

# RACEGUIDE

2019/2020 MICHELIN FORMULA-E



AUGUST  
5-6 / 8-9 / 12-13



## BERLIN E-PRIX

6<sup>th</sup> RUNNING

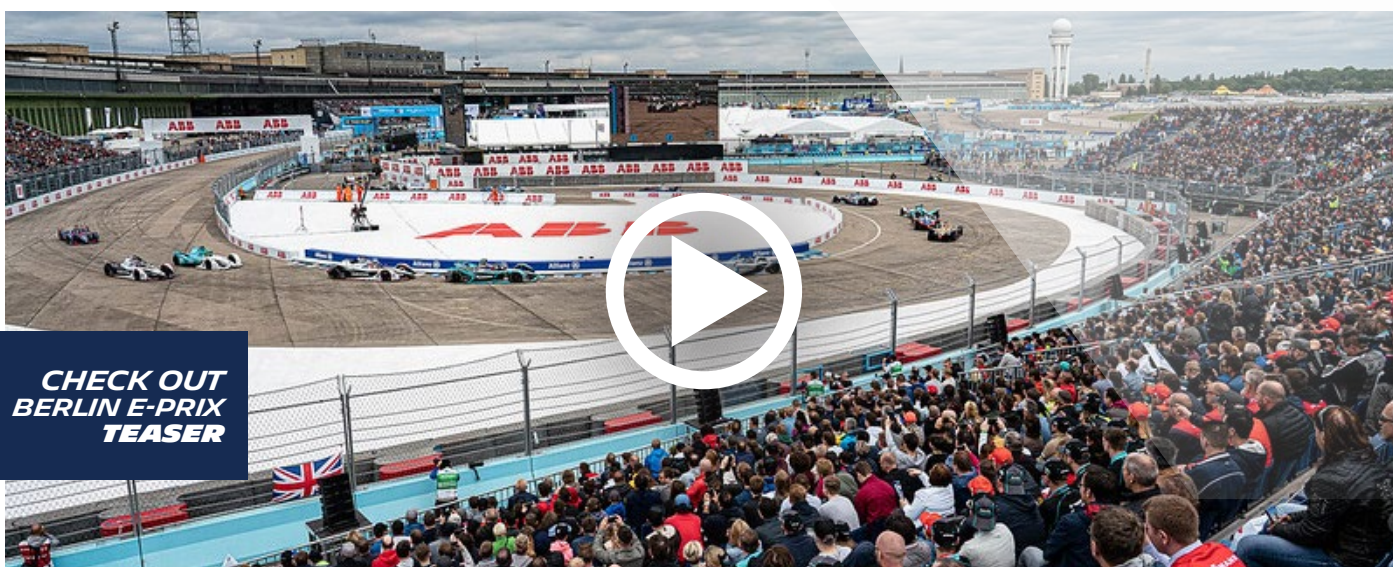
ROUNDS 6, 7, 8, 9, 10 AND 11

OF THE 2019/2020 ABB FIA FORMULA E CHAMPIONSHIP



WE FACE THE EQUIVALENT OF HALF A FORMULA E SEASON, WITH SIX RACES IN THE SPACE OF JUST NINE DAYS. NOT TO MENTION SEVEN ROUNDS OF THE JAGUAR I-PACE E-TROPHY. THAT'S 13 RACES, SO OUR SIX FITTERS WILL NEED TO FIT, INFLATE, BALANCE AND STRIP SOME 1,400 MICHELIN PILOT SPORT TYRES, ALL EQUIPPED WITH THE MICHELIN TRACK CONNECT SYSTEM. THAT'S GOT TO BE A RECORD OVER SUCH A SHORT PERIOD OF TIME!

CHECK OUT  
JÉRÔME MONDAIN  
INTERVIEW



CHECK OUT  
BERLIN E-PRIX  
TEASER

**A BUSY END TO THE SEASON  
FOR THE TEAMS AND MICHELIN**





## THE BERLIN E-PRIX AND MOTORSPORT

Berlin has hosted at least one Formula E race every season since 2014/2015



The 2016 e-prix took place in the streets of Berlin, and not at Tempelhof Airport

Four German carmakers are involved in Formula E (Audi, BMW, Porsche, Mercedes)

Germany also hosts rounds of the FIA Formula 1 and World Rally Championships

Germany has produced 17 motorsport world champions and 5 world-title-winning makes

## GREEN GUIDES

Make the most of your visit to multicultural Berlin with Michelin's Week&Go Green Guide. The Michelin Green Guides to south and north/central Germany are the ideal companions for touring the country.



