279194AOFFFF |
| 9 | Front Right Side Door Pressure Sensor | 2551CO30FFFF |
| 10 | Rear Left Side Door Pressure Sensor | ABB1D350FFFF |
| 11 | Rear Right Side Door Pressure Sensor | DA638220FFFF |

## Hexadecimal Data

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 0028 7D 7E 7D 7E 7D 7D 7C 7D 7D 7D 7E 7D 7D 7D 7D 7D 7D 7D 7D 7D 7D 7D 7D 7E 7D 7D 7D 7D 0056 7D 7D 7D 7D 7E 7E 7E 7D 7D 7D 7C 7D 7D 7E 7D 7D 7D 0016 $0084008000800080 \quad 00$ 7F FF 7F FE 7F FF 80




 0252 E9 80 F7 $7 \mathrm{FF} 7080 \quad 11 \quad 81$ FE 81 CE $80 \quad 7980$
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 0364 0392 0420 0448 0476 0504 0532 0560 0588 0616 FO 80 1A 80 FC 7F FD 7F FD 7F FB 7F FA 7F FB 7F FD 7F FC 7F FA 7F F7 7F F6 7F EE 7F FA $80 \quad 07$ 7F FA 7F E2 7F F1 80 O3 7F F6 7F EF 7F FO 7 FF D4 $7 \mathrm{7F}$ 73 81 AD 7A CA 81 1A 82 AD $80247 F$ A3 $80857 F 8 A 80687 F$ EO 7F AF $805 E 7 F$ 1D 7D 42 7C

 7E 7F CO 7E DD 7F OE 80 FA 7F FD 7D DD 8020
 B6 7F 87 7F BA 7F 61 7F FA 7F 7C 7 FF D3 80 E4 7F E1 7F A7 7F E5 80 OO 80 2D 7F 8C 7F F6 $80697 F 9 E 7 F$ DC 7F DO 7F CD 802 Cl 80

 0700 7F 7D 7D 7D 7D 7D 7D 7E 7E 7C 7E 80 7E 7C 7C 80 0728 7F 7D 7F 7D 7D 7C 7C 7D 7F 7F 80 7D 7F 7E 7D 7B 7D 7C 7D 7D 7D 7F 7D 7D 7D 7D OO 1B



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7F 7F 7F O2 OC 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7 F 7F 7 F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F



 7F FD 7F E7 7F D9 7F EA 7F FE 80 7F E3 7F F3 7F F3 7F F9 7F F1 7F FC 7F FD 7F F6 7F FE 7F EB 7F F9 7F F2 $80 \quad 067 \mathrm{~F}$ F2
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 7F FF 7F FF 7F FF 7F FF 7F FE 7F FF 7F FE 7F FD 7F FD 7F FD 7F FF $80 \quad 0080 \quad 007 F \quad F B$

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 0084 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0112 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0140 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF $0168 \quad$ FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF $0196 \quad F F$ FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF $\quad \mathrm{FF}$ FF FF FF 0224 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0252 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0280 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0308 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0336 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0392 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0420 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0448 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0476 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0504 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF $F$ FF $\quad \mathrm{FF}$ FF FF FF 0532 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0560 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0588 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0616 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0644 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0672 FF FF FF FF FF FF FF FF FF OO 19 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0700 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0728 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF OO $1 B$ 0756 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0784 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0812 FF FF FF FF FF OO 1F FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0840 FF FF FF FF FF 0020 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0868 FF FF FF FF FF OO 21 FF OO 22 FF OO 23 FF FF 0024 FF FF 0025 FF FF OO 28 FF FF 00 089629 FF FF OO 2D FF OO 30 FF FF OO 33 FF FF 0034 FF FF 0036 FF 0038 FF FF 0039 FF 0924 FF OO 3B FF OO 3D FF FF OO 3 F F FF FF 00 3F FF FF 00
 0980 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 1008 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 00 5C FF FF FF FF FF FF FF FF FF FF 1036 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 00 5D FF FF FF FF FF FF FF FF FF FF 1064 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 1092 FF FF FF FF FF FF FF FF FF FF FF FF FF FF 00 5E FF FF FF FF FF FF FF FF FF FF FF FF 1120 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 1148 FF FF FF FF FF FF FF FF FF FF FF FF OO 5 F FF FF FF FF FF FF FF FF FF FF FF FF FF FF

