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**Driving Behavior Analysis**

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# 概要/Overview

驾驶行为分析（Driving Behavior Analysis），以下简称为DBA，是基于虚拟座舱系统（以下简称“VCS”）中驾驶行为分析的软件算法，根据车载硬件或车载信息娱乐系统中的其他模块提供的源信息，加以计算和分析，得出相应的结果，必要时结合后台能力进行数据交互，并通过中控屏幕反馈给用户的一套功能。

Driving Behavior Analysis (hereinafter referred to as DBA) is a set of functions, which use the software algorithm of driving behavior analysis in the Virtual Cockpit System (hereinafter referred to as VCS) to obtain corresponding results through calculation and analysis of the source information provided by on-board hardware or other modules in the On-board Infotainment System, carry out data interaction in combination with background capabilities when necessary, and provide feedback to users via the central control screen.

# 账户关联/Account-related

DBA的触发与呈现不与账户关联，而从属于车辆的行程。车辆作为数据的载体，承担收集、呈现、储存、上传等作用（统称为处理），车辆会将收集到的数据上传给安吉星SOS，由SOS作分析和进一步结果呈现。

DBA is a trip-based feature which is principally tied with vehicles but not to accounts. As the data carrier, vehicle is responsible for the collection, exhibition, storing and updating (aka processing). Vehicles will update the data collected to OnStar SOS for further analyzing and presentation.

## 未认领数据/ Unclaimed Data [MY TBD]

驾驶行为分析功能需要在用户同意服务条款之后才可以开启，服务条款的所有权方为安吉星SOS。具体策略待与SOS确定解决方案。

The DBA only can started after the user agrees with the terms of service. The owner of terms of service is OnStar SOS. The detailed solution is to be worked out together with OnStar SOS.

# 后台交互/Background Interaction

## 上传的数据/ Uploaded Data

本章节定义的是娱乐系统往后台上传的数据。上传数据分为两部分，一部分用于DBA功能的评分、排名及展示，称为“DBA相关数据”；另一部分为搭载DBA数据上传通路一并上传的数据，包含V2X告警数据等，称为“其他数据”。

This section defines the data uploaded by the entertainment system to the background. Uploaded data are split into two categories. One is the data used for DBA scoring, rating and exhibition, and are named “DBA related data”. The other is the data sharing the same upload tunnel with DBA, i.e. V2X warning data, and are named “other data”.

### DBA相关数据/DBA related data

本章节罗列了车机需要上传给后台的DBA数据全集。

The entire list of DBA data to be uploaded to back office is shown in this section

|  |  |
| --- | --- |
| **上传的数据/Upload Data** | **描述/Description** |
| 主动提示功能开关  Active Prompt Function switch | 用于控制驾驶行为分析自动提示功能的开关，一旦该开关状态改变，需按事件型方式同步给驾驶成就APP~~后台~~  The switch to control the ON/OFF state of the active prompt function of DBA. The state shall be synced with back office on an event-triggered basis. |
| Trip ID | Trip ID由行程结束时的日期+时间+用户ID组成，例如：20200531+1915+ID  Trip ID consists of the date+time+user ID at the end of the trip, for example: 20200531+1915+ID |
| VIN | 车辆的VIN号  VIN of the vehicle |
| 用户ID  User’s ID | 用户账户的唯一识别码  Unique identifier of the user account |
| 该行程开始时间  The travel start time | 行程开始时间，精确到秒钟  Travel start time, accurate to seconds |
| 该行程结束时间  The travel end time | 行程结束时间，精确到秒钟  Travel end time, accurate to seconds |
| 该行程结束所在的城市  The city where the trip ended | 城市代码，通过车载导航的接口获取  The city code is obtained through the vehicle navigation interface. |
| 城市代码提供方  City code provider | 百度，高德，腾讯  Baidu, Amap , Tencent |
| 该行程的评分  The score of the trip | 行程评分，范围：0~100；数据精度：1；  Trip score, Range: 0 ~ 100; Data precision: 1; |
| 该行程的行驶里程  The mileage of this trip | 行驶里程数据，单位：km；范围：0~1000.0；数据精度：0.1km；  Mileage data, Unit: km; Range: 0 ~ 1000.0; Data precision: 0.1km; |
| 行程过程中的瞬时速度  The instantaneous velocity in the trip | 行程中以一定的时间间隔上传行程中的瞬时速度；精确到0.1km/h；时间间隔暂定15s，支持标定；  The instantaneous velocity information periodically obtained during the trip; data precision is 0.1km/h; time interval is 15s, calibratable |
| 行程过程中的最高速度  The maximum trip speed | 整个行程中所出现的最高车速；精确到0.1km/h  The max velocity speed during the trip; data precision is 0.1km/h |
| 该行程的油耗信息  Fuel consumption information for this trip | 油耗信息，单位：L；范围：0~100.0；数据精度0.1L；  Fuel consumption information, Unit: L; Range: 0 ~ 100.0; Data precision is 0.1L; |
| 该行程的电耗信息  Electricity consumption information for this trip | 电耗信息，单位：Kw；范围：0 ~ 635.00 kWh；数据精度0.01 kWh  Electricity consumption information, Unit: kWh; Range: 0 ~ 635.00 kWh; Data precision 0.01 kWh; |
| 该行程的巡航里程  Cruise mileage for this trip | 用户使用高级辅助驾驶功能的行驶里程，单位：km；范围：0~1000.0；数据精度：0.1km；  The mileage traveled by the user using the advanced auxiliary driving function, Unit km; Range: 0 ~ 1000.0; Data precision: 0.1km；; The congestion duration of the trip; |
| 巡航开始时的时间戳  Cruise start time | 每次高级辅助驾驶功能开始使用的时间点，精确到秒钟  The start time of each cruise control, accurate to seconds |
| 巡航结束时的时间戳  Cruise end time | 每次高级辅助驾驶功能结束使用的时间点，精确到秒钟  The end time of each cruise control, accurate to seconds |
| 拥堵时长  Congestion duration | 该行程的拥堵时长，单位：min；范围：0~511；数据精度：1 min  The congestion duration of the trip, Unit: min; Range: 0 ~511; Data accuracy: 1 min |
| 拥堵开始时的时间戳  Congestion start time | 每次进入拥堵路段的时间点，精确到秒钟  The start time of each congestion, accurate to seconds |
| 拥堵结束时的时间戳  Congestion end time | 每次离开拥堵路段的时间点，精确到秒钟  The end time of each congestion, accurate to seconds |
| 变道未打灯的次数  Number of lane changes without lighting | 变道未打灯次数，单位：N/A；范围：0~127；数据精度：1  Number of lane changes without lighting, Unit: N/A; Range: 0 ~ 127; Data accuracy: 1 |
| 变道未打灯发生的时间戳  Lane changes without lighting time | 每次变道未打灯发生的时间，精确到秒钟  The time of each lane change without lighting, accurate to seconds |
| 急加速次数  Number of rapid accelerations | 急加速次数，单位：N/A；范围：0~127；数据精度：1  Number of rapid acceleration, Unit: N/A; Range: 0 ~ 127; Data accuracy: 1 |
| 急加速发生时的时间戳  Time of rapid acceleration | 每次急加速发生的时间，精确到秒钟  The time of each rapid acceleration, accurate to seconds |
| 急加速发生时的加速度值  Acceleration rate of rapid acceleration | 每次急加速发生时的加速度值，精确到0.01G ~~0.01m/s~~~~2~~  The acceleration rate of each rapid acceleration, data precision is 0.01G ~~0.01m/s~~~~2~~ |
| 急加速发生时的持续时间  Duration of rapid acceleration | 每次急加速发生时的持续时间，精确到0.01s  The duration time of each rapid acceleration, data precision: 0.01s |
| 急减速次数  Number of rapid decelerations | 急减速次数，单位：N/A；范围：0~127；数据精度：1  Number of rapid deceleration, Unit: N/A; Range: 0 ~ 127; Data accuracy: 1 |
| 急减速发生时的时间戳  Time of rapid deceleration | 每次急减速发生的时间，精确到秒钟  The time of each rapid deceleration, accurate to seconds |
| 急减速发生时的加速度值  Deceleration rate of rapid deceleration | 每次急减速发生时的加速度值，精确到0.01G~~小数点后6位~~  The deceleration rate of each rapid deceleration, data precision is 0.1G ~~accurate to 6 decimal places~~ |
| 急减速发生时的持续时间  Duration of rapid deceleration | 每次急减速发生时的持续时间，精确到0.01s  The duration time of each rapid deceleration, data precision: 0.01s |
| 急转弯次数  Number of sharp turns | 急转弯次数，单位：N/A；范围：0~127；数据精度：1  Number of sharp turns, unit: N/A；; Range: 0 ~ 127; Data accuracy: 1 |
| 急转弯发生时的时间戳  Time of sharp turns | 每次急转弯发生的时间，精确到秒钟  The time of each sharp turn, accurate to seconds |
| 急转弯发生时的加速度值  Acceleration rate of sharp turns | 每次急转弯发生时的加速度值，精确到0.01G ~~0.01m/s~~~~2~~  The acceleration rate of each sharp turn, data precision is 0.01G ~~0.01m/s~~~~2~~ |
| 急转弯发生时的持续时间  Duration of sharp turns | 每次急转弯发生时的持续时间，数据精度：0.01s  Duration time of each sharp turn, data precision: 0.01s |
| 超速次数  Number of speedings | 超速次数，单位：N/A；范围：0~127；数据精度：1  Number of speedings, unit: N/A；; Range: 0 ~ 127; Data accuracy: 1 |
| 超速发生时的时间戳  Time of speedings | 每次超速发生的时间，精确到秒钟  The time of each speeding, accurate to seconds |
| 超速发生时的超速比例  Percentage of speedings | 每次超速发生时的超速比例，精确到小数点后一位  The percentage of each speeding, accurate to 3 decimal places |
| 怠速过久次数  Number of long-time idlings | 怠速过久次数，单位：N/A；范围：0~127；数据精度：1  Number of long-time idlings, unit: N/A；; Range: 0 ~ 127; Data accuracy: 1 |
| 怠速过久开始的时间戳  Start time of long-time idlings | 每次怠速过久开始的时间，精确到秒钟  The start time of each long-time idling, accurate to seconds |
| 怠速过久结束的时间戳  End time of long-time idlings | 每次怠速过久结束的时间，精确到秒钟  The end time of each long-time idling, accurate to seconds |
| 怠速时长  Idling duration | 每次怠速过久的怠速时长，精确到秒  The duration of each long-time idling, accurate to seconds |
| 疲劳驾驶时长  Fatigue driving duration | 疲劳驾驶时长，单位：min；范围：0~511；数据精度：1 min  Fatigue driving duration time, Unit: min; Range: 0 ~511; Data accuracy: 1 min |
| 疲劳驾驶开始的时间戳  Start time of fatigue driving | 每次怠速过久开始的时间，精确到秒钟  The start time of each fatigue driving, accurate to seconds |
| 怠速过久结束的时间戳  End time of fatigue driving | 每次怠速过久结束的时间，精确到秒钟  The end time of each fatigue driving, accurate to seconds |
| 停车轰油门次数  Number of stops and throttles | 停车轰油门次数，单位：N/A；范围：0~127；数据精度：1  Number of stopping and throttling, Unit: N/A; Range: 0 ~ 127; Data accuracy: 1 |
| 停车轰油门发生时的时间戳  Time of stops and throttles | 每次停车轰油门发生的时间，精确到秒钟  The time of each stop and throttle, accurate to seconds |
| 空挡滑行次数  Number of coasting with neutral | 空挡滑行次数，单位：N/A；范围：0~127；数据精度：1  Number of coasting with neutral, Unit: N/A; Range: 0 ~ 127; Data accuracy: 1 |
| 空挡滑行发生时的时间戳  Time of coasting with neutral | 每次空挡滑行发生的时间，精确到秒钟  The time of each coasting with neutral, accurate to seconds |
| 未停稳即挂挡次数  Number of gear shifts when not stop stable | 未停稳即挂挡次数，单位：N/A；范围：0~127数据精度：1  Number of gear shifts when not stop stable, unit: N/A; Range: 0~127 Data Precision: 1 |
| 未停稳即挂挡发生时的时间戳  Time of gear shifts when not stop stable | 每次未停稳即挂发生的时间，精确到秒钟  The time of each gear shifts when not stop stable, accurate to seconds |
| 未系安全带次数  Number of unbelted seatbelts | 未系安全带次数，单位：N/A；范围：0~127数据精度：1  Number of unbelted seatbelt, Unit: N/A; Ranges: 0~127 Data Precision: 1 |
| 未系安全带发生时的时间戳  Time of unbelted seatbelt | 每次未系安全带发生的时间，精确到秒钟  Time of each unbelted seatbelt, accurate to seconds |

对于显示范围有上限的数据，一旦计数超过显示范围上限，则计数不继续增加，维持为范围上限数值。

For data with a limited upper range, once the count exceeds the upper limit, the count will stop and remain at the upper limit value.

### 其他数据

|  |  |
| --- | --- |
| **上传的数据/Upload Data** | **描述/Description** |
| V2X告警数据  V2X warning data | 发生的各种V2X告警次数  Numbers of V2X warnings |

#### V2X告警数据

需要上传的V2X告警数据的内容请参考《PIS-2054\_ V2X Infotainment requirement》(V0.0.1.2)第9.2章节。

Please refer to *PIS-2054\_ V2X Infotainment requirement* (V0.0.1.2) section 9.2 for the contents and signals of V2X warning data.

## 下载的数据/ Downloaded Data

本章节定义的是娱乐系统需要从后台获取的数据，具体参考如下，~~排名的具体定义请参考~~[~~5.3.4章节~~](#_击败用户百分比/_Percentage_of)：

This section defines the data that the entertainment system needs to obtain from the background. ~~for specific definitions, please refer to~~ [~~Section 5.3.4~~](#_击败用户百分比/_Percentage_of) ：

|  |  |
| --- | --- |
| **下载的数据/Download Data** | **描述/Description** |
| DBA功能开关状态  ON-OFF status of DBA | DBA整个功能的开关，由后台同步给车机，需按事件型方式从后台同步  The switch to control the ON/OFF state. It’s synced on an event-triggered basis. |
| **~~单次驾驶评分的展示/~~****~~Display of Single Driving Score:：~~** | |
| ~~本次驾驶评分的排名击败的用户数（方案一）~~  ~~Number of users defeated in the ranking of this driving score (scheme 1)~~ | ~~本次的驾驶评分的所击败用户数的百分比，例如：“击败88%的用户”，无具体名次。需要从后台下载梯度表，根据梯度表换算显示。~~  ~~The ranking of this driving score, for example, "88% of users defeated", has no detail ranking. Extra ranking table download is needed from Back Office.~~ |

## 数据上传和下载时机/ Timing of Data Upload and Download

本章节定义的是行程数据上传和下载的机制和异常处理。

This section defines the mechanism and exception handling for uploading and downloading travel data.

### 行程数据缓存/ Travel Data Cache

驾驶行为分析数据缓存的大小为10M。

The size of the driving behavior analysis data cache is 10M.

单个行程数据中需要包含的数据请参考[3.1章节](#_上传的数据/_Uploaded_Data)。

Please refer to [Section 3.1](#_上传的数据/_Uploaded_Data) for the data to be included in a single trip.

当数据超过缓存数据限制时，系统需要按照历史行程的时间先后，自动删除较早的历史行程数据。

When the data exceeds the cache data limit, the system needs to automatically delete the earlier historical travel data according to the time sequence of historical travel.

### 数据上传时机/ Timing of Data Upload

驾驶员行为分析数据，均采取打包上传机制。即，行程结束时，车机端打包本次行程所需上传的数据，上传至云端后台，数据内容具体参考[3.1章节](#_上传的数据/_Uploaded_Data)。

VCU shall pack all the data collected from the trip and upload them to OnStar SOS at the end of each trip. The contents of data upload should be referred to [section 3.1](#_上传的数据/_Uploaded_Data).

