



BDRA Rules 2024

Authored and maintained by BDRA Race Rules and Technical Standards sub-committee

Version Control

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January 2023	Amendments made to align BDRA rules with BMFA/FAI rulesets to allow for all BDRA competitions to be used as Qualifying Events for the National Team.
April 8 2023	Final 2023 version released to membership for 2023 season.
April 2024	Updates following working-group consultation

British Drone Racing Association

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Glossary of Terms

Competition Organiser: Role with overall responsibility for arranging and publicising an event to the racing community, and appointing the Race Director and other Race Officials to assist in the smooth running of the competition.

Race Director: Role with overall responsibility for managing the competition on race day. Specifically, the Race Director is responsible for the maintenance of the track, safety, spotters, flight line, adjudication, penalty procedures and delivers the safety briefing.

Race meeting: A collection of races that are usually split into a Qualifying phase and a finals phase.

Practice: The period before Qualifying during which competitors get to familiarise themselves with the track and to prepare their models for racing.

Heat: An individual race with between 4 and 8 competitors.

Qualifying round: A set of 'heats' that includes all of the competitors.

At the end of the first qualifying round each competitor will have had exactly one opportunity to qualify.

All competitions have multiple qualifying rounds to ensure each competitor has a fair opportunity to qualify.

Finals: A set of races in which competitors get to compete for podium positions. Competitors are organised by qualifying position and depending on the competition format, may have been reduced in number by one or more optional elimination rounds.

British Championship: The official BDRA end-of-season competition where the top pilots from the British Championship Series are invited to compete for the title of British Champion and accompanying trophy.

British Championship Series: The sanctioned National Series that consists of Qualifying Events run to BDRA rules. The Series ranking is the selection criteria used for inviting competitors to the British Championship and to the National Team.

Qualifying Event: A BDRA sanctioned race meeting where a competitor can accrue points towards the British Championship Series.

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1. General Event Rules

1.1 Membership: To be eligible to have results count towards qualification for the National Championship Series the competitor must be a fully paid-up member of the BDRA by 12:00 noon on the day of any Qualifying Event in which they compete.

1.2 Race Entry: Entry fees must be paid in full by the entry deadline. Entry to the event is not guaranteed until all fees have been received.

1.3 Cancellations: Cancellations must be received by the cancellation deadline, which must be defined by the race organiser and announced at the same time as the event.

1.3.1 Refunds: Fees and deposits may be returned at the discretion of the Competition Organiser, less any cancellation fees. The refund policy must be defined by the race organiser and announced at the same time as the event.

1.4 Arrival/registration: Competitors will be required to check-in with the Race Director (or designated check-in official) upon arrival.

1.5 Failsafe checking: Competitors will be required to demonstrate a fully functioning failsafe (motors cut on loss of signal) before they are permitted to access the track. All drones to be used at the event must be failsafe checked.

1.6 Insurance: Competitors will be required to provide evidence of current insurance, appropriate for the venue.

1.6.1 Drone registration check: All drones must comply with current CAA drone regulations and must display the pilots operator ID. Should there be any question as to the validity of that operator ID then the pilot must be able to present the email from the CAA confirming that ID. Race Organisers/Directors are to confirm that a number in the 'correct format' is affixed to the drone but are not held responsible if this is not correct (due to there being no mechanism from the CAA to check this at present).

1.7 Safety: Competitors will be required to attend the safety briefing, the time of which will be advertised pre-event.

1.7.1 Latecomers: The Race Director may hold a second briefing for latecomers at their discretion. Access to fly the track will not be permitted until the competitor has attended the safety briefing.

1.7.2 Permitted flights: All drones are grounded for the duration of the event unless flying in the current heat. Hover / VTx testing can only be performed with the permission of the race director in the assigned area.

1.7.3 Video equipment safety: Powering on in the pits for testing or repair will only happen with VTx off AND props off.

1.7.4 Starting area: A 2m exclusion zone will be present around the start line. Drones should be placed in the appropriate position on the start line and powered on, however it is forbidden to arm until all pilots have exited the exclusion zone.