## THE 2019 RACE

**WINNER**  
**Lucas di Grassi**  
 (Audi Sport Abt Schaeffler), 37 laps



**POLE POSITION**  
**Sébastien Buemi**  
 (Nissan e.dams),  
 1m07.295s

**FASTEST RACE LAP**  
**Lucas di Grassi**  
 (Audi Sport Abt Schaeffler),  
 1m09.357s

Three Formula E champions on the podium (di Grassi, Buemi, Vergne)

The Michelin Pilot Sport delivered a strong performance on Berlin-Tempelhof's abrasive track surface at temperatures in excess of 30°C

Lucas di Grassi posted the fastest race lap on the 29th of the race's 37 laps to illustrate the lasting-performance credentials of Michelin's Formula E tyre



## TIMETABLE

### FORMULA-E

		ROUND 6	ROUND 7	ROUND 8	ROUND 9	ROUND 10	ROUND 11
		August 4	August 5	August 6	August 8	August 9	August 12
Shakedown	15 minutes	6:00pm					
Free Practice 1	45 minutes		9:00am		9:00am	9:00am	
Free Practice 2	30 minutes		11:30am		11:45am	11:30am	
Free Practice 3	45 minutes			11:30am		9:45am	11:30am
Qualifying Group 1	6 minutes		2:15pm	2:15pm	2:15pm	2:15pm	2:15pm
Qualifying Group 2	6 minutes		2:25pm	2:25pm	2:25pm	2:25pm	2:25pm
Qualifying Group 3	6 minutes		2:35pm	2:35pm	2:35pm	2:35pm	2:35pm
Qualifying Group 4	6 minutes		2:45pm	2:45pm	2:45pm	2:45pm	2:45pm
Super Pole (Top 6)	20 minutes		3:00pm	3:00pm	3:00pm	3:00pm	3:00pm
E-Prix	45 minutes + 1 lap		7:04pm	7:04pm	7:04pm	7:04pm	7:04pm
Podium ceremony			8:00pm	8:00pm	8:00pm	8:00pm	8:00pm

### JAGUAR I-PACE eTROPHY

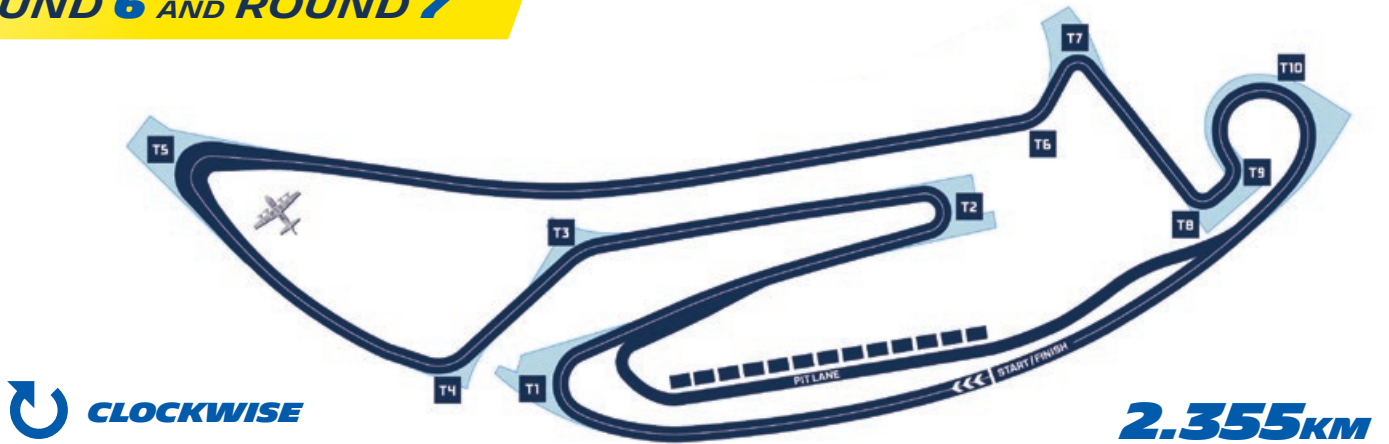
		ROUND 4	ROUND 5	ROUND 6	ROUND 7/8	ROUND 9	ROUND 10
		August 4	August 5	August 6	August 8	August 9	August 12
Shakedown	20 minutes	2:20pm					
Free Practice	40 minutes		7:00pm		10:00am	10:15am	
Qualifying Group 1	30 minutes		10:15am	10:30am	12:40pm	12:55pm	10:30am
Qualifying Group 2	20 minutes				1:05pm		
Race 1	25 minutes		4:45pm	4:45pm	4:45pm	4:45pm	4:45pm
Race 2	25 minutes + 1 lap					11:20am	