若在行驶途中，用户选择关闭功能开关，参考[5.3.10.1章节](#_关闭状态下数据处理__/)对驾驶员行为分析数据进行处理。

If the user turns off the DBA ON-OFF switch during the trip, please refer to [Section 5.3.10.1](#_关闭状态下数据处理__/) when dealing such cases.

### 数据重传机制/Data Retransmission Mechanism

如果驾驶行为分析在行程结束时上传数据失败，系统需要支持为该用户保存最多5次的驾驶行为数据。上传失败的数据需要在下一次点火周期内进行重传，下一次行程开始5分钟后进行重传，每隔5分钟重传一次，单次点火周期内最多尝试3次。

If the driving behavior analysis fails to upload data at the end of the trip, the system needs to support saving driving behavior data for the user up to 5 times. Data that fails to be uploaded need to be retransmitted in the next ignition cycle, retransmitted 5 minutes after the start of the next trip, retransmitted every 5 minutes, and tried up to 3 times in a single ignition cycle.

### 数据下载机制/Mechanism of Data Download [Delete]

根据《CLE Narrative\_0002100\_本次驾驶排名及油耗排名\_v1.7》，本章节内容将不再执行，但仍保留描述内容以备后续参考。

驾驶行为分析展示的排名信息均基于前一日结算的结果。其获取机制如下图所示。

The ranking information displayed in the driving behavior analysis is based on the result of the previous day's settlement.



当检测到一次行程开始时，首先判断当前DBA功能开关是否打开，若否，则直接退出数据下载流程。

When a trip is detected started, whether the switch of DBA is turned on should firstly be checked. If the DBA function is turned off, then the entire process will quit.

若当前DBA功能开关打开，则通过和系统日期进行比对，判断当前DBA端（本地）保存的梯度表（梯度表定义见3.1.2章节）是否为T-1日的，若是，则在行程结束时，使用该梯度表对用户本次行程进行排名。

If the DBA function is turned on, whether the date of the ranking table (refer to Section 3.1.2 for definition of ranking table) is consistent with the system’s date minus one (T-1) should be firstly checked. If yes, then this ranking table will be used at the end of the trip.

若当前本地保存的梯度表不为T-1日的梯度表，则尝试从后台获取T-1日的梯度表，规则为每隔5分钟请求一次，直到成功获取，最多请求3次。若最终请求成功，则行程结束时，使用该梯度表对用户本次行程进行排名，并将T-1日的梯度表保存至本地，替换之前本地的梯度表。

If no, then a request should be sent to obtain the T-1 ranking table. The rule is to request 3 times max with an interval of 5 mins till the right table is obtained. If the right ranking table can be obtained, then use this table at the end of the trip and replace the last saved local ranking table with the T-1 one.

若最终请求不成功，则在行程结束时再尝试获取一次梯度表，若此时请求成功，则使用该梯度表对用户本次行程进行排名，并将T-1日的梯度表保存至本地，替换之前本地保存的梯度表。

If the right ranking table can’t be obtained after all the attempts, then a last request should be sent at the end of the trip. If the right ranking table can be obtained after this request, then use this table at the end of the trip and replace the last saved local ranking table with the T-1 one.

若此时请求仍然不成功，则使用此时本地保存的梯度表对用户本次行程进行排名。

If the right ranking table still can’t be obtained after this request, then use the last saved local ranking table at the end of the trip.

用户本次行程的排名是否显示为可标定项，使用P\_DBA\_SCORE\_RANKING\_ENABLE来标定，当标定值为True时，显示该排名结果；当标定值为False时，不显示该排名结果。P\_DBA\_SCORE\_RANKING\_ENABLE的默认值为False。

Whether to exhibit "Percentage of Defeated Users" is calibratable. Using P\_DBA\_SCORE\_RANKING\_ENABLE for calibration. When P\_DBA\_SCORE\_RANKING\_ENABLE is True, the “Percentage of Defeated Users" will be exhibited; when P\_DBA\_SCORE\_RANKING\_ENABLE is False, the “Percentage of Defeated Users" will not be exhibited. The default value of P\_DBA\_SCORE\_RANKING\_ENABLE is False.

云端返回梯度表的**参考**机制为：若在凌晨T-1日梯度表还未生成时，车机端此时请求云端，则云端返回T-2日的梯度表；若T-1日梯度表已生成，则返回T-1日的梯度表。

**For your information**, the ranking table is obtained in such pattern: If the last day’s ranking table has not been generated, a table of the day before yesterday’s will be obtained. If the last day’s ranking table has been generated, this table will be obtained.

### 查看详情时数据下载/ Data Download When Viewing Details ~~[MY TBD]~~ [Delete]

~~在用户查看详情时，系统需要请求后台下载对应页面需要的数据。在获取失败的情况下，需要支持用户手动刷新获取数据。~~

~~When the user looks at the details, the system needs to request the back office to download the data required by the corresponding page. In case of acquisition failure, users need to be supported to manually refresh the acquired data.~~

~~数据下载失败的判定条件：数据获取延时超过 3s (TBD)。~~

~~Criteria for data download failure: data acquisition delay exceeds 3s (TBD).~~

## DBA开关状态同步/ DBA On-off State Synchronization

~~驾驶行为分析功能的开关状态由IT后台下发，~~具体参考< [5.3.10.3 功能开关状态同步/ Function On-off State Synchronization](#_功能开关状态同步/_Function_Switch) >。

~~On-off state synchronization of driving behavior analysis function will be downloaded from IT back office.~~ For detail reference < [5.3.10.3 功能开关状态同步/ Function On-off State Synchronization](#_功能开关状态同步/_Function_Switch) >.

# 行程划分/Trip Division

DBA所体现的是用户在一段行程中的驾驶表现。本节定义的是行程的精确划分。对于一个点火周期，必定会出现以下几个阶段：

DBA reflects the driving performance of the user during a trip. This section defines the precise division of trip. For an ignition period, the following phases are bound to occur:

1）Power Mode由OFF状态变为RUN状态/Power Mode changes from OFF state to RUN state

2）车辆由静止状态进入行驶状态（车辆从P档挂入其他档位）/The vehicle enters the moving state from the parking state (the vehicle gear is switched from Park to others)

特别地，若车载信息娱乐系统中DBA完成启动前车辆已经进入行驶状态，则DBA应当在启动后立刻开始工作。

Particularly, if the vehicle has entered the moving state before the DBA in the On-board Infotainment System completes its start-up, the DBA shall start working immediately after the start-up.

3）车辆经过若干次静止到行驶的状态的切换（可以代表行驶过程中走走停停）/The vehicle has experienced changes from parking to moving for several times (which represents stop-and-go during driving).

4）车辆进入静止状态（车辆在从其他档位挂入P档）/The vehicle enters the parking state (the vehicle gear is switched from others to Park).

5）Power Mode由ACC或RUN状态返回OFF/ Power Mode returns from ACC or RUN state to OFF state.

我们定义 1) 作为一个标准的行程的开始，5)作为一个行程的结束。

We define 1) as the beginning of a standard trip and 5) as the end of a trip.

特别地，小于5km（可标定，通过标定**P\_DBA\_MINIMUM\_EFFECTIVE\_TRAVEL**确定）的行程将不被呈现，但仍将被处理和上传。

Particularly, trips less than 5km (Calibrateable, it is determined by calibration **P\_DBA\_MINIMUM\_EFFECTIVE\_TRAVEL**) will be processed and recorded, but not presented as a pop-up.

## 行程报告自动提示/Automatic Prompt for Trip Report

在用户开启驾驶行为分析和驾驶评分自动提示功能的情况下，在行程结束时，DBA会自动提示用户本次的驾驶行为评分情况（行程报告）。自动提示仅P挡下展示，如果用户重新点火并退出P挡，自动提示需要自动消失。

When the user turns on the driving behavior analysis and driving score automatic prompt function, the DBA will automatically prompt the user about the driving behavior score (Trip Report) at the end of the trip. The automatic prompt will only be displayed in gear P. If the user re-ignites and exits gear P, the automatic prompt will need to disappear automatically.

行程报告需包含以下内容：

* ~~击败用户百分比/Percentage of Users Defeated~~
* 评分及评级/Trip Score and Ranking
* 驾驶时长/Trip Duration Time
* 驾驶里程/Trip Mileage
* 平均速度/Average Speed
* 最高车速/Maximum Speed
* 平均油耗（ICE only）/Average Oil Consumption (ICE only)
* 平均电耗（EV only）/Average Power Consumption (EV only)
* 拥堵时长/Congestion Duration Time
* 自适应巡航里程/ACC Mileage
* 变道未打灯次数/Number of Lane Changes without Signaling
* 急加速次数/Number of Sharp Accelerations
* 急减速次数/Number of Sharp Decelerations
* 急转弯次数/Number of Sharp Turns
* 超速次数/Number of Speedings
* 怠速过久次数（ICE only）/Number of Long Idlings (ICE only)
* 疲劳驾驶时长/Duration of Fatigue Driving
* 停车轰油门次数（ICE only）/Number of Accelerator Hitting while Stopped (ICE only)
* 空挡滑行次数（ICE only）/Number of Neutral Taxiing (ICE only)
* 未停稳即挂挡次数（ICE only）/Number of Gear Shifting without Fully Stopped (ICE only)
* 未系安全带次数/Number of Seatbelt Unfastened

行程报告中需包含用户可关闭弹窗提示的开关（参考5.3.10 关闭主动提示功能 章节）。

User should be able to turn off the trip report prompt from switch within the prompt window.

## 其他情况对行程划分的影响/Influence of Other Conditions on Trip Division

系统中的用户状态变化，用户设置变化都会对驾驶行为分析的行程产生影响，具体参考后续子章节。

Changes in user status and user settings in the system will all affect the trip of driving behavior analysis. Please refer to the following subsections for details.

### 功能开关对行程划分的影响/Influence of Function On-off on Trip Division

驾驶行为分析功能的开关对行程划分的影响请参考《5.3.9.1 关闭状态下数据处理》章节[~~5.3.10章节~~](#_关闭驾驶行为分析/_Turning_off);

Please refer to the influence of On\_Off of driving behavior analysis function on stroke division in *Section 5.3.9.1 Date Processing in OFF State*[~~Section 5.3.10~~](#_关闭驾驶行为分析/_Turning_off).

## Power Mode

娱乐系统通过CAN信号获取车辆的Power Mode状态。

The VCS obtains the Power Mode status of the vehicle through CAN signals.

### CLEA信号/CLEA Signals

在CLEA架构中，娱乐系统通过信号***PPEI Platform General Status Signal Group : System Power Mode***获取Power Mode状态，信号对应的枚举值如下：

1. $0=Off，车辆处于OFF状态；
2. $1=Accessory; 车辆处于ACC状态；
3. $2=Run，车辆处于RUN的状态；
4. $3=Crank Request，车辆启动请求；

信号***PPEI Platform General Status Signal Group : System Power Mode Validity***用于表示信号***PPEI Platform General Status Signal Group : System Power Mode***的有效性，当前者信号值为$0=Valid时，表示后者的状态信号时有效的。

### GB信号/GB Signals

在GB架构中，娱乐系统通过信号***System Power Mode Protected : System Power Mode Authenticated***获取Power Mode状态，信号对应的枚举值如下：

1. $0 = Off，车辆处于OFF状态；
2. $1 = Accessory，车辆处于ACC状态；
3. $2 = Run，车辆处于RUN，但是没有动力输出，对应4.1章节中RUN的状态；
4. $3 = Start Request，车辆启动；
5. $4 = Propulsion，车辆处于Propulsion，并且有动力输出，也对应4.1章节中RUN的状态；

GB架构中，Propulsion和RUN都对应DBA中的RUN的状态。

信号***System Power Mode Protected : System Power Mode Authenticated Invalid***用于表示信号***System Power Mode Protected : System Power Mode Authenticated***的有效性，当前者信号值为$0=False时，表示后者的状态信号时有效的。

# 驾驶数据分析/Driving Data Analysis

## 驾驶数据分析定义/Definition of Driving Data Analysis

驾驶数据分析是指通过DBA本地内置的核心算法及后台服务器对采集的源数据进行分析处理得出相应结果的过程。

Driving data analysis refers to the process that uses the core algorithm built in DBA through the background server’s analysis and processing of the collected source data to obtain corresponding results.

## 源数据/Source Data

驾驶行为分析的相关总线源数据取用请参考Clea Family Infotainment Connectivity Electrical Interface。

Please refer to *Clea Family Infotainment Connectivity Electrical Interface* for access to relevant bus source data of driving behavior analysis.

## 分析内容/Analysis Content

### 基础信息/Basic Information

#### 行程起点/Trip Start Point

行程起点是DBA判断“行程开始时间”时车辆所处的位置，将这个位置的GPS位置信息调用导航应用能力来判断POI或位置名称作为行程起点。若行程在DBA启动前已经开始 ，则以DBA启动后的第一时刻作为行程起点；若行程开始时车辆无法获取GPS位置信息，则以车辆可以获取到GPS信息的第一时刻的位置作为行程起点。

The trip start point is the location of the vehicle when the DBA determines the trip start time, and the GPS information of the location shall call the navigation application ability to determine POI or location name as the trip start point. If the trip has already begun before the DBA starts, the first moment after the DBA starts shall be taken as the trip start point. If the vehicle cannot acquire GPS location information at the beginning of the trip, the location where the vehicle initially acquires GPS information shall be taken as the trip start point.

需要注意的是，行程起点相关的GPS数据当前不作处理和上传，但是保留相关解释。

A kind reminder is that GPS of the trip start point is not collected and updated currently, but still keep the relevant information for further use.

#### 行程终点/Trip End Point

行程终点是DBA判断“行程结束时间”时车辆所处的位置，将这个位置的GPS位置信息调用导航应用能力来判断POI或位置名称作为行程终点。

The trip end point is the location of the vehicle when the DBA determines the trip end time, and the GPS information of the location shall call the navigation application to determine POI or location name as the trip end point.

行程结束时刻，如果无法获取GPS点（车辆定位信息），则终点信息为未知。

At the end of the trip, if the GPS point (vehicle positioning information) cannot be obtained, the end point information is unknown.

本文中的GPS位置指的是车辆定位系统提供的定位信息，因为车辆定位系统支持航位推算（DR），因此即便在卫星定位短暂丢失的情况下，车辆依旧能够提供一个较为准确的定位。

The GPS position in this article refers to the positioning information provided by the vehicle positioning system. Because the vehicle positioning system supports dead reckoning (DR), the vehicle can still provide a more accurate positioning even if the satellite positioning is temporarily lost.

行程结束时，需从导航获取行程终点所在城市的城市名和城市代码。若终点信息为未知，则相关城市名和城市代码也置为未知。

At the end of the trip, VCU needs to obtain the city name and city code of the end point city. If the end point city is unknown, then the corresponding city name and city code should also be set as unknown.

需要注意的是，行程终点相关的GPS数据当前不作处理和上传，但是保留相关解释。

A kind reminder is that GPS of the trip end point is not collected and updated currently, but still keep the relevant information for further use.

#### 行程距离/Trip Distance

行程距离是一段行程中车辆驶过的距离，具体是指“行程开始时间”时与“行程结束时间”时车辆里程表的差值。

Trip distance refers to the distance traveled by the vehicle during a trip, specifically the difference between the odometer readings at “trip start time” and “trip end time”.

##### CLEA信号/CLEA Signals

本章节定义用于计算行驶里程需要的CLEA信号。

This section defines CLEA signal required for the calculation of mileage.

通过信号***Vehicle Odometer***获取行程开始时刻和行程结束时刻的里程表信息，用于计算行驶里程。

The odometer readings at trip start time and trip end time is obtained by signal ***Vehicle Odometer***, which is used for the calculation of mileage.