1.7.5 End of race procedure: At the end of the race pilots land in the designated landing area immediately and wait for the permission of the race director to enter the track area to retrieve drones.

1.7.6 Retrieval: When retrieving drones they must be powered off completely and carried off the track, do not attempt to re-arm during this time.

1.7.7 Safety incidents: In the event an incident occurs that requires the race to halt (e.g.: a fire) during a race the Race Director will issue the command to land. All pilots must land immediately and remove their goggles. Only then can the track be accessed to deal with the incident. Do not attempt to re-arm your drone during this time.

1.7.8 Malfunctions: In the event of a flight controller malfunction (e.g yaw spin), disarm immediately and let your drone drop. Do not try to regain control in this situation.

1.7.9 Test hover/flights: Test flights may be granted only by the race director in a designated area.

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1.8 Track status: The track will be open for inspection and 'track walking' before the first round of races commences.

1.8.1 The track will be considered 'live' once the first round commences until the day's racing is over.

1.8.2 Access to the 'live' track can only be granted by the Race Director and Track Marshals, who will manage the competitors entering and exiting the track before and after each race.

1.8.3 Access to the track whilst there are models in the air is strictly forbidden.

1.9 Flight line: Competitors may only fly during their race and only from the designated pilot area.

1.9.1 Competitors that are not in the race must not interfere with the progress of any pilot in the race.

1.9.2 Competitors must only enter the designated pilot area as directed by the Race Director or dedicated Race Officials.

1.10 Spotter: Typically a competitor will be required to spot for the race before their own. Any alternatives to this will be announced during the safety briefing.

1.10.1 Failure to spot (or provide a suitable substitute) as required will result in forfeit of the previous round's forfeit your current best rounds score. This is at the discretion of the Race Director.

1.10.3 Coach: A coach is permitted in addition to the assigned spotter. The coach will not interfere with any pilot

1.10.4 The role of the spotter: A spotter is to observe and count laps. it is NOT the responsibility of the spotter to advise the pilot as to track direction or any missed obstacles.

1.11 Variations to these rules: Any variations to these rules that affect Qualifying Events shall be submitted by the event organiser as part of the QE application, published at the time of the event being announced, and included in the announcement on the iFPV and BMFA Contest and Event Calendars.

Variations must not be applied after an event has been opened for entry.

1.11.1 Any variations to these rules that affect the Championship, the National Championship Series or the Team Selection process shall be published by the BDRA as soon as possible on the BDRA website and emailed directly to each member.

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2. Qualifying for the British Championships

2.1 British Championship selection criteria: A maximum of 60 competitors for the British Championship shall be invited in order of ranking at the close of the season — 57 from the British Championship Series and 3 from the Scottish Championship Series.

A maximum of the next 10 pilots shall be invited to the reserve list and pilots shall be invited from this list to take any unfilled positions in the event that another competitor drops out or does not accept their invitation to compete in the Championship.

The Championship will be considered full once all 60 positions have been filled, and/or the reserve list has been depleted.

2.1.1 Scottish Qualifying: 3 places shall be reserved for the top 3 eligible pilots from the 'Scottish Championship Series' to compete at the British Championship. Unfilled places shall be returned to the BDRA to fill from the reserve list.

2.2 British Championship Series: The sanctioned national series that consists of Qualifying Events run to BDRA rules, which enable qualification to the British Championships.

2.2.1 British Championship Series Season: The British Championship Series Season is a fixed 12-month period from the first Saturday in August to the Friday before the first Saturday in August of the following year. All Qualifying Events that occur within a season window shall contribute league points towards the season that is defined by these bounding dates.

2.3 British Championship Series Format: The British Championship Series shall consist of at least THREE British Championship Qualifying competitions.

2.3.1 Discards: A set number of each member's best results shall count towards their overall National Championship Series position in a season. This number of events shall be notified to all members before the start of the season, included in the BDRA 'Welcome' email to all members when they join for the year in question, and publicised on the BMFA and BDRA websites.