## 5818 Continued

 1204 FF FF FF FF FF FF FF FF FF FF FF FF 0061 FF FF FF FF FF FF

1232 1260 1288 1316 1344 1372 1400 1428 1456 1484 1512 1540 1568 1596 1624 1652 1680 1708 1736 1764 1792 1820 1848 1876 1904 1932 1960 1988 2016 2044 2072 2100 2128 2156 2184 2212 2240 2268 2296 2324 2352 FF FF FF FF FF FF FF FF FF FF FF 0065 FF FF 0066 FF FF 006 DF FF 006 F FF FF 0111 FF FF O3 E8 FF O3 E9 FF FF 03 EA FF FF O3 F2 FF FF FF FF 01 F5 FF FF 01 F6 FF FF 01 F7 FF FF 01 F8 FF FF FF FF 01 F9 FF FF FF FF 01 FA FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 01 FC FF FF FF FF O2 OO FF FF O2 O1 FF FF O2 O2 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0203 FF 0206 FF FF 0200 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0208 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 02 O9 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 OA FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 OB FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 OC FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 15 FF FF FF FF O2 16 FF 0217 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0218 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 19 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 02 1A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 02 1B FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 1C FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 02 1D FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 1E FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 1F FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0220 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0221 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF O2 22 FF FF 0223 FF FF FF FF 0224 FF 0225 FF 02 26 FF FF FF FF FF FF FF FF FF FF FF 0227 FF FF FF FF FF FF FF FF FF FF FF FF FF FF

5818 Continued

| 88 | FF | FF | 02 | 28 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2912 | FF | FF | FF | FF | FF | FF | FF | FF | 02 | 29 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F | F | FF | FF | FF | FF | 02 | 2A |
| 2940 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | O2 | 2B | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 2968 | FF | FF | FF | FF | FF | FF | 02 | 2C | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 2996 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | 02 | 2D | FF | 02 | 2E | FF | 02 | 2F | FF | FF | 02 | 30 | FF | FF | 02 | 31 |
| 3024 | FF | FF | 02 | 32 | FF | 02 | 33 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3052 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3080 | FF | FF | F | F | FF | FF | FF | FF | FF | FF | FF | FF | FF | F | F | 02 | 34 | FF | FF | FF | F | F | FF | FF | FF | F | F | F |
| 3108 | FF | FF | FF | FF | FF | 02 | 35 | FF | O2 | 36 | FF | 02 | 37 | FF | 02 | 38 | FF | 02 | 39 | FF | FF | 00 | 4E | FF | 00 | 52 | FF | 00 |
| 3136 | 53 | FF | 00 | 54 | FF | 00 | 55 | FF | 00 | 57 | FF | 01 | 20 | FF | 01 | 21 | FF | 01 | 22 | FF | 01 | 23 | FF | 01 | 24 | FF | 02 | 3A |
| 3164 | FF | 02 | 3B | FF | FF | 02 | 3C | FF | FF | 02 | 3D | FF | FF | O 2 | 3E | FF | FF | 02 | 3F | FF | FF | 02 | 40 | FF | FF | 02 | 41 | F |
| 3192 | FF | 02 | 42 | F | F | 02 | 43 | FF | FF | 02 | 44 | FF | FF | 02 | 45 | F | FF | 02 | 46 | FF | FF | 02 | 47 | FF | FF | 2 | 48 | $F$ |
| 3220 | FF | 02 | 49 | FF | FF | 02 | 4A | FF | FF | 02 | 4B | FF | 03 | E7 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3248 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3276 | FF | FF | F | F | F | FF | FF | F | F | F | FF | F | FF | F | FF | F | F | F | F | FF | F | F | FF | FF | FF | FF | F | FF |
| 3304 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3332 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3360 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F | F | FF | FF | F | F | FF | FF | FF | FF | FF | FF |
| 3388 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F | F | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3416 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3444 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3472 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F | F | F | F | FF | FF | FF | FF | F | FF | FF | FF | FF | FF | F |
| 3500 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3528 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3556 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3584 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3612 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3640 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3668 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3696 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3724 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3752 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3780 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3808 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 3836 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

F014

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F190
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FEO2
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FEO4
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FEO5
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FEO6
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FEO7
$\begin{array}{lllllllllllllll}00 & 00 & 00 & 00 & 00 & 00 & 00 & 00 & O A & 90 & 02 & 01 & E 2 & 50 & 30\end{array}$

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FEOC
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    13 DD 12 63 6B 2A AA 17 60 73 70 AD 68 4E OE A9 79 4F 7B 99 FC 5E E9 8E 1D A2 A9 9A 50 FE F9 O7
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