

2019 Formula SAE Japan Local Rules Number 2

Issued: January 30, 2019 (First Edition +)

The purpose of this document is to inform of the local rules that **must** apply to 2019 Formula SAE Japan. Any additional local rules that become necessary **must** be posted on the FSAEJ official website as they become available. These local rules are valid for 2019 Formula SAE Japan only.

Formula SAE Japan Rules Committee

J2019-38 Submission of Sales Presentation Document (SPD) (refer to Formula SAE® Rules 2019 S.2.2 and S.2.4, and 2019 FSAEJ Participation Rules Article 13)

The following details **must** be described in the Sales Presentation Document.

- Market Analysis
- Sales Strategy
- Business Targets
- Vehicle Strategy and Performance
- Plans for Efficient Design and Manufacturing
- Key Design Features
- Key Performance Targets

Descriptions in this document related to the formula car to be sold are required to be consistent with the Design Report. However, teams are permitted to make changes related to cost in accordance with the business plan.

The minimum font size in the Sales Presentation Document **must** be 10-point (DTP) for both English and Japanese descriptions.

J2019-39 Procedure for Presentation Event (refer to Formula SAE® Rules 2019 S.2.3, S.2.5, and S.2.6, and 2019 FSAEJ Participation Rules Article 13)

The following times are allotted to each team in the Presentation Event: no more than 15 minutes to set up the necessary equipment, no more than 10 minutes for the actual presentation, and a question and answer session lasting approximately 5 minutes. Teams that fail to set up their equipment within the allotted time and cannot begin their presentation at the scheduled time **must** be disqualified and receive 0 points.

Points **must** be deducted from teams that do not finish their presentation within the allotted time.

Presentations **must** be carried out by a maximum of three team members, including those participating in the question and answer session and those operating the equipment.

A maximum of six team members are permitted to be present in the room during the presentation. However, attendees that are not part of the three-person presentation group described above are not permitted to assist the presentation group in any way, including the setting up and removal of equipment, participation in the question and answer session, and time keeping. If such assistance is discovered, the presentation **must** be suspended immediately and the team **must** be scored 0 points.

J2019-40 Evaluation Criteria (refer to Formula SAE® Rules 2019 S.2.7 and 2019 FSAEJ Participation Rules Article 13)

If an inconsistency exists between the presentation and Sales Presentation Document, the details **must** be announced at the beginning of the presentation.

J2019-41 Holding of the Presentation Event (refer to Formula SAE® Rules 2019 S.2.2, and 2019 FSAEJ Participation Rules Article 13)

The Presentation Event **must** be held during the scheduled days of the Static Events. However, the actual judging **must** be carried out separately.

J2019-42 Preconditions for Preparation of Cost Report (refer to Formula SAE® Rules 2019 S.3.4 and S.3.10)

The costs **estimated** in the Cost Report **must** not include **R&D cost, Overhead cost**, profits, and the like.

Production of the formula car is defined as 1,000 units per year, **and 3,000 units per life**.

In addition, **in creating the cost report, the team must use the FSAEJ cost table** posted separately on the team page.

J2019-43 Submission Items for Cost and Manufacturing Event (refer to Formula SAE® Rules 2019 DR.1, DR.2, DR.3, S.3.4, S.3.5, S.3.6, and S.3.7)

For FSAEJ, the FSAE Online website **must** not be used to prepare the Bill of Materials (BOM) and cost **estimate** data (FCA).

The Cost Report **must** consist of the items below, which **must** be submitted in both electronic data (CD-ROM) and printed formats.

The contents of the electronic data and printed materials **must** be consistent.

The Cost Report **must** be printed on A4 paper and collected in a single ring binder.

The following items **must** be described on the cover of the Cost Report.

- (a) School name, (b) Competition name, (c) Car number

1. Bill of Materials (BOM)

This consists of a sheet or sheets for **estimating** the cost of one whole vehicle unit. These sheets **must** be submitted using the official FSAEJ format (to be posted on the team page at the beginning of February 2019). If submitted in a different format, the Cost Report **must** be judged as “not submitted.”