2.3.2 Tie-break: In the event that two or more competitors are tied on points after discards have been taken into account, the following criteria shall be applied to the results, in order, until the tie is broken:

- Greatest number of qualifying results
- Least differential between highest and lowest qualifying positions
- Highest single qualifying position
- The most recent qualifying positions where the tied competitors raced in the same competition
- iFPV ELO ranking

2.3.3 Minimum attendance: There is no minimum attendance but competitors will need to be ranked high enough at the end of the season to be eligible for invitation to the British Championship and/or National Team.

2.4 Qualifying Event Format: The Qualifying Events that make up the National Championship Series will consist of at least FIVE rounds in the qualifying phase. Where a competition is abandoned, there must be at least THREE rounds completed for the result to count towards qualification for the British Championship.

2.4.1 The overall results from the finals will count towards the series point allocation. Should the finals have to be abandoned due to unforeseen circumstances at least 50% of a competitor's best qualifying rounds will be used as a basis for the points allocation.

2.4.2 The BDRA Committee may sanction alterations to the Qualifying Event format, where this is the case, the race organiser must communicate any changes to all competing members prior to commencement of the event. Smaller alterations will be sanctioned on the day by the BDRA Committee before racing commences.

2.4.3 Further details of Race Format options and technical specifications can be found in the Technical Rules and Organisers section.

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2.5 Scoring System: The points allocated to a pilot depend on the placing of that pilot. The points system outlined below has been based on NASCAR scoring algorithm from 2007. This gives fixed points for any given finishing position regardless of the number of entrants. Points are allocated as follows.

Placing	1	2	3	4	5	6	7	8	9	10
Points	185	170	165	160	155	150	146	142	138	134
Placing	11	12	13	14	15	16	17	18	19	20
Points	130	127	124	121	118	115	112	109	106	103
Placing	21	22	23	24	25	26	27	28	29	30
Points	100	97	94	91	88	85	82	79	76	73
Placing	31	32	33	34	35	36	37	38	39	40
Points	70	67	64	61	58	55	52	49	46	43
Placing	41	42	43	44	45	46	47	48	49	50
Points	40	37	34	31	28	25	22	19	16	13
Placing	51	52	53	54	55	56	57	58	59	60
Points	11	10	9	8	7	6	5	4	3	2

In the event that there are any events with over 60 pilots participating then anyone placing 61st or below will score a nominal 1 point.

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3. F9U Team Selection

3.1 F9U National Team: The F9U National Team will be selected to align with the FAI definition of a National Team, which at the time of writing is defined as:

- Maximum of five individual competitors providing that at least one is Female and at least one is Junior
- A team manager
- Helpers (one maximum permitted for each competitor) and supporters

Refer to the relevant FAI sporting code or F9U bulletin for details.

3.2 Selection Process: The F9U National Team selection process shall use the National Championship Series rankings as they stand at the end of each season. The top 3 ranked pilots shall be offered a place on the National Team. Should a pilot decline their invitation then the next highest ranking pilot shall be offered that place. The process shall be repeated, following the order of ranking, until the 3 places are filled.

3.2.1 Junior place: If the above accepted places do not include a junior then a further place shall be offered to the highest ranking junior in the National Championship Series rankings. This process shall also be repeated until the junior place has been filled.

3.2.2 Female place: If the above accepted places do not include a female then a further place shall be offered to the highest ranking female in the National Championship Series rankings. This process shall also be repeated until the female place has been filled.

3.3 Ratification process: The BDRA shall aim to notify via email, confirm and ratify the pilots who are selected for the National Team within 14 days after the close of each season so that travel and accommodation plans can be made.

Acceptance to the National Team shall be considered a commitment to make every reasonable attempt to attend the World Drone Racing Championship that year.

3.4 Team Member Validity Period: The National Team shall be valid until superseded by the selection of the next National Team at the end of the following qualifying season.

In the event that a Team Member needs to stand down within this period, the pilot shall notify the BDRA immediately via email.

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4. Pilot Conduct

4.1 Pilot Conduct: As a new and growing sport, Drone Racing has a wonderful community of passionate pilots and supporters. It is the excitement of the experience that attracts people to the sport, but still to be a supportive community that encourages new members to stay.