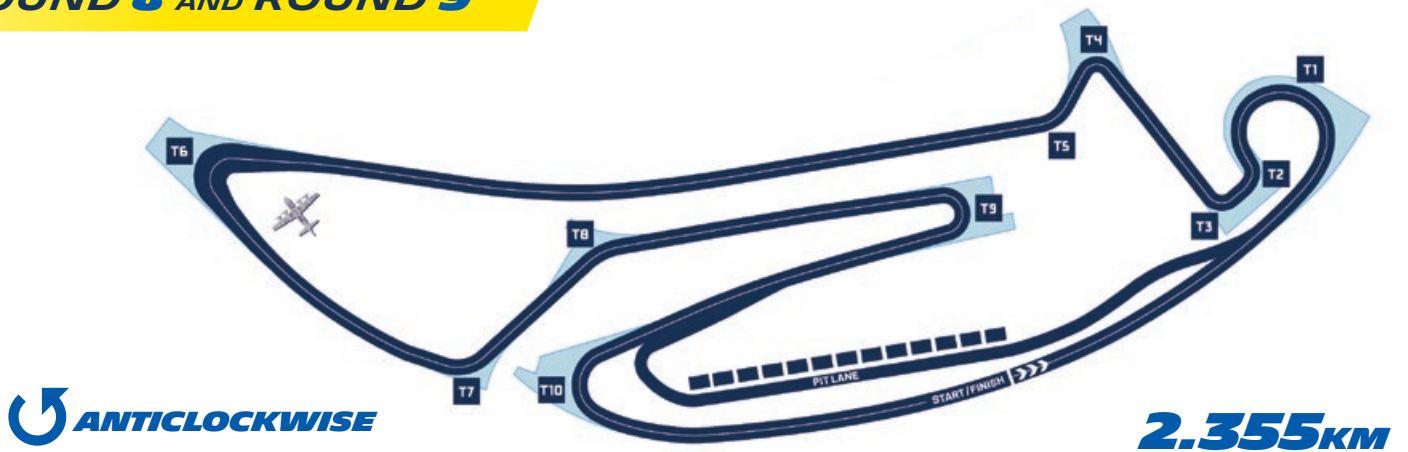
# THREE DIFFERENT TRACK LAYOUTS

Chief characteristics: a combination of straights and tight turns, and an abrasive concrete surface that is hard on tyres