信号***Vehicle Odometer Validity***用于表示信号***Vehicle Odometer***的有效性，当前者信号值为$0=Valid时，表示后者的信号值是有效的。

Signal ***Vehicle Odometer Validity*** is used to represent the validity of signal ***Vehicle Odometer***. When the value of the former $0=Valid, it indicates that the value of the latter is valid.

##### GB信号/GB Signals

本章节定义用于计算行驶里程需要的GB信号。

This section defines GB signal required for the calculation of mileage.

通过信号***Vehicle Odometer Display Value Protected : Vehicle Odometer Display Value Authenticated***获取行程开始时刻和行程结束时刻的里程表信息，用于计算行驶里程。

The odometer readings at trip start time and trip end time is obtained by signal ***Vehicle Odometer Display Value Protected : Vehicle Odometer Display Value Authenticated***, which is used for the calculation of mileage.

信号***Vehicle Odometer Display Value Protected : Vehicle Odometer Display Value Authenticated Invalid***用于表示信号***Vehicle Odometer Display Value Protected : Vehicle Odometer Display Value Authenticated***的有效性，当前者信号值为$0=False时，表示后者的信号值是有效的。

Signal ***Vehicle Odometer Display Value Protected : Vehicle Odometer Display Value Authenticated Invalid*** is used to represent the validity of signal ***Vehicle Odometer Display Value Protected : Vehicle Odometer Display Value Authenticated***. When the value of the former $0=False, it indicates that the value of the latter is valid.

##### 标定信息/Calibration Information

N/A

#### 行程时长/Trip Duration

行程时长是一段行程所消耗的时间总长，具体是指“行程开始时间”时与“行程结束时间”时的时间差值。

Trip duration refers to the total time spent during a trip, specifically the time difference between the “trip start time” and the “trip end time”.

#### 巡航里程/Cruise Mileage

巡航里程是车辆在这段行程中通过ACC自适应巡航所驶过的总距离。

Cruise mileage is the total distance traveled by the vehicle via ACC adaptive cruise during the trip.

##### CLEA信号信息/CLEA Signals

本章节定义用于计算巡航里程需要的CLEA信号。

通过信号***Adaptive Cruise Control Active***获取自适应巡航的工作状态，当***Adaptive Cruise Control Active***=$1 True时，表示用户开启了ACC自适应巡航，DBA需要记录这个状态下行驶的起止时间~~、起止位置GPS信号~~和行驶里程；当用户***Adaptive Cruise Control Active***=$0 False时，表示用户没有开启ACC自适应巡航。

The operating state of Advanced Driver Assistance System (ADAS) is obtained by ***Adaptive Cruise Control Active*** ~~signal~~ ***~~Lane Centering Control Indication Request\_FCM~~*** ~~or~~ ***~~Lane Centering Control Indication Request\_IDCM\_A~~*** ~~(mutually exclusive)~~***.*** When ***Adaptive Cruise Control Active*** = $1 True, it indicates that the user enables ACC and DBA needs to record the start and end time and mileage in this state. When ***Adaptive Cruise Control Active***=$0 False, it indicates that the user disables ACC. ***~~Lane Centering Control Indication Request\_FCM~~*** ~~or~~ ***~~Lane Centering Control Indication Request\_IDCM\_A~~*** ~~=~~~~$2 Green Indicator;~~ ***~~Lane Centering Control Indication Request\_FCM~~*** ~~or~~ ***~~Lane Centering Control Indication Request\_IDCM\_A~~*** ~~= $3 Blue Indicator, it indicates that the user enables ACC, DBA needs to record the start and end time, start and end PGS signal and mileage in this state.~~

##### GB信号信息/GB Signals

本章节定义用于计算巡航里程需要GB信号。

This section defines the GB signals required for calculation of cruise mileage.

通过信号***Adaptive Cruise Control Engaged ~~Adaptive and Conventional Cruise Control Indication Request~~***获取高级辅助驾驶系统的工作状态，当信号***Adaptive Cruise Control Engaged*** = $1 TRUE ***~~Adaptive and Conventional Cruise Control Indication Request~~*** ~~= $4 Cruise Control Green Telltale On~~ ~~和~~***~~Adaptive and Conventional Cruise Control Indication Request~~*** ~~= $5 Cruise Control Blue Telltale On~~时，表示用户使用了ACC自适应巡航，DBA需要记录这个状态下行驶的起止时间~~、起止位置PGS信号~~和行驶里程。

The operating state of Advanced Driver Assistance System (ADAS) is obtained with signal ***Adaptive Cruise Control Engaged ~~Adaptive and Conventional Cruise Control Indication Request~~.*** When ***Adaptive Cruise Control Engaged*** = $1 TRUE ***~~Adaptive and Conventional Cruise Control Indication Request~~*** ~~= $4 Cruise Control Green Telltale On~~~~and~~ ***~~Adaptive and Conventional Cruise Control Indication Request~~*** ~~= $5 Cruise Control Blue Telltale On~~, it indicates that the user enables ACC, DBA needs to record the start and end time, ~~start and end location PGS signal~~ and driving mileage in this state.

##### 标定信息/Calibration Information

TBD

#### 行程平均油耗/Average Trip Fuel Consumption (ICE Only)

行程平均油耗是指一段行程中车辆消耗燃油的平均水平，具体是指“行程开始时间”时与“行程结束时间”时车辆剩余燃油百分比的差值乘以油箱容积后的数值与行程距离之比折算为百公里油耗后的结果。（更为直接的是直接取用车辆剩余燃油数值）

Average Trip Fuel Consumption refers to the average level of fuel consumed by the vehicle during a trip, specifically referring to the value converted from the ratio of the product (the difference between the percentages of remaining fuels in the vehicle at the trip start time and the trip end time multiplied by the fuel tank capacity) to the trip distance according to the fuel consumption per hundred kilometers. (A more direct way is to take the remaining fuel value of the vehicle)

平均油耗的显示精度为 0.1 L/100km。

The display accuracy of average fuel consumption is 0.1 L/100km.

##### CLEA信号/CLEA Signals

本章节定义用于计算行程平均油耗的CLEA信号。

This section defines the CLEA signals required for calculation of average trip fuel consumption.

通过信号***PPEI Engine General Status 5 Signal Group : Fuel Total Capacity***获取车辆的油箱容积信息。

The fuel tank capacity of the vehicle is obtained with signal ***PPEI Engine General Status 5 Signal Group : Fuel Total Capacity.***

通过信号***PPEI Engine General Status 5 Signal Group : Fuel Level Percent***获取行程开始和行程结束时的车辆的剩余油量百分比。

The percentages of remaining fuels in the vehicle at the trip start time and the trip end time is obtained with signal ***PPEI Engine General Status 5 Signal Group : Fuel Level Percent.***

信号***PPEI Engine General Status 5 Signal Group : Fuel Level Percent Validity***用于表示信号***PPEI Engine General Status 5 Signal Group : Fuel Level Percent***的有效性，当前者信号值为$0=Valid时，表示后者的信号值是有效的。

Signal ***PPEI Engine General Status 5 Signal Group : Fuel Level Percent Validity*** is used to represent the validity of signal ***PPEI Engine General Status 5 Signal Group : Fuel Level Percent.*** When the value of the former $0=Valid, it indicates that the value of the latter is valid.

##### GB信号/GB Signals

本章节定义用于计算行程平均油耗的GB信号。

This section defines the GB signals required for calculation of average trip fuel consumption.

通过信号***Fuel Total Capacity***获取车辆的油箱容积信息。

The fuel tank capacity of the vehicle is obtained with signal ***Fuel Total Capacity.***

通过信号***Fuel Information : Filtered Display Total Fuel Level Percent***获取行程开始时刻和行程结束时刻的车辆的剩余油量百分比。

The percentages of remaining fuels in the vehicle at the trip start time and the trip end time is obtained with signal ***Fuel Information : Filtered Display Total Fuel Level Percent.***

信号***Fuel Information : Filtered Display Total Fuel Level Percent Invalid***用于表示信号***Fuel Information : Filtered Display Total Fuel Level Percent***的有效性，当前者信号值为$0=False时，表示后者的信号值是有效的。

Signal ***Fuel Information : Filtered Display Total Fuel Level Percent Invalid*** is used to represent the validity of signal ***Fuel Information : Filtered Display Total Fuel Level Percent.*** When the value of the former $0=False, it indicates that the value of the latter is valid.

##### 标定信息/Calibration Information

娱乐系统是否支持油耗信息的显示通过标定***VEHICLE\_FUEL\_TYPE\_PETROL***确认，标定值为True时，表示娱乐系统支持显示油耗信息。

Whether the entertainment system supports the display of fuel consumption information is confirmed by calibration ***VEHICLE\_FUEL\_TYPE\_PETROL***. When the calibration value is RTUE, it means that the entertainment system supports the display of fuel consumption information.

#### 行程速度/Trip Speed

##### CLEA信号/CLEA Signals

本章节定义用于计算行程车速的CLEA信号。

This section defines the CLEA signals required for calculation of trip speed.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车辆的行驶速度。

This vehicle speed is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven.***

信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven Validity***用于表示信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***的有效性，当前者信号值为$0=Valid时，表示后者的信号值是有效的。

Signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven Validity*** is used to represent the validity of signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven.*** When the value of the former $0=Valid, it indicates that the value of the latter is valid.

##### GB信号/ GB Signals

本章节定义用于计算行程车速的GB信号。

This section defines the GB signals required for calculation of trip speed.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车辆的行驶速度。

This vehicle speed is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated.***

信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated Invalid***用于表示信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***的有效性，当前者信号值为$0=False时，表示后者的信号值是有效的。

Signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated Invalid*** is used to represent the validity of signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated.*** When the value of the former $0=False, it indicates that the value of the latter is valid.

##### 行程瞬时速度/Instantaneous Trip Speed

行程瞬时速度是指行程中某一时刻车辆行驶的瞬时速度。VCU以一定的采样频率采集车辆的车速信息。采样频率以标定P\_DBA\_SPEED\_SAMPLING\_FREQUENCY确定，默认值为15s。

Instantaneous trip speed means the vehicle’s speed of a specific moment. VCU obtains the speed information on a periodical basis from cal P\_DBA\_SPEED\_SAMPLING\_FREQUENCY. The default value is 15s.

##### 行程平均速度/Average Trip Speed

行程平均速度是指一段行程中车辆行驶的平均速度水平，具体是指行程距离与行程时长的比值折算为千米每小时。

Average Trip Speed refers to the average speed level of the vehicle during a trip, specifically referring to the value (km/h) converted from the ratio of trip distance to trip duration.

##### 行程最高速度/Maximum Trip Speed

行程最高速度是指一段行程中车辆行驶的最高速度水平，具体是指DBA从“行程开始时间”时直至“行程结束时间”时期间出现的最高车速。（推荐使用擂台法对采集的车速数据进行比较，不作为软件算法的指导）

Maximum Trip Speed refers to the highest speed level of the vehicle during a trip, specifically referring to the highest speed of DBA that occurs from the “trip start time” to the “trip end time”. (It is recommended that DBA use Ring Method to compare the collected vehicle speed data. Please note this is NOT a guide for the software algorithm)

##### 标定信息/Calibration Information

N/A

#### 行程拥堵等待时间/Trip Congestion Waiting Time

行程拥堵等待时间是指一段行程中车辆处于低速行驶的时长累积，具体是指这段行程中车速低于5km/h的总时长。（推荐在软件内部使用一个计时器，一旦车速低于或等于5km/h时便开始累加计时，一旦车速大于5km/h便暂停计时，行程结束后输出结果并将计时器清零，不作为软件算法的指导）

Trip congestion waiting time refers to the accumulated time when the vehicle is running at a low speed during a trip, specifically referring to the total time when the vehicle speed is less than 5km/h during the trip. (It is recommended that DBA to use a timer inside the software. The timer shall start once the vehicle speed is less than or equal to 5km/h, and shall pause once the vehicle speed is more than 5 km/h. The result shall be output after the trip and the timer shall be reset. It shall be not used as a guide for the software algorithm.)

DBA需要记录这个状态下行驶的起止时间和拥堵里程。

DBA need to record the start and end time and congestion mileage of the entire trip.

##### CLEA信号/CLEA Signals

本章节定义用于计算行程拥堵等待时间的CLEA信号。

This section defines the CLEA signals required for calculation of trip congestion waiting time.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车辆的行驶速度。

The vehicle speed is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***.

##### GB信号/GB Signals

本章节定义用于计算行程拥堵等待时间的GB信号。

This section defines the GB signals required for calculation of trip congestion waiting time.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车辆的行驶速度。

The vehicle speed is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***.

##### 标定信息/Calibration Information

N/A

#### 行程驾驶员心率变化/Driver Heart Rate Changes during Trip [MY TBD]

行程驾驶员心率变化是指VCS从外接智能设备中获取的本段行程过程中的心率变化情况。详细信息请参考PIS-2066 Wearable Devices Connection.

Driver Heart Rate Changes during Trip refers to the heart rate changes during the trip obtained by VCS from the external intelligent device. Please refer to *PIS-2066 Wearable Devices Connection* for details.

#### 行程平均电耗/ Average Trip Power Consumption (EV Only)

行程平均电耗指的是行程开始时刻的到行程结束时产生的电耗与本行程的行驶里程的比值。

The average power consumption of the trip refers to the ratio of the power consumption generated from the start of the trip to the end of the trip to the mileage of the trip.

平均电耗的显示精度为 0.1 kW·h/100km.

The display accuracy of average power consumption is 0.1 kW·h/100km.

##### CLEA信号/CLEA Signals

N/A

##### GB信号/GB Signals

本章节定义用于计算平均电耗需要的GB信号。

This section defines the GB signals required for calculation of average trip power consumption.

当信号***High Voltage Battery Remaining Usable Energy Don't Use Data***= $0 FALSE时表示剩余电量信息有效，通过信号***High Voltage Battery Remaining Usable Energy***获取车辆动力电池的剩余电量信息。

When signal ***High Voltage Battery Remaining Usable Energy Don't Use Data***= $0 FALSE, it indicates that the battery remaining capacity is valid. The traction battery remaining capacity is obtained with signal ***High Voltage Battery Remaining Usable Energy***.

当信号***High Voltage Battery Remaining Usable Energy Don't Use Data***= $1 TRUE时，表示DBA无法获取准确的剩余电量信息，DBA需要间隔5秒钟（TBD），重复3次。如果在行程开始或者行程结束的时刻，重复3次后还无法获取车辆的剩余电量信息，行程结束时，平均电耗信息显示为无效状态。

When signal ***High Voltage Battery Remaining Usable Energy Don't Use Data***= $1 TRUE, it indicates that DBA cannot obtain accurate battery remaining capacity, and DBA needs to repeat 3 times with an interval of 5s (TBD). If the battery remaining capacity of vehicle still cannot be obtained after 3 repeats at the start or end time of a trip, average trip power consumption will be displayed as “Invalid” at the end of trip.

##### 标定信息/Calibration Information

娱乐系统通过标定***VEHICLE\_FUEL\_TYPE\_ELECTRIC***确认是否需要显示电耗信息，当标定值为TRUE时，DBA需要显示用户的平均电耗信息。

The entertainment system confirms the necessity of displaying power consumption with calibration ***VEHICLE\_FUEL\_TYPE\_ELECTRIC***, when the calibration value is TRUE, DBA needs to display the average power consumption of the user.