3.1.1 All pilots will follow the instructions of the Race Director for both safety and the effective running of the event.

4.2 Event Conduct: The BDRA has a zero-tolerance policy to any violent, threatening, harassing, aggressive or bullying behaviour at events. Such behaviour will result in being asked to leave the event. If someone not competing at the event behaves in such a manner, they will also be asked to leave. Please note if such person(s) are associated with a specific pilot then that competitor may also be asked to leave the event. Temporary or permanent banning of offending parties may also be imposed.

4.2.1 Online Conduct: The BDRA is similarly opposed to any online conduct that can be considered bullying, harassing or victimising. Members that feel they are being subjected to such behaviour online are asked to report it to a member of the BDRA with evidence. It will be dealt with through mediation or in extreme, by temporary or permanent banning of the offending party.

4.3 Discrimination and Harassment: In line with the Equality Act 2010, no member of the BDRA will be discriminated against on the grounds of a protected characteristic; age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation. Any discrimination on the grounds of being targeted against these protected characteristics is deemed as harassment. If any member is being subjected to harassment, they must report it to a member of the BDRA committee with any available evidence. It will be dealt with through either mediation or in extremis, temporary or permanent banning of the offending party.

4.4 Illegal substance abuse: In line with the Psychoactive Substance Act 2016, BDRA members are asked not to bring any illegal substances to any BDRA sanctioned event. If a member or individual at an event is suspected of being in possession of illegal substances then they will be asked to leave.

4.5 Sportsmanship clause: All pilots are expected to demonstrate sportsmanlike conduct at all times during an event.

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5. Organisers Rules

5.1 The Qualifying Event Calendar: The Committee will strive to schedule Qualifying Events in such a way to maximise the number of opportunities for members to take part in as many Qualifying Events as possible. The diary will be managed to avoid competition clashes and two qualifying competitions on the same day would only be sanctioned where there is sufficient distance between them.

5.2 Bidding for a Championship Series Event: Organisers wishing to hold a Championship Series Qualifying Event are requested to complete the application form on the BDRA website, including fully answering all the requested details about the event or the organising group/club. If forms are incorrectly, or poorly, completed then the BDRA committee reserves the right to reject and request resubmission.

5.2.1 If more than one organiser bids for the same Championship Series Qualifying Event, the BDRA Committee will take into account the scale of the event, the track record of the organiser and location of the competition (with preference being to widely distributed national events).

5.3 Championship Series competition entry requirements: Qualifying Events must be open to all BDRA members and advertised on iFPV and the BMFA Contest and Events Calendar at least ONE month prior to the event.

5.3.1 Qualifying Events will have a minimum number of competitors that will be announced by the BDRA committee at the start of each season. This number may be altered during the season to accommodate unexpected situations (e.g.: global pandemic) and notified to all members accordingly.

5.3.2 It is mandatory for all entry fees for Qualifying Events to be offered at least £2 less for BDRA members over non-members.

5.3.3 Organisers should inform participants that in order for their results to count towards British Championship Qualifying, they must be BDRA members before signing up for the event.

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6. Track Specification

6.1 Track area: The track area consists of the track plus any safety features that separate it from spectators, competitors or race officials.

6.1.1 The track area is the only area within which models may be flown and must be clearly defined to prevent unauthorised access.

6.1.2 Suitable precautions must be taken to ensure models do not fly into spectators, competitors or race officials should they leave the track area.

6.1.3 Any netting should be of suitable height and strength to contain the models and where there is a risk of a model sliding under the netting then it should also be tethered at its base.

6.1.4 Any part of the track that is not protected by netting must be segregated from the flight line by a minimum safe distance of 30m.

6.1.5 There must be a clear, unobstructed view of the track area from Race Control in order that the Race Director can be confident of maintaining safety at all times.

6.1.6 Adjacent sections of the circuit where models may be travelling in opposite directions will be separated by an appropriate safe distance to reduce the risk of a mid-air collision.