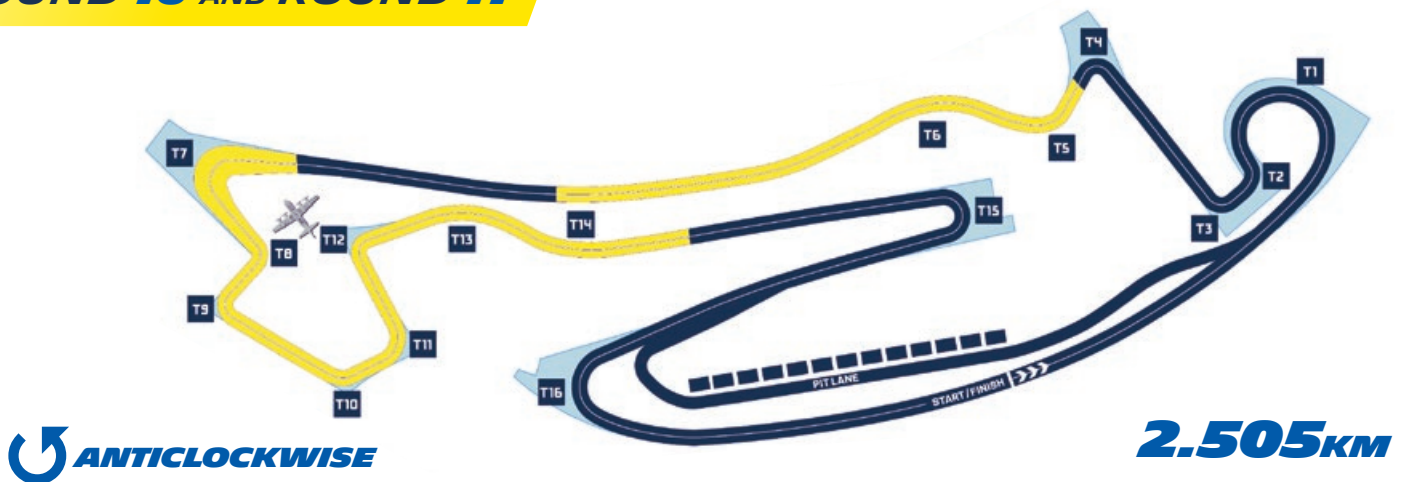
## ROUND 6 AND ROUND 7



## ROUND 8 AND ROUND 9



## ROUND 10 AND ROUND 11





## THE BERLIN E-PRIX AND SUSTAINABLE MOBILITY

Germany is to invest €14 billion in favour of renewable electricity and fuel-cell technology

In 2019, Germany was the European country that sold the highest number of electric vehicles (63,491, up 75% over 2018)

Tesla is to open a 'gigafactory' in Berlin in 2021 with a production capacity of 500,000 electric vehicles per year

It is expected that one million electric vehicles will be on the road in Germany by 2022

In February 2020, the proportion of renewable energy in Germany's energy mix was 61.2%

## MICHELIN STATISTIC



To further reduce Formula E's environmental footprint, Michelin was behind an initiative to reduce the tyre allocation per driver from 12 to 16 for two races



**JÉRÔME MONDAIN**  
Formula E Programme Manager  
Michelin Motorsport

## OUR TEAM OF FITTERS FACE A TOUGH LOGISTICAL CHALLENGE

"Over and beyond the challenge that racing at the calendar's most abrasive track represents, our team of fitters face a tough logistical challenge in Berlin where we will contest the equivalent of half a Formula E season, with six races in the space of just nine days. Not to mention seven rounds of the Jaguar I-Pace e-Trophy. That's 13 races, so our six fitters will need to fit, inflate, balance and strip some 1,400 Michelin Pilot Sport tyres, all equipped with the Michelin Track Connect

system. That's got to be a record over such a short period of time! Meanwhile, three different track configurations will be used at Berlin-Tempelhof. The first two races will lap the circuit in one direction, and the next two will run in the other. The layout will then be rearranged for the last two e-prix to combine part of the initial loop with a new section. And all these challenges will need to be met while following a strict sanitary protocol, of course!"

## MICHELIN AND THE 2020 BERLIN E-PRIX

### MICHELIN PILOT SPORT



Developed specifically for the FIA Formula E Championship

The first 18-inch single-seater racing tyre

The first single-seater racing tyre capable of competing in dry and wet conditions

The first tyre capable of lasting an entire race meeting

**Size (front/rear)** Front: 245/40 R 18 / Rear: 305/40 R 18

**Width (front/rear)** 245mm / 305mm

**Tread width (front/rear)** 240mm / 270mm

**Side wall height (front/rear)** 98mm / 122mm (i.e. 40 percent of tread width)

**Rim diameter** 18 inches

**Weight (front/rear)** Front: 8kg / Rear: 10kg

**Type of tread pattern** Asymmetric, non-directional

**Usage** Circuits, street circuits, asphalt, concrete, wet or dry weather





# MICHELIN PILOT SPORT

THE REVOLUTIONARY  
MICHELIN PILOT SPORT:  
LIGHTER AND MORE ENERGY-  
EFFICIENT THAN EVER

## A REVOLUTIONARY RACING TYRE, IN MORE WAYS THAN ONE!

Developed specifically for the world's first all-electric single-seater motor racing championship, the new MICHELIN Pilot Sport is an exceptionally versatile tyre that was designed by Michelin Motorsport's engineers to cover the entire race day (free practice, qualifying, race), whatever the weather, as required by the technical regulations that govern the series.

