FAI Hong Kong Open Drone Racing Championship 2019

Race Regulations

version 2.1 (Revised on 22-10-2019)

Location: Fung Kai No.1 Secondary School, Sheung Shui, Hong Kong

Event date: 17th Nov 2019

1) Race Format

The race will start with qualifying, proceeding to elimination stage and then a final race to decide the top 4 placings.

Number of participants: 32

a) Qualifying heats:
  ● Qualifying heats will be run in time-trial format. The fastest lap time out of 3 sessions will be used as the qualifying time.

b) Elimination rounds:
  ● Each heat will have 3 or more pilots, and will be run in a first-to-finish format. The first 2 places in each group will proceed to the next stage.

c) Final:
  ● The final will consist of 3 races, and will be run in a first-to-finish format. Points will be awarded according to the finishing order in each race, and the aggregated points will determine the overall winners.

2) Drone Specifications:

  a) Frame: The diagonal length measured from the center of the motors cannot exceed 250mm.
  b) Motion Power: Can only use 4 motors as the motion power.

c) Propellers: The diameter must be within 5 to 5.5 inches (127 to 139.7mm). Full metal propellers are forbidden. Any propeller protection device is forbidden.

d) Battery: The maximum voltage of the flight battery must not exceed 25.5 volts (6S). The voltage measurement will be done before the flight.

e) VTX: TBS UNIFY PRO 5G8 HV - RACE (SMA), Immersion RC Tramp HV, Rush FPV or FURIOUS FPV Stealth Race. The VTX must be with a 25mW maximum power emission.

f) Camera: NTSC only.

g) Radio transmitter: 2.4GHz only with maximum output power of 100Mw. No frequencies other than 2.4GHz will be allowed. Any 2.4GHz radio control equipment may be used, provided that it does not interfere with other radio systems or video systems.

h) LED: Each drone must be equipped with lighting strips with at least 40 functioning RGB LED elements located under drone arms/body or in the back. These must be switchable either by hand or electronically to adjust to any of these colors: RED/YELLOW/GREEN/BLUE/CYAN/PURPLE.

i) Fail safe: Must be set to disarm when triggered.

j) Action Cam HD Video Recording: Participants who reach the final stage (final 4) must install an Action Cam with at least 1080p resolution for video recording purpose. Recorded video (SD card) must be submitted to the race organizer after finishing the race. Action cams should weigh 40g, or dummies will be added to adjust the weight. The ownership of the submitted video footage will belong to the organizer.

3) Qualifying:

a) Qualifying heats will be run in time trial format. The timer will start when the drone passes through the start/finish gate, and will be stopped when the time trial is finished.

b) There will be 8 groups (1-8), with 4 pilots in each group. The formation of the groups and radio channels will be drawn randomly.

c) If a pilot cannot finish the entire heat, the result of the heat will not be counted as a timed result, and will be recorded as a DNF.

d) The drone must pass the start/finish gate within 10 seconds after the starting signal. If this cannot be achieved, the result of that round would be marked as a DNS.

e) There will be 3 qualifying heats for each pilot. Each pilot's fastest completion time will be used to decide the group assignments in the Elimination Stage.

4) Elimination Stage:

a) After qualifying, the 16 fastest pilots will be assigned to 4 groups (A-D), with 4 pilots in each group. Pilots will be assigned from the slowest to the fastest based on the qualifying results. Channels will be randomly assigned.

b) The races will be run in a first-to-finish format, and there will only be one round for each race.

c) The timer will start upon the starting signal, and will be stopped at the time of race completion.

d) The pilots who finish in the first 2 places in each race will proceed to the next stage, until there are only 4 pilots left.

5) Final Stage:

The race final will take place when there are only 4 pilots left. VTX channels will be randomly assigned to the pilots.

There will be a total of 3 races. Each pilot will gain the below points according to their finishing order after each race.

First place: 7 points

Second place: 5 points

Third place: 2 points

Fourth place: 1 point

If a pilot is unable to finish a race (DNF), he/she will get no points for that round.