#### 加速度数据换算关系

通过总线获取的加速度信号单位为m/s2，VCU上传的数据单位为G，两者的换算关系为：

其中，

A为用于上传的数据，单位为G；

B为总线获取的数据，单位为m/s2。

影响的总线信号有：

|  |  |  |
| --- | --- | --- |
|  | CLEA | GB |
| 横向加速度信号 | ***IMU Yaw Latitud Acc Signal Group1 : Inertial Measurement Unit Lateral Acceleration Primary*** | ***Serial Data 46 Protected : Lateral Acceleration Authenticated*** |
| 纵向加速信号 | ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary*** | ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated*** |

### 行程不良驾驶行为/Bad Driving Behaviors during Trip

#### 急转弯/Sharp Turn

急转弯是指车辆在转向过程中速度过快造成车辆接近失控或对车内乘客的乘坐舒适性造成显著可感知性影响的情况。

Sharp turn refers to the situation where the vehicle is almost out of control due to excessive speed in the steering process or has a significant perceptible impact on the riding comfort of passengers in the vehicle.

急转弯的识别：当车辆的横向加速度绝对值超过0.4G时（可标定,通过标定**P\_DBA\_SHARP\_TURN\_THRESHOLD**确认），判断急转弯事件开始，当横向加速度绝对值小于0.05G，判断急转弯事件结束。判定急转弯产生一次。

Identification of sharp turn: when the absolute value of lateral acceleration of the vehicle exceeds 0.4G (Calibration, it is determined by calibration **P\_DBA\_SHARP\_TURN\_THRESHOLD**), Judging the beginning of the sharp turn event, and judging the end of the sharp turn event when the absolute value of the lateral acceleration is less than 0.05G.

加速度数据单位的换算方式参考《5.3.1.11加速度数据换算关系》章节。

##### CLEA信号/CLEA Signals

本章节定义用于判断车辆急转弯的CLEA信号。

This section defines CLEA signals for judging sharp turn of vehicle.

当信号***IMU Yaw Latitud Acc Signal Group2 : Inertial Measurement Unit Lateral Acceleration Primary Validity*** = $0 Valid; DBA通过信号***IMU Yaw Latitud Acc Signal Group1 : Inertial Measurement Unit Lateral Acceleration Primary*** 获取当前车辆的横向加速度。

When signal ***IMU Yaw Latitud Acc Signal Group2 : Inertial Measurement Unit Lateral Acceleration Primary Validity*** = $0 Valid, DBA obtains the current lateral acceleration of the vehicle with signal ***IMU Yaw Latitud Acc Signal Group1 : Inertial Measurement Unit Lateral Acceleration Primary***.

当信号***IMU Yaw Latitud Acc Signal Group2 : Inertial Measurement Unit Lateral Acceleration Primary Validity*** = $1 Invalid，表示当前横向加速度信号无效，DBA将暂停对急转弯的判断。

When signal ***IMU Yaw Latitud Acc Signal Group2 : Inertial Measurement Unit Lateral Acceleration Primary Validity*** = $1 Invalid, it indicates that the current lateral acceleration signal is invalid, and DBA will suspend its judgment on sharp turn.

##### GB信号/GB Signals

本章节定义用于判断车辆急转弯的GB信号。

This section defines GB signals for judging sharp turn of vehicle.

当信号***Serial Data 46 Protected : Lateral Acceleration Authenticated Invalid*** = $0 FALSE时，通过信号***Serial Data 46 Protected : Lateral Acceleration Authenticated***获取当前车辆的横向加速度，用于急转弯事件判断。

When signal ***Serial Data 46 Protected : Lateral Acceleration Authenticated Invalid*** = $0 FALSE, the current lateral acceleration of the vehicle is obtained with signal ***Serial Data 46 Protected : Lateral Acceleration Authenticated for sharp turn event judgment*** .

当信号***Serial Data 46 Protected : Lateral Acceleration Authenticated Invalid*** = $1 TRUE，表示当前横向加速度信号无效，DBA将暂停对急转弯的判断。

When signal ***Serial Data 46 Protected : Lateral Acceleration Authenticated Invalid*** = $1 TRUE, it indicates that the current lateral acceleration signal is invalid, and DBA will suspend its judgment on sharp turn.

##### 标定信息/Calibration Information

通过标定***P\_DBA\_SHARP\_TURN\_THRESHOLD***确定急转弯判断的阈值。

The threshold of sharp turn judgment is determined with calibration ***P\_DBA\_SHARP\_TURN\_THRESHOLD***.

#### 变道未打灯/Lane Change without Signaling

变道未打灯是指车辆在变道情况下没有及时打开转向灯以提示周围车辆，造成潜在危险的情况。

Lane Change without Signaling refers to the situation where the vehicle changes the lane without turning on the turn signal lamp in time to alert the surrounding vehicles, causing potential hazards.

变道未打灯的具体判断逻辑如下：

The specific judgment logic for lane change without lighting is as follows:

**左侧变道不打灯判断/** **Left lane change without lighting judgment：**

1. 起始条件：当 0.4 ＜ ***Vehicle Centerline Distance to Left Lane Marking*** ＜0.7m 判断左侧变道事件产生，检测到左侧变道事件后，向后查询数据，如果出现了0 ＜***Vehicle Centerline Distance to Left Lane Marking*** ＜ 0.2m，则判断左侧变道事件有效 / Starting condition: when 0.4 ＜ ***Vehicle Centerline Distance to Left Lane Marking*** ＜ 0.7m, the left lane change event is judged to be generated; after the left lane change event is detected, the data is queried backward; if 0 ＜ ***Vehicle Centerline Distance to Left Lane Marking*** ＜ 0.2m, the left lane change event is judged to be valid.
2. 在这个中间时段内，如果出现 ***Vehicle Centerline Distance to Left Lane Marking*** ＞ 1.0m，则对应左侧变道事件无效/ If the ***Vehicle Centerline Distance to Left Lane Marking*** ＞ 1.0m occurs in this intermediate period, the corresponding left lane change event is invalid;
3. 在这个中间时段内，如果出现***Vehicle Centerline Distance to Left Lane Marking*** = 0，则对应的左侧变道事件无效/ If ***Vehicle Centerline Distance to Left Lane Marking*** = 0 occurs in this intermediate period, the corresponding left lane change event is invalid;
4. 在起始条件生效时刻，往前1s时间内，需要全程打左转向灯，否则判定为变道不打灯/ At the effective time of the initial conditions and within 1 second in advance, the left turn signal shall be used throughout the whole course; otherwise, the lane change shall be judged as no light.

**右侧变道不打灯判断/** **Right lane change without lighting judgment:**

1. 起始条件：当 0.4 ＜ ***Vehicle Centerline Distance to Right Lane Marking*** ＜0.7m 判断右侧变道事件产生，检测到右侧变道事件后，向后查询数据，如果出现了0 ＜***Vehicle Centerline Distance to Right Lane Marking*** ＜ 0.2m，则判断右侧事件有效 / starting condition: 0.4 ＜ ***Vehicle Centerline Distance to Right Lane Marking*** ＜ 0.7m, the right lane change event is judged to be generated, after detecting the right lane change event, the data is queried backward, and if 0 ＜ ***Vehicle Centerline Distance to Right Lane Marking*** ＜ 0.2m, the right lane change event is judged to be valid;
2. 在这个中间时段内，如果出现 ***Vehicle Centerline Distance to Right Lane Marking*** ＞ 1.0m，则对应右侧变道事件无效 / If ***Vehicle Centerline Distance to Right Lane Marking*** ＞ 1.0m occurs in this intermediate period, the corresponding right lane change event is invalid;
3. 在这个中间时段内，如果出现***Vehicle Centerline Distance to Left Lane Marking*** = 0，则对应的右侧变道事件无效 / If ***Vehicle Centerline Distance to Right Lane Marking*** = 0, occurs in this intermediate period, the corresponding right lane change event is invalid;
4. 在起始条件生效时刻，往前1s时间内，需要全程打右转向灯，否则判定为变道不打灯/ At the time when the starting conditions take effect and within the first 1s, the right turn signal needs to be turned on all the way; otherwise, it will be judged as changing lanes and not turning on the light.

##### CLEA信号/CLEA Signals

本章节定义用于判断车辆变道未打灯的CLEA信号。

This section defines CLEA signals for judging lane change without signaling of vehicle.

通过信号***Left Turn Lamp Active***和信号***Right Turn Lamp Active***获取转向灯的开关状态。

The ON/OFF state of turn signal lamp is obtained with signal ***Left Turn Lamp Active*** and signal ***Right Turn Lamp Active***.

通过信号***Vehicle Centerline Distance to Left Lane Marking***获取车辆中心线到左侧车道线的距离信息。

This distance from vehicle centerline to left lane marking is obtained with signal ***Vehicle Centerline Distance to Left Lane Marking***.

通过信号***Vehicle Centerline Distance to Right Lane Marking***获取车辆中心线到右侧车道线的距离信息。

This distance from vehicle centerline to right lane marking is obtained with signal ***Vehicle Centerline Distance to Right Lane Marking***.

##### GB信号/GB Signals

N/A

##### 标定信息/Calibration Information

变道未打灯功能，通过标定***P\_DBA\_LANE\_CHANGE\_DETECTION\_ENABLE***确定该功能是否开启，当标定***P\_DBA\_LANE\_CHANGE\_DETECTION\_ENABLE*** = 0 "FALSE"时，该功能关闭。

Whether the function of lane change without signaling of vehicle is enabled is determined with calibration ***P\_DBA\_LANE\_CHANGE\_DETECTION\_ENABLE***. When calibration ***P\_DBA\_LANE\_CHANGE\_DETECTION\_ENABLE*** = 0 "FALSE", the function is disabled.

#### 急加速/Sharp Acceleration

急加速是指车辆在行驶过程中突然猛烈加速的行驶行为。

Sharp acceleration refers to the sudden and violent acceleration of a vehicle during driving.

急加速的识别根据：

Identification basis for sharp acceleration:

当车辆的纵向加速度超过0.25G时（可标定，通过标定**P\_DBA\_SHARP\_ACCELERATION\_THRESHOLD**确认），判断急加速开始，接下来当纵向加速度小于0.05G，判断急加速事件结束。判定车距保持不当产生一次。

When the longitudinal acceleration of the vehicle exceeds 0.25G (Calibration，it is determined by calibration **P\_DBA\_SHARP\_ACCELERATION\_THRESHOLD** ), Judging that the rapid acceleration starts, then judging that the rapid acceleration event ends when the longitudinal acceleration is less than 0.05G .it shall be determined that improper distance keeping occurs once.

加速度数据单位的换算方式参考《5.3.1.11加速度数据换算关系》章节。

##### CLEA信号/CLEA Signals

本章节定义用于判断车辆急加速的CLEA信号。

This section defines CLEA signals for judging sharp acceleration of vehicle.

在CLEA架构的车型中，当信号为***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $0 Valid时，驾驶行为分析应用通过信号***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary***获取车辆的纵向加速度，用判断急加速事件。

On a model of CLEA architecture, when signal ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $0 Valid, the driving behavior analysis application obtains the longitudinal acceleration of vehicle with signal ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary*** for judging sharp acceleration events.

当信号***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $1 Invalid时，表示纵向加速值不可信，这种情况下，驾驶行为分析应用需要暂停急加速事件的判断。

When signal ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $1 Invalid, it indicates that the acceleration value is untrusted, in which case, the driving behavior analysis application needs to suspend judging sharp acceleration events.

##### GB信号/GB Signals

本章节定义用于判断车辆急加速的GB信号。

This section defines GB signals for judging sharp acceleration of vehicle.

当信号为***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $0 FALSE时，驾驶行为分析应用通过信号***Serial Data 46 Protected : Longitudinal Acceleration Authenticated***获取车辆的纵向加速度，用判断急加速事件。

When signal ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $0 FALSE, the driving behavior analysis application obtains the longitudinal acceleration of vehicle by signal ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated*** for judging sharp acceleration events.

当信号***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $1 TRUE时，表示纵向加速值不可信，这种情况下，驾驶行为分析应用需要暂停急加速事件的判断。

When signal ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $1 TRUE, it indicates that the acceleration value is untrustworthy, in which case, the driving behavior analysis application needs to suspend the sharp acceleration event judgment.

##### 标定信息/Calibration Information

通过标定***P\_DBA\_SHARP\_ACCELERATION\_THRESHOLD***确定急加速判断的阈值。

The threshold of sharp acceleration judgment is determined by calibration ***P\_DBA\_SHARP\_*** ***ACCELERATION \_THRESHOLD***.

#### 急减速/Sharp Deceleration

急减速是指车辆在行驶过程中突然猛烈刹车的行驶行为。  
Sharp deceleration refers to the sudden and violent braking of a vehicle during driving.

车距保持不当的识别：当车辆的纵向加速度超过-0.4G时（可标定，通过标定**P\_DBA\_SHARP\_DECELERATION\_THRESHOLD**确定），判断急减速开始，接下来当纵向加速度大于-0.05G，判断急减速事件结束。判定车距保持不当产生一次。

Identification of improper distance keeping: When the longitudinal acceleration of the vehicle exceeds -0.4G (Calibration, it is determined by calibration **P\_DBA\_SHARP\_DECELERATION\_THRESHOLD**), Judging that the rapid deceleration starts, then judging that the rapid deceleration event ends when the longitudinal acceleration is greater than-0.05G.it shall be determined that improper distance keeping occurs once.

加速度数据单位的换算方式参考《5.3.1.11加速度数据换算关系》章节。

##### CLEA信号/CLEA Signals

本章节定义用于判断车辆急减速的CLEA信号。

This section defines CLEA signals for judging sharp deceleration of vehicle.

当信号为***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $0 Valid时，驾驶行为分析应用通过信号***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary***获取车辆的纵向加速度，用判断急加速事件。

When signal ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary*** ***Validity*** = $0 Valid, the driving behavior analysis application obtains the longitudinal acceleration of vehicle with signal ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary*** for sharp acceleration event judgment.

当信号***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $1 Invalid时，表示纵向加速值不可信，这种情况下，驾驶行为分析应用需要暂停急减速事件的判断。

When signal ***IMU Yaw Long Acc Signal Group : Inertial Measurement Unit Longitudinal Acceleration Primary Validity*** = $1 Invalid, it indicates that the longitudinal acceleration value is untrustworthy, in which case, the driving behavior analysis application needs to suspend sharp deceleration event judgment.

##### GB信号/GB Signals

本章节定义用于判断车辆急减速的GB信号。

This section defines GB signals for judging sharp deceleration of vehicle.

当信号为***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $0 FALSE时，驾驶行为分析应用通过信号***Serial Data 46 Protected : Longitudinal Acceleration Authenticated***获取车辆的纵向加速度，用判断急加速事件。

When signal ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $0 FALSE, the driving behavior analysis application obtains the longitudinal acceleration of vehicle with signal ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated*** for sharp acceleration event judgment.

当信号***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $1 TRUE时，表示纵向加速值不可信，这种情况下，驾驶行为分析应用需要暂停急减速事件的判断。

When signal ***Serial Data 46 Protected : Longitudinal Acceleration Authenticated Invalid***= $1 TRUE, it indicates that the acceleration value is untrustworthy, in which case, the driving behavior analysis application needs to suspend sharp deceleration event judgment.

##### 标定信息/Calibration Information

通过标定***P\_DBA\_SHARP\_ DECELERATION \_THRESHOLD***确定急减速判断的阈值。

The threshold of sharp deceleration judgment is determined by calibration ***P\_DBA\_SHARP\_ DECELERATION \_THRESHOLD***.

#### 疲劳驾驶/Fatigue Driving

疲劳驾驶指同一段行程中~~账户登陆情况下~~行程时间超过2 小时（可标定，通过标定值**P\_DBA\_FATIGUE\_DRIVING\_TIME** 确认）未停车休息。由于驾驶员行为分析功能不与账户绑定，暂时不对休息时长作判断，而只判断连续驾驶时长是否超过2小时（可标定）。

Fatigue driving refers to the situation where the trip time exceeds 2 hours (Calibratable, it is determined by calibration **P\_DBA\_FATIGUE\_DRIVING\_TIME**) without stopping for rest. Currently, DBA is not account based, so the rest time is not a criterion when judging whether a trip is fatigue driving, and the only criterion is trip time.