6.1.7 Turns will be marked by a clearly visible turn flag or air gate.

6.1.8 Sharp or high speed turns must be directed away from the competitor or spectator areas.

6.2 Obstacles: The circuit will consist of at least 12 obstacles, consisting of air gates, turn pylons and special obstacles to be crossed or avoided.

6.2.1 Air gates and special obstacles that are intended to be flown through must have a minimum opening of 1.2m .. Larger air gates are recommended when running competitions with larger heat sizes.

6.2.3 Air gates placed in a direct line adjacent to one another count as a single obstacle.

6.2.4 Turn pylons and special obstacles that are intended to be flown around/avoided must have a minimum height of 2.4m.

6.2.5: Obstacles that are intended to be flown around are considered to have infinite height for the purpose of lap validity

6.2.6 Obstacles must be of suitable quality, contrast with the background and be visible with standard FPV video equipment at a distance of 30m.

6.3 Track markers: The circuit must be marked out along its length using track markers in either a single row which follows the racing line racing line, or a double row to indicate the edges of the route. 20cm diameter sports cones / markers are usually used.

6.3.1 Track markers must contrast with the background and be capable of clearly defining the track with standard FPV video equipment at a distance of 30m. White cones work best on green grass.

6.4 Start grid: The start grid will be placed on or off the racing line, perpendicular or parallel to the racing line depending on the start grid system in use, at a point with easy access from the flight line.

6.4.1 Where the start grid is placed off the racing circuit the section between the grid and the circuit will be considered part of the race distance / time.

6.4.2 Optionally the start grid may be spaced according to the qualifying position of pilots so as to advantage those qualifying in a better position.

6.4.3 The start grid must be as a minimum 10m from the first obstacle.

6.5 Landing zone: A landing zone should be designated to provide a safe area within which competitors who have completed their race can land without fear of obstructing competitors who are still racing and without causing video interference.

6.6 Pilot/flight linespacing: For outdoor racing there should be an attempt to maintain 30m separation between the track and the flight line to help prevent video issues.

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7. Competition Procedures

7.1 Competition organisation: A competition is normally organised over two stages:

- Qualification Stage
- Finals Stage

7.1.1 Qualification Stage: Competitors will be organised into Heats, and a round shall consist of every Heat run in sequence such that every competitor will have the opportunity to fly exactly once per round.

Competitions will have a minimum of three qualifying rounds and competitors shall obtain one score per round.

The best score(s) obtained by each competitor during Qualifying shall be used to calculate their Qualifying position.

7.1.2 Finals Stage: Competitors will be organised into Finals based on their Qualifying positions.

The order in which the Competitors complete each Final will determine their Final result.

7.2 Heat size: Heats will consist of 4–8 competitors

7.2.1 Heat size will remain the same during the qualifying rounds.

7.2.2 To maximise throughput and simplicity, competitors remain in the same heat throughout the qualifying stage.

7.2.3 [OPTIONAL] Organisers may choose to adopt an FAI-style shuffling of the heats between each round of Qualifying. As a variation to this standard ruleset, this must be stated as part of the event announcement, as per the General Event Rules.

7.3 Frequency scheme and management: The video frequency scheme will consist of an appropriate number of channels within the 5.8 GHz band with a minimum 35 MHz separation, in order to accommodate the target number of pilots per heat for the event.

7.3.1 The frequency scheme will be selected by the Race Director and announced prior to the event.

7.3.2 All competitors will be required to support ALL frequencies for the competition and will be expected to be able to switch to any alternative frequency with reasonable notice in order to facilitate a fair racing format.

7.3.3 A digital video recorder (DVR) is strongly recommended in order to review races as necessary in case of doubt or complaint.

7.3.4 The competition organiser will aim to check the venue for video quality and announce any restrictions prior to the event.

7.3.5 The Competition organiser may additionally recommend a combination of equipment (e.g.: video receivers, polarised / directional antennas) to further optimise the quality of the video signal.

7.3.6 It is the responsibility of each competitor to ensure that they can set their allocated frequency.

7.3.7 Competitors may be expected to submit to a random video transmitter inspection by the Race Director upon request.

7.4 Frequency discipline: Video transmitters may only be powered on whilst the competitor is racing or at the trackside and readying their equipment for their next race.