The pilot who achieves the highest total points out of the 3 races will become the winner, the second highest will be the 1st runner up, and the third highest will be the 2nd runner up.

6) Race rules:

a) General:
   ● Pilots must need permission to enter Judges Zone, Pilots Zone, and Race Zone at all times.
   ● Pilots must not operate any drones or radio equipment at any time without permission.
   ● Dangerous flying attitude is prohibited.
   ● Freestyle is prohibited.
   ● Each pilot has the responsibility to ensure all his/her equipment are functioning properly, and meets the race requirements. If it is found that any non-qualified equipment is used during the race, it may be considered as cheating.
   ● The laws of Hong Kong SAR must be complied with at all times.

b) Pilots reporting and drone checking:
   ● Pilots must report their arrival at the drone checking desk at the designated time. All drones used for the race must be checked to meet the specifications, and they will be kept inside the Drones Zone.
   ● Each pilot can submit up to 2 drones, and they can withdraw their drones before the race.
   ● In case repairing is required, pilots can request to enter the zone and do the repairs within the zone.

c) Pre race-start preparation:
   - Pilots have 3 minutes to get prepared, which includes placing the drone on the starting position, and any other preparations to start the race. If a pilot is ready before the 3 minutes ends, the pilot has the choice to announce his/her readiness. The pilot may continue with preparation if needed, but has to give a notification to the judge.
   - Pilots are free to enter/ exit the Pilots Zone and the Race Zone during the preparation period.
   - The judge will announce the start of the race, after the 3 minutes has passed, or after confirming with all the pilots for their readiness.
   - If a pilot is not ready within the given time, the pilot will need to give up that round.
   - If after the announcement is made, and a pilot is unable to start the race for any reason, the judges have the right to not give any extra time, even if the 3 minutes has not been reached. The race will start as normal.

d) Co-pilot:
   - Each pilot may have ONE co-pilot for each round, and each co-pilot may only assist ONE pilot at the same time. It is not compulsory to have a co-pilot, but a pilot has to confirm who his co-pilot is at the time of entering the Pilots Zone. Once the co-pilot is confirmed, it cannot be changed during the round.
   - Co-pilots can freely enter/exit the Pilots Zone and the Race Zone during the preparation period.
   - During the race, the co-pilot can stay next to the pilot. The co-pilot can give suggestions to the pilot without using any kind of equipment.
   - Co-pilots must not harass other pilots.
   - If a co-pilot receives any warnings from the judges, the pilot will also receive the same.

e) Race Start:
   - Pilots and co-pilots must stay in the Pilots Zone after the announcement is made, unless an exception is given by the judges.
   - Drones will be checked by the judges.
   - The starting signal will be sounded after everyone is ready.

f) Taking off:
   - Drones must take off after the starting signal.
   - The race will be restarted if there is a false start. Pilots will have an extra 2 minutes for preparation if needed.

g) During the race:
   - The drones have to follow the designated track and must successfully fly through all gates, flags and other obstacles in the intended order.
   - If a pilot misses an obstacle, they must safely turn around and attempt the obstacle again. Until a successful fly-through, passing other gates/obstacles will not be included in the Valid Flying Distance.
   - If a drone is unable to follow the designated track, the judges may order the pilot to land his/her drone, and disqualify the pilot for that round.

h) Valid Flying Distance:
   ● When a drone is unable to finish the race, the Valid Flying Distance rule may be applied to determine the result. First, the number of gates/obstacles passed at the final landing place is counted, and then the distance to the next ordered gate/obstacle will be measured. The closest to the next gate/obstacle will be considered as having a higher position at the round.

i) Finishing a Race:
   ● The drone has to follow the designed track and fly through all the gates and obstacles in the intended order. The entire drone has to pass through the start/end gate to finish the race.

     Example: If a drone's battery comes off by accident, and the body of the drone has passed through the start/finish gate, but the battery hasn't, it will be counted as a DNF.