判断逻辑参考如下：

The judgment logic reference is as follows:

计时开始条件：车辆在当前账户状态下，车辆车速大于5 km/h，开始计时。

Timing start condition: when the vehicle speed is greater than 5 km/h under the current account status, timing will start.

计时结束条件：车辆熄火，P挡或者N挡，车速为0，本次计时结束。

Timing completion conditions: vehicle’s power mode off, gear P or gear N, vehicle speed 0, the timing is completed. It should be noted that it takes a certain period of time for the account to be logged in when the vehicle is started.

**疲劳驾驶事件归属/ Attribution of Fatigue Driving Events：**

1. 行程中，如果计时大于2小时（可标定，通过标定值**P\_DBA\_FATIGUE\_DRIVING\_TIME** 确认），判断该次行程出现疲劳驾驶，并以大于2 小时（可标定，通过标定值**P\_DBA\_FATIGUE\_DRIVING\_TIME** 确认）的时刻为事件的发生时刻。

If the timing is more than 2 hours(Calibratable, it is determined by **P\_DBA\_FATIGUE\_DRIVING\_TIME**) in the trip, fatigue driving is judged to occur in the trip, and the time greater than 4 hours(Calibratable, it is determined by **P\_DBA\_FATIGUE\_DRIVING\_TIME**) is taken as the occurrence time of the event.

1. 行程开始时，如果就发现计时已经大于2 小时（可标定，通过标定值**P\_DBA\_FATIGUE\_DRIVING\_TIME** 确认），行程起始时刻就为疲劳驾驶的事件发生时刻。

At the beginning of the trip, if it is found that the timing is more than 2 hours (Calibratable, it is determined by **P\_DBA\_FATIGUE\_DRIVING\_TIME**, the starting time of the trip is the time when the fatigue driving event occurs.

##### CLEA信号/CLEA Signals

本章节定义用于判断疲劳驾驶的CLEA信号。

This section defines CLEA signals for judging fatigue driving.

通过信号***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***获取车辆的挡位信息，通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

The gear position information of vehicle is obtained with signal ***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***, and vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***.

##### GB信号/GB Signals

本章节定义用于判断疲劳驾驶的GB信号。

This section defines GB signals for judging fatigue driving.

通过信号***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***获取车辆的挡位信息，通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车辆的行驶速度。

The gear position information of vehicle is obtained with signal ***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***, and vehicle speed is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***.

##### 标定信息/Calibration Information

疲劳驾驶监测，根据标定***P\_DBA\_FATIGUE\_DRIVING\_DETECTION\_ENABLE***确认该功能是否开启，当***P\_DBA\_FATIGUE\_DRIVING\_DETECTION\_ENABLE*** = 1 "TRUE"时，表示该功能开启。

Whether the function of fatigue driving detection is enabled is determined by calibration ***P\_DBA\_FATIGUE\_DRIVING\_DETECTION\_ENABLE***. When ***P\_DBA\_FATIGUE\_DRIVING\_DETECTION\_ENABLE*** = 1 "TRUE", the function is enabled.

根据标定***P\_DBA\_FATIGUE\_DRIVING\_TIME***确认疲劳驾驶的判定条件，默认值2 小时，连续驾驶超过2 小时判定为疲劳驾驶。

The judging condition for fatigue driving is determined by calibration ***P\_DBA\_FATIGUE\_DRIVING\_TIME***, which is 2 hours by default. Driving continuously for more than 2 hours is judged as fatigue driving.

#### 怠速过久（ICE Only）/Long Idling (ICE Only)

怠速过久指的是怠速超过一定的时长而有可能对发动机造成积碳的情况。

Long idling refers to the situation where idling lasts for a certain amount of time and may cause carbon deposition in the engine.

怠速过久的判断条件为，引擎转速 ＞ 0，车速为0，且持续时间超过10min(通过标定值确认，**P\_DBA\_ENGINE\_IDLE\_TIME**)，判断怠速过久产生一次。

The judging conditions for idling too long are: Engine Speed ＞ 0, vehicle speed is 0, and duration exceeds 10min (confirmed by calibration value, **P\_DBA\_ENGINE\_IDLE\_TIME**). It is judged that idling too long occurs once.

##### CLEA信号/CLEA Signals

本章节定义用于判断怠速过久的CLEA信号。

This section defines CLEA signals for judging long idling.

通过信号***PPEI Engine General Status 1 Signal Group1 : Engine Speed***获取引擎的转速信息。

The engine speed information is obtained with signal ***PPEI Engine General Status 1 Signal Group1 : Engine Speed***.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

The vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***.

##### GB信号/GB Signals

本章节定义用于判断怠速过久的GB信号。

This section defines GB signals for judging long idling.

通过信号***Tachometer Engine Speed***获取引擎的转速信息。

The engine speed information is obtained with signal ***Tachometer Engine Speed***.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车速信息。

The vehicle speed information is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***.

##### 标定信息/Calibration Information

通过标定***P\_DBA\_ENGINE\_IDLE\_TIME***获取怠速过久的时间阈值。

The threshold of long idling is obtained by calibration ***P\_DBA\_ENGINE\_IDLE\_TIME***.

#### 停车轰油门（ICE Only）/Accelerator Hitting while Stopped (ICE Only)

停车轰油门指的是车辆静止未熄火时踩下油门踏板从而有可能造成发动机损伤的情况。

Accelerator Hitting while Stopped refers to the situation where the accelerator pedal is pressed when the vehicle is stationary and not shut down, thus possibly causing damage to the engine.

当检测到加速踏板位置的1次变化过程（从某一初始值增加然后回到初始值），车速持续<1km/h，且发动机转速持续>3000rpm(通过标定值确认，**P\_DBA\_ACCELERATOR\_HITTING\_ENGINE\_SPEED\_THRESHOLD**)，且档位持续为空档或者P档，记为1次停车轰油门事件。

When a change process of the accelerator pedal position is detected (increasing from a certain initial value and then returning to the initial value), the vehicle speed continues to be less than 1km/h, the engine speed continues to be more than 3000 rpm (Calibration, **P\_DBA\_ACCELERATOR\_HITTING\_ENGINE\_SPEED\_THRESHOLD**), and the gear continues to be in N or P, an event of Accelerator Hitting while Stopped shall be recorded.

##### CLEA信号/CLEA Signals

本章节定义了用于判断停车轰油门的CLEA信号。

This section defines CLEA signals for judging accelerator hitting while stopped.

通过信号***PPEI Engine General Status 1 Signal Group1 : Engine Speed***获取引擎的转速信息。

The engine speed information is obtained with signal ***PPEI Engine General Status 1 Signal Group1 : Engine Speed***.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

The vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***.

通过信号***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***获取挡位信息。

The gear position information is obtained with signal ***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***.

##### GB信号/GB Signals

本章节定义了用于判断停车轰油门的GB信号。

This section defines GB signals for judging accelerator hitting while stopped.

通过信号***Tachometer Engine Speed***获取引擎的转速信息。

The engine speed information is obtained with signal ***Tachometer Engine Speed***.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车速信息。

The vehicle speed information is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***.

通过信号***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***获取挡位信息。

The gear position information is obtained with signal ***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***.

##### 标定信息/Calibration Information

通过标定***P\_DBA\_ACCELERATOR\_HITTING\_ENGINE\_SPEED\_THRESHOLD***确定停车轰油门的引擎转速阈值。

The engine speed threshold of accelerator hitting while stopped is obtained by calibration ***P\_DBA\_ACCELERATOR\_HITTING\_ENGINE\_SPEED\_THRESHOLD***.

#### 空挡滑行（ICE Only）/Neutral Taxiing (ICE Only)

空挡滑行指的时车辆行驶过程中挂入N档使车辆滑行一段距离的情况。当车速>1km/h且档位为N档，持续时间在5s（可标定，P\_DBA\_NEUTRAL\_TAXIING\_FLAG\_TIME）以上记空档滑行。

Neutral Taxiing refers to the situation where the vehicle is taxiing for a certain distance with the gear in N position during vehicle driving. When the vehicle speed is more than 1km/h with the gear in N, and the duration is more than 5s (Calibratable，P\_DBA\_NEUTRAL\_TAXIING\_FLAG\_TIME), an event of Neutral Taxiing shall be recorded.

##### CLEA信号/CLEA Signals

本章节定义了用于判断空挡滑行的CLEA信号。

This section defines CLEA signals for judging neutral taxiing.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

The vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***.

通过信号***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***获取挡位信息。

The gear position information is obtained with signal ***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***.

##### GB信号/GB Signals

本章节定义了用于判断空挡滑行的GB信号。

This section defines GB signals for judging neutral taxiing.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车速信息。

The vehicle speed information is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***.

通过信号***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***获取挡位信息。

The gear position information is obtained with signal ***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***.

##### 标定信息/Calibration Information

通过标定***P\_DBA\_NEUTRAL\_TAXIING\_FLAG\_TIME***确定空挡滑行的时间阈值。

The time threshold of neutral taxiing is determined by calibration ***P\_DBA\_NEUTRAL\_TAXIING\_FLAG\_TIME***.

#### 未停稳即挂挡（ICE Only）/Gear Shifting without Fully Stopped (ICE Only)

未停稳即挂挡指车辆在没有完全静止的情况下，车辆挂入P、R档，将有可能造成车辆变速器损坏的情况。当车辆的当前速度不小于5km/h（可标定，P\_DBA\_GEAR\_SHIFTING\_FLAG\_SPEED），检测到车辆档位从D前进挡变化为P、R挡，或者从R挡变化为P、前进挡，那么认为发生了未停稳车就进行挂挡的行为。

Gear Shifting without Fully Stopped refers to the situation where the vehicle is not completely stationary and the gear is shifted to P or R, which may cause damage to the transmission of the vehicle. When the current speed of the vehicle is not less than 5km/h (to be calibrated by P\_DBA\_GEAR\_SHIFTING\_FLAG\_SPEED), the gear of the vehicle is detected changing from forward gear to P or R gear, or the gear of vehicle is detected changing from R gear to P or forward gear, it shall be considered that the gear shifting behavior occurs without fully stopping the vehicle.

##### CLEA信号/CLEA Signals

本章节定义了用于判断未挺稳即挂挡的CLEA信号。

This section defines CLEA signals for judging gear shifting without fully stopped.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

The vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven.***

通过信号***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM***获取挡位信息。

The gear position information is obtained with signal ***PPEI Trans General Status 2 Signal Group 2\_TCM : Transmission Estimated Gear\_TCM.***

##### GB信号/GB Signals

本章节定义了用于判断未挺稳即挂挡的GB信号。

This section defines GB signals for judging gear shifting without fully stopped.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车速信息。

The vehicle speed information is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated.***

通过信号***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated***获取挡位信息。

The gear position information is obtained with signal ***Transmission Estimated Gear Protected : Transmission Commanded Gear Authenticated.***

##### 标定信息/Calibration Information

N/A

#### 超速行驶/Speeding

超速行驶是指车辆在通过限速路段时超过规定行驶速度的行为。

Speeding refers to the behavior that the vehicle speed exceeds the regulated driving speed when passing through the speed-limited section.

超速行驶识别：通过来自导航模块的电子眼及限速信息，DBA应当有能力对车辆的超速行驶行为进行判断。具体地，DBA应当识别出车辆通过某一电子眼路段（通常封闭道路为电子眼前700米，城市道路为电子眼前300米）的最高时速是否超过当前路段的限速并计算超出的百分比，称为超速百分比。

Speeding identification: DBA shall be able to determine the Speeding behavior of the vehicle through the electronic eyes and speed limit information from the navigation module. Specifically, DBA shall identify whether the maximum speed of a vehicle passing through an speeding camera (usually 700 meters in front of the speeding camera for closed roads and 300 meters in front of the speeding camera for urban roads) exceeds the speed limit of the current section and calculate the percentage of the exceeding part, which is called the overspeed percentage.

##### CLEA信号/CLEA Signals

本章节定义了用于判断超速行驶的CLEA信号。

This section defines CLEA signals for judging speeding.

CLEA架构车型，通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

On a model of CLEA architecture, the vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven.***

##### GB信号/GB Signals

本章节定义了用于判断超速行驶的GB信号。

This section defines GB signals for judging speeding.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车速信息。

The vehicle speed information is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated.***

##### 标定信息/Calibration Information

N/A

#### 未系安全带/Seatbelt Unfastened

未系安全带指驾驶员在行驶过程中未系安全带的驾驶行为。（Notification Driver Seatbelt Status = Unfastened且挡位处于前进挡，具体请参考5.2定义）

Seatbelt Unfastened refers to the driving behavior that the driver does not wear a seatbelt during driving. (Notification Driver Seatbelt Status = Unfastened and the gear in D position. Please refer to the definition in 5.2 for details)

当车速＞5 km/h, 并且车辆提示驾驶员系安全带。

When the vehicle speed＞5 km/h and system remind user to fasten driver seatbelt

##### CLEA信号/CLEA Signals

本章节定义了用于判断未系安全带的CLEA信号。

This section defines CLEA signals for judging seatbelt unfastened.

通过信号***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven***获取车速信息。

The vehicle speed information is obtained with signal ***PPEI Vehicle Speed and Distance Signal Group1 : Vehicle Speed Average Driven.***

通过信号***Airbag Indications Signal Group : Fasten Driver Seatbelt Indication Control Indication On***获取安全带状态信息，当信号为$1=True表示驾驶员当前没有系安全带。

The seatbelt status information is obtained with signal ***Airbag Indications Signal Group : Fasten Driver Seatbelt Indication Control Indication On***, when signal is $1=True, it indicates that the driver does not fasten the seatbelt currently.

##### GB信号/GB Signals

本章节定义了用于判断未系安全带的GB信号。

This section defines GB signals for judging seatbelt unfastened.

通过信号***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated***获取车速信息。

The vehicle speed information is obtained with signal ***Vehicle Speed Average Driven Protected : Vehicle Speed Average Driven Authenticated.***

通过信号***Occupant Restraint Information Protected : Driver Seat Belt Status Authenticated***获取安全带状态信息，当信号为$1=UnFastened表示驾驶员当前没有系安全带。

The seatbelt status information is obtained with signal ***Occupant Restraint Information Protected : Driver Seat Belt Status Authenticated***, when the signal is $1=UnFastened, it indicates that the driver does not fasten the seatbelt currently.

##### 标定信息/Calibration Information

N/A

### 行程驾驶评分与评级/Trip Driving Scoring and Grade

行程驾驶评分是以百分制积分的，每个单项都可能对总分产生相应权重的扣分。

Trip driving scoring is based on the percentile system, and each individual item may generate corresponding weight reduction for the total score.

行程驾驶评分需要四舍五入取整数。

Travel DBA scores need to be rounded to the nearest whole number.