* File name and file format:

carnumber_abbreviatedschoolname_FSAEJ_CR_BOM.xls(x)

(The school name **must consist of no more than 30 letters.)**

2. Cost **estimate data for each **assembly or part (FCA)****

This consists of a sheet or sheets for estimating the cost of each assembly or part. These sheets **must** be submitted using the official FSAEJ format (to be posted on the team page at the beginning of February 2019). If submitted in a different format, the Cost Report **must** be judged as “not submitted.”

* File name and file format:

carnumber_abbreviatedschoolname_FSAEJ_CR_FCA.xls(x)

(The school name **must consist of no more than 30 letters.)**

NOTE: The BOM and FCA **must** not be submitted in a single Excel file.

The Cost eBOM required by Formula SAE® Rules 2019 S.3.6 corresponds to the BOM and FCA as defined by FSAEJ. However, FSAEJ prohibits the submission of the BOM and FCA in a single Excel file to facilitate document screening of the Cost Report.

NOTE: Photographs or drawing data **must** not be included in the Excel files (BOM and FCA).

3. Supplement documentation for cost estimation

These are materials that provide evidence to support the accuracy of the figures required to calculate the costs of each part. Any format is acceptable.

* File name and file format:

carnumber_abbreviatedschoolname_FSAEJ_CR_Supplement.pdf

(The school name **must consist of no more than 30 letters.)**

The **supplement must** include the following materials as a minimum requirement.

- a. Three-view drawings or materials equivalent to three-view drawings of parts defined as “Made” in Formula SAE® Rules 2019 S.3.11 (see the Cost Tables and Formula SAE® Cost Event Supplement CR.2).
- b. In addition to three-view drawings or materials equivalent to three-view drawings, the material composition, structure, and manufacturing method of each component part of a composite material.
- c. In addition to three-view drawings or materials equivalent to three-view drawings, wiring diagrams of wire harnesses.

In addition, for EVs, separate three-view drawings (or materials equivalent to three-view drawings) and wiring diagrams **must** be prepared for the EV high-voltage wire harnesses (HV Wiring: System Engine and Drivetrain – EN) and other wire harnesses (Wire Harness: System Electrical – EL), and these **must** be saved in each system.

NOTE: Excel files submitted as electronic data must not be converted to PDF. Any BOM or **FCA** converted into PDF and submitted as electronic data **must** not be accepted.

J2019-44 Submitted Items for EV Cost Report Review (refer to Formula SAE® Rules 2019 S.3.4)

On the day of the Cost and Manufacturing Event, if requested by a Cost Report Judge, photographs of dedicated EV parts that are not visible due to enclosure within a sealed structure or the like **must** be submitted as evidence of the cost **estimation** for those parts.

Teams unable to submit photographs on request **must** be penalized a maximum of 20 points.

J2019-45 Cost Event Addendum (refer to Formula SAE® Rules 2019 S.3.9)

The Cost Event Addendum reflecting design changes implemented after the submission of the original Cost Report **must** use the official FSAEJ format (posted on the team page). Addendum submitted in any other format **must** not be accepted.

In addition, revisions of calculation errors in the Cost Report and the like **must** not be accepted in the form of addendum.

Addendum **must** be printed out and submitted to the Judges at the beginning of judging on the day of the Cost and Manufacturing Event.

J2019-46 Add Item Requests for Cost Tables (refer to Formula SAE® Rules 2019 S.3.10 and S.3.12)

The first version of the official Cost Tables for FSAEJ will be released at the end of March 2019 on the team page. In the event that a “Bought” part, fabrication method, or the like adopted for the vehicle is not included in these Cost Tables, the team **must** submit an “Add Item Request” via the “Cost Table Add Item Request” page of the Q&A system. The completed “Add Item Request” Excel file (to be specified separately) and supporting documentation **must** be compressed using the .zip or .lzh format and submitted by 14:00 on April 24 (Wed.), 2019 (JST), Japan time. The final version of the Cost Tables incorporating this information **must** be issued in the middle of May, and their details **must** be frozen at this time.