   ● If a drone has missed any gate(s)/obstacle(s), even if the drone has passed through the start/finish gate, it will be considered as an unfinished race, and will be marked as a DNF with Valid Flying Distance.
   ● Pilots have the responsibility to ensure they fly through all the gates and obstacles themselves.

j) After Race Finish:
   ● The drone must land ASAP at the designed landing zone. There will be a warning to the pilot if there is any extra flying.
   ● Pilots have to stay at the Pilots Zone quietly until judge announces the race is finished.

k) Ranking Calculation:
   1) Qualifying and Elimination Rounds:
      - First - The finishing race time.
      - Second - DNF with Valid Flying Distance.
      - Third - DNS in pilot number order.
      - During the Elimination rounds, if there are pilots with DNFs which cannot be ranked properly with the Valid Flying Distance, there will be a rematch for them. All the others with finishing race times and DNS will not be affected.

   2) Final rounds:
      - The Valid Flying Distance rule will not be applied during the Final rounds. Any drone which is unable to finish a race will be marked as DNF with 0 points given for that round.
      - If 2 or more pilots finish with an identical race time in any single round, they will gain the highest possible amount of points from their finishing position.
      - After finishing 3 rounds, the pilot with the highest amount of points will be the winner, second highest will be the 1st runner up, and third highest will be the 2nd runner up.
      - In the case of 2 or more pilots having the same amount of points, their final positions will be determined by the below criteria based on order:
         i. The amount of higher placings out of the 3 rounds.
         ii. After summing up all the finishing race times, the pilot with the shorter time will get the better final rank. In the case of a DNF, the finish race time will be counted as 5 minutes.

        iii.   The results from the 3rd round will be used as the final ranking.

        iv.   The results from the 2nd round will be used as the final ranking.

        v.   The results from the 1st round will be used as the final ranking.

        vi.   If after taking all of the above into account and it is still not possible to determine the rankings, it will become a tie, and both pilots will share the highest possible position together.

l) Timing:
   - An electronic timing system is used in all races, and manual timing will be used as backup.
   - In case of the electronic timing system malfunctioning, manual timing will be used based on the video recordings.

m) VTX Interference:
   - If a pilot's VTX transmission is lost because of interference, the pilot should land the drone immediately.
   - Pilots can report interference to the judges after landing. Judge will make a decision based upon the judges' receivers' video.

7) Warnings:

Pilots who have accumulated 2 minor warnings, will receive 1 serious warning.

Pilots who have accumulated 2 serious warnings, will be disqualified for the tournament, and will be recorded in the book.

a) Verbal Warning:
   - Judges have the right to give out a verbal warning to a pilot who is violating against the rules in a minor way.   If a pilot is violating continuously, depending on the situation, judges can give out a minor or a serious warning.

b) Minor Warning:
   - Unable to follow orders from the judges.
   - False start.
   - After finishing a race, the drone does not land at the designated landing zone ASAP.
   - After race start, pilots leave the Pilots Zone without permission.

c) Serious Warning:
   - Unable to follow orders from the judges.
   - Taking off a drone without receiving permission from the judges.
   - Flying a drone outside Race Zone at any time.
   - Cheating.
   - Harassing other pilots in any way, including video signal interruption caused by powering up a drone.

8) Disqualifications:

Judges have the right to give out warnings, and to disqualify a pilot from any round or from the entire tournament, depending on the seriousness of the situation.

i.   Disqualifications (Individual Rounds):
- Inability to follow orders from the judges.
- Any serious warning that is not accumulated from 2 minor warnings.
- 2 continuous false starts.

ii.   Disqualifications (Tournament):
- Inability to follow orders from the judges.
- Accumulation of 2 serious warnings.
- Unsporting behaviour.
- Any illegal action during any time within the tournament.

9) Complaints:
- Any complaints about the results have to be lodged right after every race. Any late submissions will not be considered.
- All complaints during the race must be lodged without any harassment to the other pilots.
- The chief judge has the final judgment on all complaints.