Another exceptional characteristic of the tyre is its size. The MICHELIN Pilot Sport was effectively the first ever single-seater tyre to feature an interior diameter of 18 inches, a disruptive concept put forward by Michelin Motorsport and approved by the FIA (Fédération Internationale Automobile). The fact that 18-inch wheels have become a common

feature of road cars enables Michelin Motorsport's engineers and chemists to carry over the lessons they learn on the racetrack to everyday tyres, in keeping with the firm's 'track to street' policy.

The MICHELIN Pilot Sport (front: 245/40 R 18 / rear: 305/40 R 18) is tall and narrow in the interests of energy efficiency, which equates to longer range. Its low sidewalls also flex less, resulting in the generation of less heat, which in turn means reduced energy consumption, a valuable benefit for Formula E's latest-generation 'Gen2' Spark SRT 05Es.

The MICHELIN Pilot Sport is a connected tyre, too, thanks to an embedded RFID chip which facilitates tracking, from production through to recycling.



## MICHELIN PILOT SPORT: THE WINNING TYRE RANGE



**FRONT**  
**Size**  
24/64-18 equivalent to  
245/40 R 18  
**Side wall height**  
98mm



**Usage**  
Wet or dry weather  
**Type of tread pattern**  
Asymmetric, non-directional  
**Rim diameter**  
18 inches



**REAR**  
**Size**  
27/68-18 equivalent to  
305/40 R 18  
**Side wall height**  
122mm

## FORMULA E: A LABORATORY FOR INNOVATIONS LIKE MICHELIN'S CONNECTED SOLUTIONS, TOO!

The 2019/2020 FIA Formula E Championship sees Michelin introduce Michelin Track Connect. This unprecedented technology uses a Michelin designed and developed sensor embedded in its Pilot Sport Formula E tyres to monitor pressures automatically, with no human intervention.

The data it collects is transmitted directly to the FIA in encrypted form. **While the system addresses a requirement of the championship's technical regulations, Formula E will also allow Michelin to:**

- Incubate and develop connected solutions in extreme conditions for the benefit of current and future Michelin Track Connect customers,
- Extend its expertise in the realm of data acquisition and analysis with a view to applying it to other fields and responding to consumer and market demand.