In the event that cost information shown in the final FSAEJ Cost Tables differs from that in the Formula SAE® Cost Tables, the FSAEJ version **must** be given priority, even if the Formula SAE® Cost Tables feature an additional part.

If the Add Item Request could not be completed before preparation of the Cost Report and parts not listed in the Cost Tables need to be entered in the report, the team **must** appraise the cost of these items and identify them clearly in the Cost Report (e.g., through the use of colored cells). The Cost Judges **must** re-evaluate the Cost Report and deduct points appropriately.

J2019-47 Scoring of the Cost Report (refer to Formula SAE® Rules 2019 S.3.14)

If the Adjusted Cost (including penalties) is found to exceed \$45,000 in the pre-screening procedure of the Cost Report, the Adjusted Cost **must** be defined as exactly \$45,000, and the team **must** be scored 0 points for the Discussion Score.

J2019-48 Scoring of the Cost and Manufacturing Event (refer to Formula SAE® Rules 2019 S.3.14 and S.3.18)

The points scoring in the Cost and Manufacturing Event **must** be as follows.

- Price Score: 0 to 40 points
- Discussion Score: 0 to 40 points
- Scenario Score: 0 to 20 points
- Total Score: 0 to 100 points

FSAEJ does not use Penalty Points. Penalty A **must** be deducted from the Discussion Score. If the Discussion Score becomes zero and a further Penalty is incurred, the total penalty **must** be calculated as Penalty B and added to the Adjusted Cost.

J2019-49 Procedure for the Cost and Manufacturing Event (refer to Formula SAE® Rules 2019 S.3.15 and S.3.17)

On the day of the Cost and Manufacturing Event, the event **must** be held in the designated area. Teams **must** bring their car to the designated area five minutes before the allotted time. The cowl **must** be removed before the start of judging.

A maximum of six team members may be present in the judging area to explain necessary items. During the judging, these team members may be interchanged freely.

(1) Submission of addendum and confirmation of details (no more than 10 minutes)

Any addendum to the Cost Report **must** be printed out and submitted to the Judges.

The Judges **must** confirm changes to the design based on the addendum.

(2) Confirmation of consistency between Cost Report and car, and feedback of document screening results (20 minutes, including item (1) above)

The Judges **must** confirm the consistency between the car and the pre-submitted Cost Report. If any inconsistencies are discovered, penalties **must** be awarded in accordance with FSAE® Rules 2019 S.3.14.

The Judges **must** also provide feedback of the Cost Report judging results and discuss the Cost Report with the team.

(3) Real case scenario (Cost Scenario) (10 minutes)

The issues for the real case scenario that affect cost and manufacturing **must** be disclosed at the end of July. (These issues **must** be posted on the team page.)

The teams **must** report the results, which they have considered in advanced based on these issues, to the Judges (5 minutes).

The Judges **must** question the team about this report and ask for additional explanations as necessary (5 minutes).

(4) Delays to start time

The scheduled finishing time of judging **must** not be adjusted if the start of judging is delayed by the team.

If the start of judging is delayed by 10 minutes or more, the real case scenario **must** be omitted. In this case, the team **must** be scored 0 points in the Scenario Score.

J2019-50 Cost Audit (refer to Formula SAE® Rules 2019 S.3.16)

FSAEJ does not perform a Cost Audit since the Cost Reports are subject to document screening.

J2019-51 Excluded Items for Cost Report (refer to Formula SAE® Cost Event Supplement CS.5 and Local Rule J2019-23)

The Ready-To-Drive-Sound (Tractive System Active Sound (TTAS)) does not have to be included in the Cost Report.

J2019-52 Part Numbering on Drawings (refer to Formula SAE® Cost Event Supplement CL.2)

Three-view drawings or materials equivalent to three-view drawings attached as supporting documentation for the Cost Report **must** include part numbers and the abbreviated name of the school.

NOTE: The part numbering convention differs between the 2017-18 Formula SAE® Rules and Formula SAE® Rules 2019.