燃油车驾驶评分原则如下：

The driving scoring principles for fuel vehicles are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| 类别（燃油车型） Category (Fuel Vehicles) | 评价项 Evaluation Item | 权重值 Weight Value | 评分规则 Scoring Rules |
| 行驶平顺类 Driving Smoothness  （20%） | 急加速 Sharp Acceleration | 5% | 此项最高分为100分，检测到一次急加速，本项分值扣25分，直至扣完为止。 The highest score for this item is 100. If the sharp acceleration is detected, 25 points will be deducted from this score until it is fully deducted. |
| 急减速 Sharp Deceleration | 5% | 同上 Same as above |
| 急转弯 Sharp Turn | 5% | 同上 Same as above |
| 空挡滑行 Neutral Taxiing | 5% | 此项最高分为100分，若检测到一次，此项得分为0。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |
| 交通违规类 Traffic Violations  （50%） | 变道未打灯 Lane Change without Signaling | 10% | 此项最高分为100分，检测到一次未及时打开转向灯，本项分值扣25分，直至扣完为止。 The highest score for this item is 100. If the turn signal lamp is not turned on in time, 25 points will be deducted from this score until it is fully deducted. |
| 疲劳驾驶 Fatigue Driving | 16% | 此项最高分为100分，若检测到一次，此项得分为0。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |
| 超速 Speeding | 16% | 此项最高分为100分，若超速小于当前限速的50%，则扣30分，超过50%，此项得分为0分。 The highest score for this item is 100. If the exceeding part is less than 50% of the current speed limit, 30 points shall be deducted, otherwise, the score for this item shall be 0. |
| 未系安全带 Seatbelt Unfastened | 8% | 此项最高分为100分，若检测到一次，此项得分为0分。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |
| 车辆损耗类 Vehicle Loss  （30%） | 未停稳即挂挡 Gear Shifting without Fully Stopped | 10% | 此项最高分为100分，若检测到一次，此项得分为0分。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |
| 怠速过长 Long Idling | 10% | 此项最高分为100分，若检测到一次，此项得分为0。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |
| 停车轰油门 Accelerator Hitting while Stopped | 10% | 此项最高分为100分，若检测到一次，此项得分为0。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |

新能源车驾驶评分原则如下：

The driving scoring principles for new energy vehicles are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| 类别（新能源车型） Category (New Energy Vehicles) | 评价项 Evaluation Item | 权重值 Weight Value | 评分规则 Scoring Rules |
| 行驶平顺类 Driving Smoothness  （30%） | 急加速 Sharp Acceleration | 10% | 此项最高分为100分，检测到一次急加速~~未及时打开转向灯~~，本项分值扣25分，直至扣完为止。 The highest score for this item is 100. If the turn signal lamp is not turned on in time, 25 points for this item will be deducted until it is fully deducted. |
| 急减速 Sharp Deceleration | 10% | 同上 Same as above |
| 急转弯 Sharp Turn | 10% | 同上 Same as above |
| 交通违规类 Traffic Violations  （70%） | 及时打开转向灯 Turn Signal Lamp Not Timely Turned On | 15% | 此项最高分为100分，检测到一次未及时打开转向灯，本项分值扣25分，直至扣完为止。 The highest score for this item is 100. If the turn signal lamp is not turned on in time, 25 points for this item will be deducted until it is fully deducted. |
| 疲劳驾驶 Fatigue Driving | 20% | 此项最高分为100分，若检测到一次，此项得分为0。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |
| 超速 Speeding | 20% | 此项最高分为100分，若超速小于当前限速的50%，则扣30分，超过50%，此项得分为0分。 The highest score for this item is 100. If the exceeding part is less than 50% of the current speed limit, 30 points shall be deducted, otherwise, the score for this item shall be 0. |
| 未系安全带 Seatbelt Unfastened | 15% | 此项最高分为100分，若检测到一次，此项得分为0分。 The highest score for this item is 100. If it is detected once, the score for this item shall be 0. |

对于不同评分，DBA会给予不同的评级。具体评级对应如下：

DBA shall provide users with grades based on score. Please refer to the below for more details:

|  |  |
| --- | --- |
| 81-100 | 优秀 Excellent |
| 61-80 | 良好 Good |
| 31-60 | 一般 Pass |
| 0-30 | 改进Subaverage |

#### 不同车型评分说明/ Description of Scoring for Different Vehicle

对于不支持变道不打灯识别的车型，该项评分为满分参与计算。

For vehicles that do not support lane change and no light identification, the score is full for this grade.

### 行程驾驶评分排名/Trip Score Ranking [Delete]

#### 评分排名/Score Ranking [Delete]

~~车机向后台上传单次行程的驾驶评分，从后台接收排名信息进行展示。排名信息为单次行程的评分排名百分比，单次行程评分前三名。同时还需从后台接收月度排名、城市排名、车友排名。~~

~~The on-board system uploads the driving score of a single trip to the background and receives the ranking information for display from the background. The ranking information is the score ranking percentage of a single trip, and the top three are scored for a single trip. At the same time, it shall also receive monthly rankings, city rankings and car friend rankings from the background.~~

~~驾驶评分排名不区分品牌和车型，数据跟随用户。~~

~~The ranking of driving scores does not distinguish between brands and models, and the data follows users.~~

##### 单次行程评分排名/ Ranking of Single Trip Scores [Delete]

##### 前一日最佳行程评分排名/ Ranking of Best Trip Scores On the Previous Day [Delete]

~~单次行程评分前三名的数据为前一天的单次驾驶评分最高的前三名。每个用户取当天最高驾驶评分参与排名，得分相同的行程，根据行程结束时间进行排序，时间越晚排序约靠前。~~

~~The data of the top three scores of a single trip are the top three scores of the previous day's single drive. Each user takes the highest driving score of the day to participate in the ranking, and the trips with the same score are ranked according to the end time of the trip, and the later the ranking is, the higher the ranking is.~~

~~最高分数相同的用户，根据行程结束时间进行排序，行程结束时间越晚，排序越靠前。~~

~~Users with the same highest score are sorted according to the end time of the trip. The later the end time of the trip, the higher the sorting.~~

~~前一日行程评分排名还包含用户自身前一日的最佳行程评分及排名信息。~~

~~The score ranking of the previous day also includes the user's own best trip score and ranking information of the previous day.~~

~~前一日单日行程评分排名的榜单支持城市排名和全国排名，用户的城市归属请参考<~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >。~~

~~The list of the previous day's one-day trip ranking supports city ranking and nationwide ranking. Please refer to <~~ [~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >.~~

##### 驾驶评分月度排名/ Monthly Ranking of Driving Scores [Delete]

~~驾驶评分的月度排名为前30天驾驶评分的平均分排名，每日24时更新。~~

~~The monthly ranking of driving scores is the average ranking of driving scores in the first 30 days and is updated at 24 o'clock every day.~~

~~驾驶评分月度排名分为全国排名和城市排名。用户的城市归属请参考<~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >。~~

~~The monthly ranking of driving scores is divided into nationwide ranking and city ranking. Please refer to <~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >.~~

~~排名包含用户的平均分数和排名信息，还包含平均分前三的用户信息。~~

~~Ranking includes the average score and ranking information of users, as well as the user information in the top three average scores.~~

##### 驾驶评分排名规则说明/ Explanation of Driving Rating Ranking Rules [Delete]

~~娱乐系统需要告知用户日排名和月度排名的规则。数据结算为每日的24时，用户查看的排名结果为前一日的结算结果，娱乐系统应以恰当的方式提示用户数据的结算规则。~~

~~The entertainment system needs to inform users of the rules for daily ranking and monthly ranking. The settlement time is 24 o'clock every day, the ranking result viewed by the user is the settlement result of the previous day, and the entertainment system should prompt the settlement rules of the user's data in an appropriate way.~~

~~驾驶行为分析中驾驶评分的排规则名参考如下（具体的文言描述以交互设计的文档为主）：~~

~~The ranking reference of driving score in driving behavior analysis is as follows (the official description refer to UE documents):~~

1. ~~单次驾驶评分排名：结算时间为每日24时，单次驾驶评分的排名是基于SGM用户过往三个月的平均分来排名的，基础数据的计算时间为每日24时/ Ranking of single driving scores: the settlement time is 24 o'clock every day, the ranking of single driving scores is based on the average scores of SGM users in the past three months;~~
2. ~~前一日最佳驾驶评分排名：结算时间为每日24时，该数据为昨日用户所有行程中评分最佳的一次行程参与的排名/ Ranking of the best driving scores of the previous day: the settlement time is 24 o'clock every day, and this data is the ranking of the best one of all the trips of yesterday's users.~~
3. ~~驾驶评分月度排名规则说明：结算时间为每日24时，该数据为用户过去30 天驾驶评分平均分的排名/ Description of monthly ranking rules for driving scores: the settlement time is 24 o'clock every day, this data is the average ranking of the driving scores of the user in the past 30 days.~~

#### 评分排名分享/Score Ranking Sharing [Delete]

~~所有排名应当支持其他应用调用（支持调用5.3.7中的历史排名数据，也支持从云端调用，具体由软件方案决定），同时也支持生成图片供分享给其他应用或群聊等（目前已知Team Travel应用）。~~

~~All ranking information shall support to be called by other applications It shall also support the generation of ranking pictures for sharing to other applications or group chat. (Team Travel as already known).~~

#### 驾驶评分排名信息脱敏处理/Desensitization of Driving Score Ranking Information [Delete]

~~系统在展示排名信息时，对于其他用户的用户名称需要进行脱敏处理。~~

~~When displaying ranking information, the system needs to desensitize the user names of other users.~~

### 行程油耗~~排名~~（ICE Only）/Trip Fuel Consumption ~~Ranking~~ (ICE Only)

#### 油耗排名/Fuel Consumption Ranking

VCS在每段行程结束后将本段行程的平均油耗数据和行程时间数据上传。

娱乐系统是否支持油耗信息的显示通过标定***VEHICLE\_FUEL\_TYPE\_PETROL***确认，标定值为True时，表示娱乐系统支持显示油耗信息。

Whether the entertainment system supports the display of fuel consumption information is confirmed by calibration ***VEHICLE\_FUEL\_TYPE\_PETROL***. When the calibration value is RTUE, it means that the entertainment system supports the display of fuel consumption information.

##### 油耗的周排名/ Weekly Ranking of Fuel Consumption [Delete]

~~油耗的周排名为用户前7日的平均油耗排名。~~

~~Average Fuel Consumption Ranking of last 7 Days.~~

~~油耗的周排名分为全国排名和城市排名，用户的城市归属请参考<~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >。~~

~~Weekly ranking of fuel consumption is divided into nationwide ranking and city ranking. Please refer to the city attribution of users <~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >.~~

~~包含用户自身的排名信息和前三名的用户信息。~~

~~Contains the user's own ranking information and the top three users’ information.~~

##### 油耗的月度排名/ The Monthly Ranking of Fuel Consumption [Delete]

~~油耗的月度排名为用户前30日的平均油耗排名。~~

~~The monthly ranking of fuel consumption is the average fuel consumption ranking for the first 30 days of users.~~

~~油耗的月排名分为全国排名和城市排名，用户的城市归属请参考<~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >。~~

~~The monthly ranking of fuel consumption is divided into nationwide ranking and city ranking. Please refer to <~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >.~~

~~包含用户自身的排名信息和前三名的用户信息。~~

~~Including the user's own ranking information and the top three users’ information.~~

##### 油耗的半年排名/ Average Fuel Consumption Ranking of Last 180 Days [Delete]

~~油耗的半年排名为用户前180日的平均油耗的排名。~~

~~The half-year ranking of fuel consumption is the ranking of average fuel consumption for the first 180 days of users.~~

~~油耗的月排名分为全国排名和城市排名，用户的城市归属请参考<~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >。~~

~~The monthly ranking of fuel consumption is divided into nationwide ranking and city ranking. Please refer to <~~[~~5.3.9 用户的城市归属~~](#_用户的城市归属)~~/ Urban Attribution of Users >.~~

~~包含用户自身的排名信息和前三名的用户信息。~~

~~Including the user's own ranking information and the top three users’ information.~~

##### 油耗排名规则说明/ Description of Fuel Consumption Ranking Rules [Delete]

~~油耗排名的数据结算为每日的24时，用户查看的排名结果为前一日的结算结果，娱乐系统应以恰当的方式提示用户数据的结算规则。~~

~~The data settlement of the fuel consumption ranking is 24 hours a day, and the ranking result viewed by the user is the settlement result of the previous day. The entertainment system should prompt the settlement rules of the user data in an appropriate way.~~

~~油耗信息跟随用户，且是有效驾驶行程内的油耗数据，不区分车型，电动车用户不展示这个数据。~~

~~Fuel consumption information follows the user and is the fuel consumption data within the effective driving journey. No distinction is made between vehicle types. Electric vehicle users do not display this data.~~

~~油耗排名规则参考如下，具体文言描述以交互文档为主：~~

~~The oil consumption ranking rules are referenced as follows (the official description refer to UE documents):~~

1. ~~油耗的周排名：更新时间为每天24时，参与排名的成员为近7天，有效驾驶行程累计驾驶时间超过1小时的用户的行程平均油耗/Weekly ranking of fuel consumption: the update time is 24:00 every day, the members participating in the ranking are nearly 7 days, and the average fuel consumption of the journey for users whose cumulative driving time for effective driving journey exceeds 1 hour;~~
2. ~~油耗的月排名：更新时间为每天的24时，参与排名的成员为近30天，有效驾驶行程累计驾驶时间超过4小时的用户的行程平均油耗/Monthly ranking of fuel consumption: the update time is 24: 00 a.m. every day, the members participating in the ranking are nearly 30 days, and the average fuel consumption of the journey for the users whose cumulative driving time for effective driving journey exceeds 4 hours;~~
3. ~~油耗的半年排名：更新时间为每天的4时，参与排名的成员为近180天，有效驾驶行程累计驾驶时间超过24小时的用户的行程平均油耗/ Semi-annual ranking of fuel consumption: the update time is 4 o'clock every day, the members participating in the ranking are nearly 180 days, and the average fuel consumption of the journey for users whose cumulative driving time exceeds 24 hours for effective driving journey;~~

##### 油耗排名异常情况说明/ Explanation of Abnormal Oil Consumption Ranking [Delete]

~~存在以下情况导致对应的油耗榜单中无用户自己的排名信息：~~

~~The following conditions lead to no user's own ranking information in the corresponding fuel consumption list:~~

1. ~~如果用户近7天的行程累计时长小于1小时，用户不参与近7天的油耗排名/If the cumulative duration of the user's trip in the past 7 days is less than 1 hour, the user will not participate in the fuel consumption ranking in the past 7 days;~~
2. ~~如果用户近30天的行程累计时长小于4小时，用户不参与近30天的油耗排名/If the cumulative duration of the user’s trip the past 30 days is less than 4 hours, the user will not participate in the fuel consumption ranking in the past 30 days;~~
3. ~~如果用户近180的行程累计时长小于24小时，用户不参与近180天的油耗排名/If the cumulative duration of the user’s trip the past 180 days is less than 24 hours, the user will not participate in the fuel consumption ranking in the past 180 days;~~

#### 油耗排名分享/Sharing of Fuel Consumption Ranking [Delete]

~~所有排名应当支持其他应用调用（支持调用5.3.7中的历史排名数据，也支持从云端调用，具体由软件方案决定），同时也支持生成图片供分享给其他应用或群聊等（目前已知Team Travel应用）。~~

~~All ranking information shall support to be called by other applications It shall also support the generation of ranking pictures for sharing to other applications or group chat. (Team Travel as already known).~~

#### 油耗排名用户信息脱敏处理/Desensitization of Fuel Consumption Ranking User Information [Delete]

~~对于油耗排行榜中的其他用户信息，其他用户的用户名称需要进行脱敏处理。~~

~~For other user information in the fuel consumption ranking list, the user names of other users need to be desensitized~~

### 行程可视化/Trip Visualization [Delete]

#### 位置信息无效处理/ Invalid Processing of Location Information Lost [Delete]

### 历史行程与排名/Historical Trips and Rankings [Delete]

#### 查看历史行程数量/ View Number of Historical Trips [Delete]

#### 历史行程信息/ Historical Trip Information [Delete]

#### 删除历史行程信息/Deletes Historical Travel Information [Delete]

##### 历史行程信息删除提示/Prompt Deleting Historical Travel Information [Delete]

### 用户的城市归属/ Urban Attribution of Users [Delete]

~~用户的城市归属判断：根据用户前30天的驾驶行程结束时所在城市中次数最多的城市。次数相同的情况下，根据城市代码进行判断，城市代码越小，优先级越高。~~

~~Judging the user's city affiliation: according to the city where the user was most frequently located at the end of his driving trip in the previous 30 days. Under the condition of the same number of times, judging according to the city code, the smaller the city code, the higher the priority.~~

~~如果近三十天内无行程数据，所有的城市排行默认上一次的。~~

~~If there is no travel data within the past 30 days, all city rankings will default to the previous one.~~

#### 用户城市归属规则说明/Description of User City Attribution Rules [Delete]

~~系统需要告知用户，城市归属的判断规则。大体规则说明参考如下，具体以交互设计文档为主：系统将根据用户近一个月的活动最频繁的城市判断用户的城市归属。~~

~~The system needs to inform the users of the judging rules of user city attribution. The general rules are described as follows, with interactive design documents as the main reference: the system will judge the user's city affiliation according to the city where the user's activities are most frequent in the past month.~~

### 关闭驾驶行为分析/ Turning off Driving Behavior Analysis

系统需要支持用户关闭驾驶行为分析，驾驶行为分析的开关分为功能开关（总开关）和主动提示开关（车机弹窗开关）两个，分别在本章节和《5.3.10 关闭主动提示功能》章节中定义。

两个开关共同决定车端弹窗是否显示。若功能开关状态为开，需进一步判断主动提示开关是否打开，若两个开关都打开则显示主动提示；若其中一个开关为关则不显示主动提示。

其中，功能开关状态记录在云端，而主动提示开关记录在车机端。功能开关由车机每次点火时从云端同步并下发给驾驶成就APP（IT负责开发），同时车机也接收驾驶成就APP所同步到的开关状态，两者互为更新关系。主动提示开关在驾驶成就APP中进行显示和主要控制，但为避免APP被卸载时数据同步删除，其状态本身记录在车机端。

~~两个开关都记录在驾驶成就APP（IT负责开发）中，需要娱乐系统从APP中同步开关状态。同时功能开关也允许用户从手机端控制，因此也需要娱乐系统从后台同步功能开关的状态。~~

#### 关闭状态下数据处理/ Data Processing in OFF State

功能开关的默认状态为关闭。

The default value of Driving Behavior Analysis switch state is OFF.