7.4.1 Video transmitters are to remain OFF at all other times, unless an exception is made by the Race Director.

7.4.2 No other 5.8GHz transmission OF ANY KIND will be permitted anywhere on site for the duration of the event.

7.4.3 Competitors are responsible for understanding how their own equipment works, and any competitor found contravening this rule will be disqualified from the competition.

7.4.4 All long range UHF control equipment such as but not limited to TBS Crossfire should be switched off in the pits to avoid congesting sometimes limited bandwidth.

7.5 Optional race rules: All optional race variants will be announced prior to the competition.

7.6 Flight occurrences: If an obstacle is damaged or destroyed during the race: When an obstacle is accidentally damaged or destroyed during a race, the pilots will be informed as soon as possible of the incident and how to proceed, by the Race Director.

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8. Qualifying Procedure

8.1 Qualifying format: Each Competitor's score for each round will be the fastest time taken to fly three consecutive laps in that round.

The Qualifying position for each pilot shall be calculated from the best 50% of scores from all Qualifying rounds. The number of rounds to count shall be determined by the number of Qualifying rounds completed, as per the table below: .

Number of rounds completed	Number of rounds to count for seeding finals
3	2
4	2
5	3
6	3
7	4
8	4
9	5
10	5
11	6
12	6
13	7
14	7

8.1.1 Non-qualification: Competitors who don't achieve 3-consecutive laps over 50% of all rounds will be considered non-qualified. For all non-qualified competitors, seeding will be calculated in the following order:

- Competitors who have completed 3 laps or more in a single heat will be placed higher than competitors who have completed 2 laps.
- Competitors who have completed 2 laps in a single heat will be placed higher than competitors who have completed 1 lap.
- Competitors who have completed 1 lap in a single heat will be placed higher than competitors who have completed no laps.

Competitors with the same number of laps will then be seeded by their single fastest time to complete those laps (to a maximum of three).

8.2 Qualifying heat duration: Heats will be 2 minutes duration followed by an extension to complete the current lap of 30 seconds.

8.3 Qualifying distance: Competitors may fly as many laps as this wish within the Qualifying duration to achieve their fastest time for 3 consecutive laps.

8.4 Race start: The race should be started with 3 tones 1 second apart to allow the pilots to get ready to start the race followed by a start signal of a different distinct tone at a random interval between 1-3 seconds after the 3rd tone. Competitors must take off from the starting grid and fly directly to the start gate.

8.4.1 Electronic timing: Lap timing for Qualifying will use the "heads-up" format. Each competitor's laps shall be timed from their initial and subsequent crossing of the start gate.

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8.5 Mass start: Will use a linear start grid long enough to maintain a minimum separation of 0.4m between models.

8.5.1 Models must start entirely from within the start grid.

8.6 Seeding: Seeding of Qualifying rounds can be done using the following methods

8.6.1 The national rankings table used to group competitors by similar ability.

8.6.2 ELO table (supplied by iFPV) used to group competitors by similar ability.

8.6.2 Random pilot seeding decided from within the timing software.

8.7 Tie-breaks: In the event of a tie-break score, the competitor with the single fastest heat score will be awarded the position.

8.8 Adjustments: If race timings have to be adjusted following a race to take into account penalties then the qualifying positions will be recalculated from the adjusted times.

8.9 Restarts: In Qualifying no restarts will usually be offered. In the event of fire ALL pilots are to land immediately and the incident will be dealt with. The heat will then restart.

8.10 Video issues: If a pilot has a video issue during a race this must be brought up with the Race Director who upon DVR review will validate the situation and at their discretion may grant a rerun for the affected pilot/pilots.

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9. Finals Procedure

Finals are an essential part of Qualifying Events; points for British Championship Qualification will be accrued based on final position. Finals also allow a race organiser the ability to award prizes for podium positions etc.

9.1 Finals format: Finals format for the all British Championship Competitions will be determined before registration for the event begins and will be one of the 2 following formats.