J2019-53 System and Assembly List for EVs (refer to Formula SAE® Cost Event Supplement CL.6)

In the Cost Report, dedicated EV parts must be categorized in accordance with Formula SAE® Cost Event Supplement CL.6 into those for electrical systems and those for “Engine and Drivetrain – EN.”

NOTE: This rule is a modification to Local Rule J2018-38.

J2019-54 Submission Items for Design Event (refer to Formula SAE® Rules 2019 DR.2 and S.4.2)

The design documents **must** consist of the Design Report and Design Specification Sheet.

The font size on the text pages of the Design Report **must** be no smaller than 8-point (DTP) both English and Japanese descriptions. The margins at the top, bottom, left, and right of each page **must** be 10 mm or more. The spacing between characters **must** not be too narrow. However, font size restrictions **must** not be applied to characters in figures and graphs.

The following dimensions **must** be included on three-view drawings as a minimum requirement: overall length, overall width, overall height, wheelbase, front and rear track, and minimum ground clearance.

All paper design documents **must** be A4- or letter-sized (8.5×11 inches).

J2019-55 Procedure for Design Event (refer to Formula SAE® Rules 2019 S.4.3, S.4.5, S.4.6, S.4.7, and S.4.8)

The Design Event **must** start when the design documents are submitted. Teams **must** read the relevant documents thoroughly and fully understand the requirements of the Design Event to ensure submission of design documents with a high degree of completion.

NOTE: On the day of the Design Event, the document screening results **must** be confirmed in front of the supporting materials and actual car. This event is an opportunity to evaluate the activities of the team after the preparation of the Design Report.

On the day of the Design Event, the event **must** be held in the designated area. Teams **must** bring their car and supporting materials to the designated area five minutes before the allotted time. A maximum of six team members may be present in the judging area to explain necessary items.

The time allotment is as follows (total 30 minutes): Setup (introduction of specialist fields of Judges, 2 minutes), Introduction (explanation from team, 3 minutes), Questioning (Q&A, 22 minutes), Closing (simple comments, 3 minutes). Photographs will be taken five minutes before judging starts. Since the Judges would like to confirm and photograph the car both with and without the cowl attached, teams **must** make preparations (i.e., design considerations) to allow the cowl to be removed in no more than 5 minutes. In the event that structural parts cannot be confirmed on site because the car uses a monocoque or the like, teams **must** bring materials (such as pre-installation photographs or the like) as evidence to explain the details of these parts.

During the Setup and Introduction steps, team members other than those presenting the vehicle **must** be permitted to film or take photographs of the general scene from outside the judging area.

Filming, photography, or sound recording by team members presenting the vehicle within the judging area

must be prohibited. All filming, photography, and recording **must** be prohibited from the Questioning step.

Score sheets **must** be sent to the teams after the Competition has ended and **must** not be handed over at the judging site.

Judging **must** take place in two stages: the Design Event for all teams, and the Design Final for between two to four teams selected in the Design Event.

J2019-56 Design Event - Vehicle Condition (refer to Formula SAE® Rules 2019 S.4.4)

Any changes in the vehicle condition between the submission of the design documents and the time when the actual vehicle is judged in the Design Event will be noticed by the judges. In the case of large-scale changes, including differences in the configuration of components, the details of the changes **must** be declared by the team and explained via documentation at the team reception on the competition site. The declaration form will be uploaded on the team page by 17:00 on July 19 (Fri.), 2019 (JST). If unsure whether declaration is required, the team in question **must** confirm in advance by submitting a formal Q&A. Please note that this does not apply to tuning elements for wheel rates, shock absorber damping, and the like.

J2019-57 Insufficient Redesign

Copy and pasting of content from a previous year's Design Report, or expressions that closely resemble previous content **must** result in the corresponding components being defined as insufficiently redesigned, and points **must** not be scored.