在用户关闭驾驶行为分析的情况下，驾驶行为分析数据不再进行收集和处理。

When the user turns off the driving behavior analysis, the driving behavior analysis data will not be collected and processed.

关闭时，本次点火周期内，关闭之前记录的驾驶行为数据需要被删除。

When it is turned off, the driving behavior data recorded before turning off need to be deleted in this ignition cycle.

当用户重新开启驾驶行为分析功能时，开启的时刻作为行程的起点。

When the user restarts the driving behavior analysis function, the starting time is taken as the starting point of the trip.

关闭时，该用户在本车的历史行程数据保留。

When closed, the user's historical travel data in the vehicle is retained.

#### 功能关闭说明/Description of Function Shutdown

在用户选择关闭驾驶行为分析时，系统需要提示用户驾驶行为分析关闭时的影响。大体提示内容参考如下，具体以交互设计文档为主：

When the user chooses to turn off the driving behavior analysis, the system needs to prompt the user to analyze the influence of turning off the driving behavior analysis. Refer to the following for general tips, with interactive design documents as the main content:

1. 注意/Note：
   1. 关闭驾驶行为分析功能，只是暂停后续的数据收集和驾驶行为分析。并不会删除以前的数据/ Turn off the driving behavior analysis function, only suspend the subsequent data collection and driving behavior analysis. The previous data will not be deleted.
   2. 关闭驾驶行为分析功能时，进行中的行程数据将会作废/ when the driving behavior analysis function is turned off, the travel data in progress will be invalidated.
2. 关闭驾驶行为分析后/ After closing the driving behavior analysis：
   1. 不会再展示行程的驾驶行为分析数据/ Driving behavior analysis data of the trip will not displayed again;
   2. 无法在驾驶行为分析的应用界面中查看历史行程数据/Unable to view historical travel data in the application interface of driving behavior analysis；
   3. 如果是燃油车型，将无法再通过驾驶行为分析应用查看油耗排名和油耗信息/ If it is a fuel vehicle type, it will no longer be possible to view the fuel consumption ranking and fuel consumption information through the driving behavior analysis application;
   4. 驾驶行为分析功能关闭后，在下一个结算日，您的数据不再参与排名计算/ after the driving behavior analysis function is turned off, your data will no longer participate in the ranking calculation on the next settlement day.

#### 功能开关状态同步/Function On-off State Synchronization

驾驶行为分析功能的开关状态是同时记录在驾驶成就APP和后台的，车端DBA需有能力同步开关状态，并根据开状态决定是否显示驾驶行为分析的功能。

The switch state of the driving behavior analysis function is recorded in the APP and back office simultaneously, and the switch state of the driving behavior analysis function needs to be correctly reflected in the state of DBA pop-up.

##### 功能开关状态同步时机/ Timing of Synchronization of Functional ON-OFF States

~~驾驶行为分析应用~~VCU需要在以下时刻同步功能的开关状态：

~~Driving behavior analysis~~ VCU applications need to synchronize the on-off state of the function at the following times:

1. 自动同步/ Automatic Synchronization：
   1. 自动同步时机：车辆点火后，VCU从安吉星后台进行一次开关状态同步，并基于该状态决定是否要采集和分析数据/ Automatic synchronization timing: after the vehicle is started, perform a ON-OFF state synchronization with OnStar back office, and whether to collect and analyze data is determined based on the state;
   2. 重试机制：每次自动同步需要支持重试机制，重试3次，每次间隔5分钟/ retry mechanism: retry mechanism shall be supported for each automatic synchronization, with 5-minute intervals 3 times.
   3. 下发机制：VCU在获取到开关状态后，需下发给驾驶成就APP/ Broadcast Mechanism: after the switch state is obtained from OnStar back office, VCU should send the state to IT APP.
2. ~~后台或~~APP下发/~~Back Office or~~ APP Signal Triggering：
   1. 当APP~~或后台~~中开关状态发生改变，下发开关状态至车机端，需要基于该状态决定是否要采集和分析数据；

When the ON-OFF status changes and IT APP ~~or back office~~ sends the new status to vehicle, and whether to collect and analyze data is determined based on the state;

##### 开关状态同步网络异常说明/Network Abnormal Description of ON-OFF State Synchronization

|  |  |
| --- | --- |
| **异常情况/** **Abnormal Condition** | **备注/Comments** |
| 由于网络不佳等原因无法从后台获取开关状态/ON-OFF state is unknown due to connectivity issue | 保持上一次本地保留的开关状态进行判断/remain at the last saved ON-OFF state |

### 关闭主动提示功能/Turn Off the Active Prompt Function

驾驶行为分析默认开启自动提示功能，因此系统需要支持用户关闭自动提示功能。在用户选择关闭主动提示功能时，车端不再弹窗进行本次驾驶行为的展示，但仍将记录、收集并上传驾驶行为数据至后台。

The automatic prompt function is turned on by default for driving behavior analysis, so the system needs to support the user to turn off the automatic prompt function. DBA pop ups will no longer be available to users when they choose to turn off automatic prompt function, but the collection and uploading of DBA data will be continued.

主动提示功能的开关在驾驶成就APP中（IT负责开发），车机端需有能力同步该开关状态并作正确显示。

The automatic prompt is managed in IT APP and local DBA should be able to sync the right state of the ON-OFF switch and exhibit accordingly.

##### 主动提示开关状态同步时机/ Timing of Synchronization of Active Prompt Function ON-OFF States

1. ~~自动同步/ Automatic Synchronization：~~
   1. ~~自动同步时机：车辆点火后进行一次开关状态同步，并基于该状态决定是否要展示驾驶行为分析结果/ Automatic synchronization timing: after the vehicle is started, perform a ON-OFF state synchronization, and whether to exhibit the DBA result is determined based on the state;~~
   2. ~~重试机制：每次自动同步需要支持重试机制，重试3次，每次间隔5分钟/ retry mechanism: retry mechanism shall be supported for each automatic synchronization, with 3 retries at 5-minute intervals.~~
2. APP下发/APP Signal Triggering：
   1. 当驾驶成就APP中开关状态发生改变，同步开关状态至车机端，车机端需要基于该状态决定是否要展示驾驶行为分析结果，并存储该开关状态；/When the ON-OFF status changes and IT APP office sends the new status to vehicle, vehicle will store this status , and whether to exhibit the DBA result is determined based on the state;
3. 用户触发/ User Triggering
   1. 用户在行程报告弹窗中关闭主动提示功能时，需要同步开关状态至驾驶成就APP；/When user turns off the active prompt function in the trip report window, the ON-OFF status should be synced to IT APP;

#### 主动提示功能关闭说明/Active Prompt Function Shutdown Description

当用户在选择关闭主动提示功能时，需要提示用户，该设置只是关闭行程结束时的自动提示，该设置只在本车生效。

When the user chooses to turn off the active prompt function, the user needs to be prompted. This setting is only to turn off the automatic prompt at the end of the trip, This setting is only valid for this vehicle.

### 驾驶攻略/ Driving Strategy [MY TBD]

娱乐系统需要提示和引导用户如何提升自己的驾驶评分和排名名次。需要提示和引导的信息参考如下（具体的文言描述以交互文档为主）：

The entertainment system needs to prompt and guide users how to improve their driving scores and ranking. The information to be prompted and guided is as follows (Please refer to UE documents for details.):

1. 保持平稳驾驶，尽量避免急加速，急减速和急转弯 / Keep driving smoothly and avoid sharp acceleration, deceleration and sharp turns as much as possible
2. 安全变道，变道前请提前一定时间打开转向灯 / Change lanes safely. Please turn on the turn signal a certain time in advance before changing lanes
3. 远离疲劳驾驶，请勿连续驾驶超过4小时（标定，P\_DBA\_FATIGUE\_DRIVING\_TIME） / Stay away from fatigue driving and do not drive continuously for more than 4 hours (Calibration，P\_DBA\_FATIGUE\_DRIVING\_TIME)
4. 保护发动机，请勿怠速过久 / Protect the engine and do not idle too long
5. 安全驾驶，避免空挡滑行 / Drive safely and avoid sliding in neutral gear
6. 安全驾驶，避免超速行驶 / Drive safely and avoid speeding
7. 保护变速箱，避免未停稳就挂挡 / Protect the gearbox to avoid shifting without stopping
8. 安全驾驶，驾驶过程中请系好安全带 / Drive safely. Please fasten your seat belt during driving
9. 行驶里程超过5km（可标定，通过标定P\_DBA\_MINIMUM\_EFFECTIVE\_TRAVEL确定）的行程才是一次有效的驾驶行为分析行程/ A journey with a mileage exceeding 5km (Calibratable, it is determined by calibration P\_DBA\_MINIMUM\_EFFECTIVE\_TRAVEL) is an effective driving behavior analysis trip.

### 服务条款（用户协议）/ Terms of Service (User Agreement) [Delete]

### 击败用户百分比/ Percentage of Users Defeated

单次行程击败用户百分比的数据基础为安吉星后台近三个月驾驶评分平均分，排名的数据基础为前一天24时的统计结果，具体的获取方式参考《[3.3.4数据下载机制》章节](#_数据下载机制时机/_Timing_Mechanism)。

For the ranking of a single trip’s score, the data base of the ranking is the average driving score of user data from SOS in the past three months, and the data base of the ranking is the statistical results based on the previous day’s trips. Please refer to [Section 3.3.4](#_数据下载机制时机/_Timing_Mechanism) for details.

# 软件更新要求/Software Update Requirements

本文档所定义的软件能力应当具备远程更新能力。

The software defined in this document shall have remote update capabilities.

# 性能要求/Performance Requirements

在一段行程结束后（挂入P档），DBA应当具备在1500ms内完成无网络依赖的相关计算并向用户显示相关信息。

At the end of a trip (Switched to Park gear), DBA shall have the ability to complete relevant calculations without network dependency within 1500ms and display relevant information to the user.

车机端与后台的网络数据传输在网络正常的情况下应当在1000ms内完成。

The network data transmission between the on-board mainframe and the background shall be completed within 1000ms under normal network conditions.

# 异常处理/Exception Handling

对于部分展示信息无法获取的情况，DBA应当友好提示用户。举例：当DBA无法正常获取到心率信息时，DBA界面应当显示“正在努力获取心率信息…”（不作为文言指导）。

DBA shall provide user-friendly wording when it fails to acquire information from other module. Giving an example, DBA shows “Trying hard to acquire heart rate information…” when it fails to connect with the smart devices. Please note that wording shall not guide UE design.

对于因网络中断而无法获得显示信息的情况，DBA应当提示当前网络状况不佳无法展示结果。

DBA shall provide user-friendly wording when it fails to show any content due to network disconnection.

# 相关CAN信号

本章节列举了CLEA架构和GB架构中，DBA应用所使用的信号，说明了对于DBA应用需要的信号的频率要求，详见附件（V0.0.2\_Signal List for PIS-2033\_DrivingBehaviorAnalysis.xlsx）：



# 相关标定项

驾驶行为分析应用相关的标定项定义参考如下：

|  |  |  |  |
| --- | --- | --- | --- |
| **标定名称** | **标定类型** | **取值范围** | **默认值** |
| VEHICLE\_FUEL\_TYPE\_PETROL | BLN | 0, 1 | TRUE |
| VEHICLE\_FUEL\_TYPE\_ELECTRIC | BLN | 0, 1 | FALSE |
| P\_DBA\_SPEED\_SAMPLING\_FREQUENCY | INTEGER | 1 – 600s | 15 |
| P\_DBA\_SHARP\_ACCELERATION\_THRESHOLD | Float | 0.05 – 0.7G | 0.25 |
| P\_DBA\_SHARP\_DECELERATION\_THRESHOLD | Float | 0.05 – 0.7G | 0.4 |
| P\_DBA\_SHARP\_TURN\_THRESHOLD | Float | 0.05 – 0.7G | 0.4 |
| P\_DBA\_FATIGUE\_DRIVING\_TIME | INTEGER | 60 – 300min | 240 |
| P\_DBA\_FATIGUE\_DRIVING\_REST\_TIME | INTEGER | 0 – 60min | 20 |
| P\_DBA\_ENGINE\_IDLE\_TIME | INTEGER | 0 – 60min | 10 |
| P\_DBA\_ACCELERATOR\_HITTING\_ENGINE\_SPEED\_THRESHOLD | INTEGER | 500 – 8000rpm | 3000 |
| P\_DBA\_FUNCTION\_ENABLE | BLN | 0, 1 | TRUE |
| P\_DBA\_LANE\_CHANGE\_DETECTION\_ENABLE | BLN | 0, 1 | TRUE |
| P\_DBA\_FATIGUE\_DRIVING\_DETECTION\_ENABLE | BLN | 0, 1 | TRUE |
| P\_DBA\_MINIMUM\_EFFECTIVE\_TRAVEL | INTEGER | 0 – 10km | 5 |
| P\_DBA\_TRIP\_CONGESTION\_WAITING\_TIME\_SPEED | INTEGER | 0 – 30km/h | 5 |
| P\_DBA\_NEUTRAL\_TAXIING\_FLAG\_TIME | INTEGER | 0 – 200s | 5 |
| P\_DBA\_GEAR\_SHIFTING\_FLAG\_SPEED | Float | 0.1 – 10km/h | 5 |
| P\_DBA\_SCORE\_RANKING\_ENABLE | BLN | 0, 1 | TRUE |