**Connected mobility technology fits perfectly with Groupe Michelin's approach to sustainable mobility.**

**MICHELIN  
TRACK  
CONNECT**



# ENTRY LIST BERLIN E-PRIX

## AUDI SPORT ABT SCHAEFFLER FORMULA E TEAM AUDI E-TRON FE06

2016/2017  
Champion



**N°11 Lucas di GRASSI** (BRA)  
Races: 63 Fasted race laps: 6  
Victories: 10 Podiums: 31  
Pole positions: 3



ROOKIE



**N°33 René RAST** (DEU)  
Race: 0 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 0



## ENVISION VIRGIN RACING AUDI E-TRON FE06



**N°2 Sam BIRD** (GBR)  
Races: 63 Fasted race laps: 5  
Victories: 9 Podiums: 18  
Pole positions: 5



**N°4 Robin FRIJNS** (NLD)  
Races: 40 Fasted race lap: 0  
Victories: 2 Podiums: 5  
Pole position: 0



## BMW I ANDRETTI MOTORSPORT MW IFE.20



**N°28 Max GÜNTHER** (DEU)  
Races: 15 Fasted race lap: 0  
Victory: 1 Podiums: 2  
Pole position: 0



**N°27 Alexander SIMS** (GBR)  
Races: 18 Fasted race lap: 1  
Victory: 1 Podium: 2  
Pole positions: 3



## GEOX DRAGON PENSKE EV-4

ROOKIE



**N°6 Sergio SETTE CAMARA** (BRA)  
Race: 0 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 0



ROOKIE



**N°7 Nico MULLER** (CHE)  
Races: 4 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 0



## DS TECHEETAH DS E-TENSE FE20

2017/2018  
and 2018/2019  
CHAMPION



**N°25 Jean-Eric VERGNE** (FRA)  
Races: 61 Fasted race laps: 4  
Victories: 8 Podiums: 21  
Pole positions: 9



**N°13 Antonio Felix DA COSTA** (PRT)  
Races: 59 Fasted race laps: 2  
Victories: 3 Podiums: 8  
Pole positions: 2



## MAHINDRA RACING MAHINDRA M6ELECTRO



**N°64 Jérôme D'AMBROSIO** (BEL)  
Races: 63 Fasted race laps: 2  
Victories: 3 Podiums: 9  
Pole positions: 2



**N°94 Alex LYNN** (GBR)  
Races: 21 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 1



# ENTRY LIST BERLIN E-PRIX

## MERCEDES-BENZ EQ FORMULA E TEAM MERCEDES-BENZ EQ SILVER ARROW 01



**N°5 Stoffel VANDOORNE** (BEL)  
Races: 18 Fasted race lap: 0  
Victory: 0 Podiums: 3  
Pole position: 1



ROOKIE

**N°17 Nyck DE VRIES** (NED)  
Races: 5 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 0



## PANASONIC JAGUAR RACING JAGUAR I-TYPE IV



**N°20 Mitch EVANS** (NZL)  
Races: 42 Fasted race laps: 2  
Victories: 2 Podiums: 6  
Pole positions: 2



ROOKIE

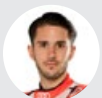
**N°51 James CALADO** (GBR)  
Races: 5 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 0



## NIO 333 FE TEAM NIO FE-005



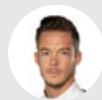
**N°3 Oliver TURVEY** (GBR)  
Races: 52 Fasted race lap: 0  
Victory: 0 Podium: 1  
Pole position: 1



**N°66 Daniel ABT** (DEU)  
Races: 63 Fasted race laps: 8  
Victories: 2 Podiums: 10  
Pole positions: 2



## TAG HEUER PORSCHE FORMULA E TEAM PORSCHE 99X ELECTRIC



**N°36 André LOTTERER** (DEU)  
Races: 30 Fasted race laps: 3  
Victory: 0 Podiums: 5  
Pole positions: 2



**N°18 Neel JANI** (CHE)  
Races: 7 Fasted race lap: 0  
Victory: 0 Podium: 0  
Pole position: 0



## NISSAN E.DAMS NISSAN IMO2

CHAMPION  
2015/2016



**N°23 Sébastien BUEMI** (CHE)  
Races: 61 Fasted race laps: 7  
Victories: 13 Podiums: 26  
Pole positions: 14



**N°22 Oliver ROWLAND** (GBR)  
Races: 19 Fasted race lap: 1  
Victory: 0 Podiums: 2  
Pole positions: 3



## VENTURI RACING MERCEDES-BENZ EQ SILVER ARROW 01



**N°19 Felipe MASSA** (BRA)  
Races: 18 Fasted race lap: 0  
Victory: 0 Podium: 1  
Pole position: 0



**N°48 Edoardo MORTARA** (CHE)  
Races: 27 Fasted race lap: 0  
Victory: 1 Podiums: 3  
Pole position: 0



# FIA FORMULA E

## DRIVERS' STANDINGS

		 SAU 22/11	 SAU 23/11	 CHL 18/01	 MEX 15/02	 MAR 29/02	 DEU 05/08	 DEU 06/08	 DEU 08/08	 DEU 09/08	 DEU 12/08	 DEU 13/08	TOTAL
1	 <b>ANTÓNIO FÉLIX DA COSTA</b> 	0	3	18	18	28							67
2	 <b>MITCH EVANS</b> 	2	0	19	26	9							56
3	 <b>ALEXANDER SIMS</b> 	7	28	0	11	0							46
4	 <b>MAXIMILIAN GÜNTHER</b> 	0	0	25	0	19							44
5	 <b>LUCAS DI GRASSI</b> 	0	18	6	8	6							38
6	 <b>STOFFEL VANDOORNE</b> 	15	15	8	0	0							38
7	 <b>EDOARDO MORTARA</b> 	6	12	0	4	10							32
8	 <b>JEAN-ÉRIC VERGNE</b> 	0	4	0	12	15							31
9	 <b>OLIVER ROWLAND</b> 	12	10	0	6	2							30
10	 <b>SAM BIRD</b> 	26	0	2	0	1							29
11	 <b>SÉBASTIEN BUEMI</b> 	0	0	0	15	12							27
12	 <b>ANDRÉ LOTTERER</b> 	18	0	0	3	4							25
13	 <b>NYCK DE VRIES</b> 	8	0	10	0	0							18
14	 <b>PASCAL WEHRLEIN</b> 	0	0	12	2	0							14
15	 <b>ROBIN FRIJNS</b> 	10	0	0	0	0							10
16	 <b>JAMES CALADO</b> 	0	6	4	0	0							10
17	 <b>DANIEL ABT</b> 	0	8	0	0	0							8
18	 <b>JÉRÔME D'AMBROSIO</b> 	2	0	0	1	0							3
19	 <b>FELIPE MASSA</b> 	0	0	2	0	0							2
20	 <b>BRENDON HARTLEY</b> 	0	2	0	0	0							2
21	 <b>NICO MÜLLER</b> 	0	0	0	0	0							0
22	 <b>OLIVER TURVEY</b> 	0	0	0	0	0							0
23	 <b>NEEL JANI</b> 	0	0	0	0	0							0
24	 <b>QING HUA MA</b> 	0	0	0	0	0							0