J2019-58 Addresses for Submission Items for Static Events (refer to FSAEJ2019 Participation Rules Article 12)

Team page Login: https://tech.jsae.or.jp/formula/2019team_en/login.aspx
Postal address: Attn.: Formula SAE Japan Office,
10-2 Gobancho, Chiyoda-ku, Tokyo, 102-0076, Japan
Society of Automotive Engineers of Japan, Inc. (JSAE) tel.: +81-3-3262-8214
Email: formula@jsae.or.jp

NOTE: We cannot accept any questions by telephone. Teams must send an email or use the Q&A system on the team page in order to leave evidence of the conversation.

J2019-59 Understanding of Flags Used in Dynamic Events (refer to Formula SAE® Rules 2019 D.4)

Only team members that pass the Flag Test* in the Technical Inspection **must** be permitted to drive in the Dynamic Events. Team members that have passed the Flag Test **must** be awarded a driver's wristband. Drivers without a wristband **must** not be permitted to participate in the Dynamic Events. The maximum penalty for any irregularity **must** be disqualification from the relevant events.

* Flag test: Team members **must** be shown several types of flags and asked to promptly describe in words the actions that must be taken in reaction to the flag (e.g., red flag = come to an immediate safe controlled stop, etc.).

J2019-60 Participation in the Acceleration, Skid-Pad, and Autocross Events (refer to Formula SAE® Rules 2019 D.8, D.9, and D.10)

1. Cars in the ICV and EV classes **must** participate together in these events under mixed running conditions (these cars **must** not participate in these events at separate times).
2. In the heats of each event, one driver **must** perform two runs. After completing the first run, the driver **must** join the line of cars waiting in the start lane. Therefore, if a car pulls out due to mechanical problems or the like during the first run, the car **must** not be permitted to make the second run.
3. In the event that a car pulls out before receiving the instruction to begin the first run (i.e., the official start instruction), the car **must** be permitted to start by re-joining the waiting line for the start lane.

J2019-61 Participation in the Endurance and Efficiency Events (refer to Formula SAE® Rules 2019 D.11)

1. Cars that fail to record a lap time in the Autocross event within 133% (in the case of ICVs) or 145% (in the case of EVs) of the fastest lap time (all times in this section include penalties) recorded by all ICVs and EVs **must** not be permitted to participate in the Endurance and Efficiency events.
2. ICVs and EVs **must** be divided respectively into Groups A, B, and C in order of the fastest lap times recorded in the Autocross event. The Endurance Event **must** be held on the first day for Groups B and C, and on the second day for Group A.
3. The running order for Groups B and C **must** start from the cars with the fastest laps recorded in the Autocross event. The running order for Group A **must** start from the car with the slowest lap recorded in the Autocross event.
4. Only 2 or 3 cars **must** be permitted to be on the course at the same time.
* However, it may be necessary to change rule J2019-61 because of the weather or other circumstances. In this case, any changes of the rule **must** be announced in advance. (Refer to Formula SAE® Rules 2019 D5.)

J2019-62 Limitation on Number of People in Driver Change Area for EV Class Endurance Event (refer to Formula SAE® Rules 2019 D.11.7.1 b)

For the EV class, the three team members that are permitted to be in the Driver Change Area may consist of (1) an ESO and two drivers, or (2) an ESO, a driver, and another team member.

J2019-63 Cone Penalties in Endurance Event (refer to rule Formula SAE® Rules 2019 D.11.12.1)

In the Endurance Event, if a car incurs more than nine cone penalties, the number of penalties **must** be rounded up to the nearest ten and the car **must** be penalized by 30 seconds for each multiple of ten penalties.

However, any car that incurs more than 30 cone penalties **must** be classified as DNF.

* 1 to 9 cone penalties = number of penalties × 2 seconds

* 10 cone penalties = 30 seconds

* 11 to 20 cone penalties = 60 seconds

* 21 to 30 cone penalties = 90 seconds

Revision Record

[First Edition+]

- 2019/1/30 Correcting the defined terms: Refer to Formula SAE® Rules 2019 GR.4.1
 Must - designates a requirement
 Must NOT - designates a prohibition or restriction
 Should - gives an expectation
 May - gives permission, not a requirement and not a recommendation
- 2019/1/30 Correcting English terms on rules regarding the Cost and Manufacturing Event