**Revision Log**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Date** | **Section** | **Description** | **Author** |
| 0.0.1.7 | 2020/12/22 | All | 根据CR#83058 《CLE Narrative\_0002100\_本次驾驶排名及油耗排名\_v1.7》删除车机端弹窗需要展示本次驾驶行为排名（击败多少用户）的需求，包括：  删除3.2章节中关于“单次驾驶评分的展示”  删除3.3.4章节，但仍保留内容以供后续参考，同时，对P\_DBA\_SCORE\_RANKING\_ENABLE标定作默认False处理  删除3.3.5章节  删除4.1章节中“击败用户百分比”一项  删除5.3.13章节  删除5.3.4章节 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 3.1.1 | 修改上传数据中“主动提示功能开关”的描述  修改上传数据中“急加速发生时的加速度值”、“急减速发生时的加速度值”和“急转弯发生时的加速度值”的数据精度描述 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 4.2.1 | 修改引用部分 | Wang Manyi |
| 0.0.1.7 | 2020/12/22 | 5.3.1.5.1 | 删除ACC ON状态下起止位置GPS信号记录的需求（根据CLE Narrative v1.6）  更新相应英文翻译中的信号错误 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 5.3.1.5.2 | 修改GB上判断ACC什么时候开启的信号 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 5.3.1.11 | 增加5.3.1.11章节《加速度数据换算关系》 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 5.3.2.1.1  5.3.2.3  5.3.2.4 | 增加加速度单位换算过程中对5.3.1.11章节的引用 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 5.3.2.5 | 修改疲劳驾驶的定义 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 5.3.5 | 修改章节《行程油耗排名》🡪《行程油耗》  删除5.3.5.1.1《油耗的周排名》章节  删除5.3.5.1.2《油耗的月度排名》章节  删除5.3.5.1.3《油耗的半年排名》章节  删除5.3.5.1.4《油耗排名规则说明》章节  删除5.3.5.1.5《油耗排名异常情况说明》章节  删除5.3.5.2《油耗排名分享》章节  删除5.3.5.3《油耗排名用户信息脱敏处理》章节 | Wang Manyi |
| 0.0.1.7 | 2021/1/5 | 5.3.8 | 删除5.3.8《用户的城市归属》章节 | Wang Manyi |
| 0.0.1.7 | 2021/1/4 | 5.3.9 | 修改对功能开关和主动提示开关的描述 | Wang Manyi |
| 0.0.1.7 | 2021/1/4 | 5.3.9.1 | 增加功能开关的默认状态值 | Wang Manyi |
| 0.0.1.7 | 2020/12/10 | 5.3.8.3.1 | 修改总开关的获取条件，增加VCU主动下发给IT APP的机制  修改总开关的下发条件，删除后台下发的能力 | Wang Manyi |
| 0.0.1.7 | 2021/1/4 | 5.3.10.1.1 | 删除主动提示开关的从后台同步的机制  增加车机需要存储主动提示开关的说明 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | All | V0.0.1.6 is tracked by CR#72493: [CR][CLE Narrative\_0002100\_本次驾驶排名及油耗排名][V1.6] | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | All | 增加缺失英文翻译章节的英文翻译 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.1.1 | 修改上传数据的内容 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.1.2 | 新增3.1.2章节《其他数据》 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.2 | 修改DBA所下载数据的内容 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.3.1 | 修改行程数据缓存的相关规定 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.3.2 | 修改数据上传时机的相关规定 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.3.4 | 修改数据下载机制的相关规定 | Wang Manyi |
| 0.0.1.6 | 2020/12/1 | 3.3.5 | 删除3.3.5章节《自动下载数据机制》 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.1.7 | 增加章节《行程瞬时速度》 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.1.7.3 | 新增子章节《行程瞬时速度》 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.1.7.4 | 调整《行程平均速度》章节为5.3.1.7的子章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.1.7.5 | 调整《行程最高速度》章节为5.3.1.7的子章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.1.2 | 更正GB横向加速度信号长名 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.3.2 | 更正GB急加速信号长名 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.4.2 | 更正GB急减速信号长名 | Wang Manyi |
| 0.0.1.6 | 2020/11/23 | 5.3.2.5 | 调整疲劳驾驶行为的逻辑定义 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.5.1 | 更正CLEA挡位切换信号长名 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.7.1 | 更正CLEA挡位切换信号长名 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.8.1 | 更正CLEA挡位切换信号长名 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.9 | 增加判定未停稳即挂挡的速度阈值的标定  调整“D挡”说法为“前进挡” | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.9.1 | 更正CLEA挡位切换信号长名  删除刹车踏板行程信号 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.2.9.2 | 删除刹车踏板行程信号 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 5.3.3 | 更正急加速行为“评分规则”内的表述 | Wang Manyi |
| 0.0.1.6 | 2020/11/23 | 5.3.4.1~5.3.4.2 | TBD该章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/23 | 5.3.5.1.1~5.3.5.1.5 | TBD该章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/23 | 5.3.6~5.3.8 | 删除该章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/23 | 5.3.9 | TBD该章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/25 | 5.3.10 | 基于IT后台负责开关的新分工，调整开关同步的逻辑定义 | Wang Manyi |
| 0.0.1.6 | 2020/11/25 | 5.3.11 | 基于IT后台负责开关的新分工，调整pop-up开关同步的逻辑定义 | Wang Manyi |
| 0.0.1.6 | 2020/12/3 | 5.3.12 | TBD该章节 | Wang Manyi |
| 0.0.1.6 | 2020/12/3 | 5.3.13 | 删除该章节 | Wang Manyi |
| 0.0.1.6 | 2020/11/19 | 10 | 增加5条标定项（VEHICLE\_FUEL\_TYPE\_PETROL，VEHICLE\_FUEL\_TYPE\_ELECTRIC，P\_DBA\_SPEED\_SAMPLING\_FREQUENCY，P\_DBA\_GEAR\_SHIFTING\_FLAG\_SPEED，P\_DBA\_SCORE\_RANKING\_ENABLE），删除一条标定项（P\_DBA\_VEHICLE\_POWER\_TYPE） | Wang Manyi |
| 0.0.1.5 | 2020/9/21 | All | V0.0.1.5 is tracked by VCS CR#64764 | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 4.3 | 补充Power Mode对应的信号章节； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 4.3.1 | 补充CLEA架构对应的Power Mode对应的信号说明； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 4.3.2 | 补充GB架构对应的Power Mode对应的信号说明； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.3.1 | 补充CLEA架构里程信号对应的有效性信号； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.3.2 | 补充GB架构里程信号对应的有效性信号； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.5.1 | 更新CLEA架构中，用于表示ACC工作状态的信号名称； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.6 | 补充平均油耗显示的精度要求； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.6.1 | 补充CLEA架构中油量剩余百分比信号的有效性信号，就在错误描述； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.6.2 | 补充GB架构中油量剩余百分比信号的有效性信号，就在错误描述； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.6.3 | 补充是否显示油耗的标定信息； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.8.1 | 补充CLEA架构中车速信号的有效性信号； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.8.2 | 补充GB架构中车速信号的有效性信号； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.11 | 补充平均电耗显示的精度要求； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.1.11.3 | 补充是否显示电耗的标定信息； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.2.9.1 | 删除CLEA架构中通过踏板行程信息作为未停稳挂挡事件的判断条件； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.2.9.2 | 删除GB架构中通过踏板行程信息作为未停稳挂挡事件的判断条件； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 5.3.5.1 | 补充是否显示油耗排名的标定信息； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 9 | 更新信号表格附件到V0.0.2版本； | Chen Deliao |
| 0.0.1.5 | 2020/9/21 | 10 | 更新标定表格:  删除P\_DBA\_VEHICLE\_POWER\_TYPE，  增加VEHICLE\_FUEL\_TYPE\_PETROL和VEHICLE\_FUEL\_TYPE\_ELECTRIC； | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | N/A | V0.0.1.4 is tracked by VCS CR#50832 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 2.1 | 由于DBA只可以在用户同意用户协议之后才可以使用，因此不存在游客账户的状态，也就没有未认领数据； | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 3.1 | 纠正书写错误，“疲劳驾驶次数”应改为“疲劳驾驶时长”； | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 4.1 | 补充最小有效行程对应的标定； | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.3.1 | 增加计算行程距离的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.3.2 | 增加计算行程距离的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.3.3 | 增加计算行程距离的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.5.1 | 增加实现巡航里程功能需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.5.2 | 增加实现巡航里程功能需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.5.3 | 增加实现巡航里程功能需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.6.1 | 增加实现行程平均油耗计算需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.6.2 | 增加实现行程平均油耗计算需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.6.3 | 增加实现行程平均油耗计算需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.8.1 | 增加实现行程最高速度需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.8.2 | 增加实现行程最高速度需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.8.3 | 增加实现行程最高速度需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.9.1 | 增加实现行程拥堵等待时间计算需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.9.2 | 增加实现行程拥堵等待时间计算需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.9.3 | 增加实现行程拥堵等待时间计算需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.11.1 | 增加计算车辆平均电耗需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.11.2 | 增加计算车辆平均电耗需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.1.11.3 | 增加计算车辆平均电耗需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.1 | 补充急转弯判断阈值对应的标定 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.1.1 | 增加判断车辆急转弯需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.1.2 | 增加判断车辆急转弯需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.1.3 | 增加判断车辆急转弯需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.2.1 | 增加判断车辆变道不打灯事件需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.2.2 | 增加判断车辆变道不打灯事件需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.2.3 | 增加判断车辆变道不打灯事件需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.3 | 补充急加速判断阈值对应的标定 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.3.1 | 增加判断车辆急加速需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.3.2 | 增加判断车辆急加速需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.3.3 | 增加判断车辆急加速需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.4 | 补充急减速判断阈值对应的标定 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.4.1 | 增加判断车辆急减速需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.4.2 | 增加判断车辆急减速需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.4.3 | 增加判断车辆急减速需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.5 | 补充疲劳驾驶阈值的标定信息，休息时间阈值的标定信息； | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.5.1 | 增加了判断疲劳驾驶需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.5.2 | 增加了判断疲劳驾驶需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.5.3 | 增加了判断疲劳驾驶需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.6 | 调整怠速过久的判断条件，Power Mode = RUN，调整为引擎转速＞0，补充怠速过久事件的时间阈值的标定信息； | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.6.1 | 增加了判断怠速过久需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.6.2 | 增加了判断怠速过久需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.6.3 | 增加了判断怠速过久需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.7 | 补充了停车轰油门的引擎转速阈值的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.7.1 | 增加了判断停车轰油门的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.7.2 | 增加了判断停车轰油门的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.7.3 | 增加了判断停车轰油门的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.8 | 补充了空挡滑行事件的时间阈值的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.8.1 | 增加了判断空挡滑行事件需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.8.2 | 增加了判断空挡滑行事件需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.8.3 | 增加了判断空挡滑行事件需要的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.9 | 调整了未停稳即挂挡的判断逻辑描述 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.9.1 | 增加了判断未挺稳即挂挡的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.9.2 | 增加了判断未挺稳即挂挡的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.9.3 | 增加了判断未挺稳即挂挡的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.10.1 | 增加了判断超速事件需要的CLEA信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.10.2 | 增加了判断超速事件需要的GB信号 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.2.10.3 | 增加了判断超速事件需要标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 5.3.11 | 驾驶攻略中，补充了疲劳驾驶对应的时间阈值标定信息和最小有效行驶里程的标定信息 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 9 | 补充CAN信号列表，附件，版本 V0.0.1 | Chen Deliao |
| 0.0.1.4 | 2020/7/22 | 10 | 补充标定项信息 | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | N/A | V0.0.1.3 is tracked by VCS CR#42433 | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 2.1 | 未认领数据说明/Unclaimed data description | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 2.2 | 增加账户切换时的数据归属问题/Adding Data Attribution in Account Switching | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 3.1/3.2/3.3 | 补充数据上传下载的说明/Instructions for uploading and downloading supplementary data | Chen Deliao |
| 0.0.1.3 | 2020/6/11 | 3.4 | 增加DBA开关状态同步/Add DBA On-off State Synchronization | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 4 | 行程结束条件进行变更，由原来的P挡结束改为熄火为判断条件；/The end of travel condition is changed from the original P gear end to flameout as the judgment condition. | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 4.1 | 补充驾驶评分自动提示/Add Automatic Prompt for Driving Score | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 4.2 | 补充其他情况对行程划分的影响/Add Influence of Other Conditions on Trip Division | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.1.2 | 补充行程结束时定位信息异常的说明/Explanation of Abnormal Positioning Information at End of Supplementary Travel | Chen Deliao |
| 0.0.1.3 | 2020/6/11 | 5.3.1.6 | 补充行程平均油耗，标注(ICE Only)/Add Average Trip Power Consumption (EV Only) | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.1.10 | 需求改为 MY TBD，可穿戴设备目前无规划/Requirements changed to MY TBD, wearable devices are currently not planned. | Chen Deliao |
| 0.0.1.3 | 2020/6/11 | 5.3.1.11 | 补充电动车的平均电耗需求/Supplement the average power consumption demand of electric vehicles | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.1 | 优化急转弯算法/Optimization of Sharp Turn Algorithm | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.2 | 优化变道未打灯算法/Optimization of lane change without lighting algorithm | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.3 | 优化急加速算法/Optimization of Fast Acceleration Algorithm | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.4 | 优化急减速算法/Optimization of Fast Deceleration Algorithm | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.5 | 补充疲劳驾驶判断条件说明/Supplementary description of fatigue driving judgment conditions | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.6 | 调整怠速过久判断条件/Adjust the judging condition of idling too long | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.2.7 | 调整停车轰油门判断条件/Adjust the judging conditions for stopping and throttling | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.3 | 补充说明评分的四舍五入取整的要求/Supplementary explanation of rounding requirements for scoring | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.3.1 | 增加章节，描述对于不同车型，不支持评分项的评分规则/Add chapters to describe the scoring rules of scoring items that are not supported for different models. | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.4.1 | 补充描述驾驶排名不区分车型和品牌/Supplementary description driving ranking does not distinguish between models and brands | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.4.1.1 | 补充单次行程评分排名/Add single trip scoring ranking | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.4.1.2 | 补充前一日驾驶评分排名/Supplement the previous day's ranking of driving scores. | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.4.1.3 | 补充驾驶评分排名规则说明要求/Supplementary requirements for driving scoring and ranking rules | Chen Deliao |
| 0.0.1.3 | 2020/6/11 | 5.3.4.1.4 | 增加驾驶评分排名规则说明/Add Explanation of Driving Rating Ranking Rules | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.4.2 | 评分排名分享需求改为MY TBD/Fuel consumption ranking requirements changed to MY TBD. | Chen Deliao |
| 0.0.1.3 | 2020/6/11 | 5.3.4.3 | 增加驾驶评分排名信息脱敏处理/Add Desensitization of Driving Score Ranking Information | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.5.1.1 | 补充油耗周排名要求/Supplementary Fuel Consumption Week Ranking Requirements | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.5.1.2 | 补充油耗月排名要求/Monthly Ranking Requirements for Supplementary Fuel Consumption | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.5.1.3 | 补充油耗半年排名要求/Supplementary Fuel Consumption Ranking Requirements for Half a Year | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.5.1.4 | 补充油耗排名规则说明的需求/Demand for Supplementing Fuel Consumption Ranking Rules | Chen Deliao |
| 0.0.1.3 | 2020/6/11 | 5.3.5.3 | 增加油耗排名用户信息脱敏处理/Add Desensitization of Fuel Consumption Ranking User Information | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.6.1 | 补充位置信息无效处理/Invalid processing of supplementary location information | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.7 | 含子章节，补充历史行程和排名显示的信息要求/It contains sub-chapters to supplement the information requirements shown in historical itinerary and ranking | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.8 | 含子章节，补充用户城市归属说明/Including sub-chapters to supplement the description of the user's city affiliation. | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.9 | 增加关闭驾驶行为分析的功能/Add the function of turning off driving behavior analysis. | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.10 | 增加关驾驶评分主动提示的功能开关/Add a function switch for driving score active prompt | Chen Deliao |
| 0.0.1.3 | 2020/6/1 | 5.3.11 | 驾驶攻略，引导用户如何提升驾驶评分/Driving strategy to guide users how to improve driving scores | Chen Deliao |
| 0.0.1.2 | Oct 15th, 2019 | 5.3.3 | Add grades | Jie Gu |
| 0.0.1.1 | Sep 24th, 2019 | 5.3.4.2/5.3.5.2/8 | Add ranking sharing description and exception handling | Jie Gu |
| 0.0.1.0 | Aug 19th, 2019 | All | New creation | Jie Gu |