# REGULATIONS

## 2019/2020 ABB FIA FORMULA E CHAMPIONSHIP

### CARS (SINGLE-SEATERS)

- » Spark STR-05e / chassis: Dallara / battery: McLaren Applied Technologies
- » Maximum length: 5,200mm
- » Maximum width: 1,800mm
- » Maximum height: 1,250mm
- » Minimum weight: 900kg, including driver and battery and/or capacitor (maximum: 280kg)
- » Maximum power, electric powertrain: 250kW (335hp) for free practice and qualifying, 200kW (270hp) during races.
- » Gearbox: six speeds maximum
- » Only 1 MGU may be used
- » Allocation per race number: 2 electric motors, 2 gearboxes, 2 inverters and 1 battery pack for the season

### TYRES

- » A single type of tyre (pattern and construction)
- » No mid-race tyre changes
- » Allocation of 4 new front tyres and 4 new rear tyres per race number per event
- » All tyres are returned to Michelin after every event
- » In the case of a puncture during a practice session, the use of a marked tyre is authorised
- » Can be inflated using air only
- » Minimum tyre pressures are checked before qualifying and before races
- » In the case of a 'Wet Track', tyre pressures may be adjusted in parc ferme
- » Tyres must remain visible in the team garages at all times
- » Tyres are identified by RFID chips
- » Tyre warmers not authorised

### POINTS-SCORING SYSTEM

**Race result:** 1<sup>st</sup>, 25 points • 2<sup>nd</sup>, 18 points  
3<sup>rd</sup>, 15 points • 4<sup>th</sup>, 12 points • 5<sup>th</sup>, 10 points  
6<sup>th</sup>, 8 points • 7<sup>th</sup>, 6 points • 8<sup>th</sup>, 4 points  
9<sup>th</sup>, 2 points • 10<sup>th</sup>, 1 point

**Pole Position:** 3 points

**Fastest drivers in the qualifying groups:** 1 point

**Fastest race lap:** 1 point  
(if driver classified inside the top 10).



### EVENT FORMATS

- » A **Shakedown** session of a maximum duration of 15 minutes + three laps may be organised the day before the race. Power is restricted to 110kW. A maximum of six laps per car.
- » **Practice:** Two practice sessions (45 and 30 minutes) in the course of the morning of Race Day. Maximum power: 250kW.
- » **Qualifying:** The drivers are divided into four groups of six cars as a function of their championship positions (or of the previous championship order in the case of the season's first race). Each driver has up to two flying laps (only one running at maximum power) to post a qualifying time. The six fastest drivers go on to take part in the Super Pole shootout. Maximum power: 250kW.
- » **Super Pole:** Start order is based on the times posted in qualifying, with the 'slowest driver' to lap first, etc. One flying lap only.
- » **Grid:** The six places at the front of the grid are reserved for the drivers who take part in the Super Pole session.
- » **Race:** Standing start. Maximum duration: 45 minutes + 1 lap. Use of two power outputs mandatory: Normal Mode (200kW / regeneration: 250kW) and Attack Mode (235kW / regeneration: 250kW).
- » **Attack Mode:** Power: 235kW (compared with 225kW in 2018/2019). The number and duration of Attack Mode activations is specific to each race and are notified at least one hour before the start. The cockpit halo lights up when a car is in Attack Mode.
- » **FanBoost:** A temporary 100kJ power boost (minimum: 240kW / maximum: 250kW) for five drivers chosen by a fan vote. To be activated once, but not before the 22nd minute of the race.