9.1.1 Triple finals for all

9.1.2 Double elimination finals

9.2 Finals race duration: Finals are a race to the finish, where all pilots are given the opportunity to complete the full race distance.

9.2.1 Race completion: The race will be considered to be complete once all pilots have EITHER completed the race distance OR have deemed to have crashed out. .

9.3 Finals race distance: Race distance (in laps) will be determined for each Final with the following method:

9.3.1 A Final: 3 laps.

9.3.2 B Final onward (but excluding the last Final): One lap less than the maximum number of laps completed by any competitor during Qualifying, with a minimum of 3. Any attempts to subvert the algorithm will be considered unsportsmanlike behaviour and the offending pilot(s)' results shall be disregarded.

9.3.3 Last Final: Decided by unanimous voting of those in that Final. In the absence of consensus, the race distance shall be determined by the same calculation as used in the B Final.

9.3.4 The race distance for each Final shall be determined by the above algorithm and is only permitted to change by unanimous vote by all those participating in that Final.

9.4 Final race start: Triple finals for all: mass start can be used and populated based on qualification position. Double elimination: Mass starts only. Linear start grid.

9.4.1 Electronic timing: Lap timing for Finals shall be triggered at the start of the race when the start signal is sounded. Each competitor's Final time will be the time measured when they pass the start/finish gate at the end of their last lap.

9.5 Final scoring for triple finals: The winner of each race in the finals will be the competitor who completes the race distance in the shortest time.

9.5.1 Position points: in triple finals for all points for finishing position in each of the 3 races are used to determine the final position. For 6 pilots 1st 10 points, 2nd 7 points, 3rd 5 points, 4th 3 points, 5th 1 point and 6th 0 points. If no competitors complete the race distance then the competitor who completes the most laps will be awarded the win.

9.5.2 Tie-breaker: In the event of a tie, the time taken to complete those laps will be used to decide the winner.

9.6 Final adjustments: If race timings have to be adjusted following a Grand Final to take into account penalties then the winner (and podium positions) will be recalculated from the adjusted times.

9.6.1 No announcement of the winners will be made until the adjustments have been accommodated.

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10. Penalties

10.1 Invalidation of a lap: A lap may be invalidated if a competitor fails to complete all obstacles in the correct sequence and direction for that lap.

10.1.1 Combination obstacles: Special or combination obstacles with more than one opening (e.g.: dive gate, split-S, corkscrew) are only considered complete if the openings have been flown in the correct order.

10.1.2 Re-attempts: If a competitor misses all or part of an obstacle then they must retry that obstacle once it is safe to do so.

10.1.3 Two-retry rule: If, after two retries, the mistake cannot be corrected, the competitor may continue onto the next obstacle. This is to avoid causing a potential safety incident at the missed obstacle and the competitor must demonstrate that two attempts have been made at completing the obstacle.

Having to wait for traffic does not constitute a retry attempt and if, during the retry manoeuvre, the competitor is involved in a collision with another model, the competitor will be disqualified from the race.

10.2 Disqualification from a race: A competitor may be disqualified from a race in the following circumstances:

- Leaving the starting block before the start signal
- Leaving the track area (e.g.: crossing of any safety demarcation)
- Colliding with another model when retrying a missed obstacle
- Colliding with another model when obstructing the racing line (i.e.: when deliberately not progressing around the track)
- Continuing to fly after completing all laps
- Performing celebratory manoeuvres after completing all laps
- Continuing to fly after being instructed to land by the Race Director
- Flying in an unsafe manner

The disqualification will be announced by the Race Director and the pilot must land as quickly and safely as possible. No scores will be counted for the entire race. Failure to comply with may result in disqualification from the event.

10.3 Disqualification from the event: A competitor may be disqualified from an event in the following circumstances:

- Use of equipment that does not conform to the rules
- Deliberately unsafe or unsporting behaviour

11. Protests/Appeals

11.1 Protest and appeal procedure: Protest and appeal procedures including restarts for VTX reception issues and mid-air collisions will be at the discretion of the Competition Organiser.

11.1.1 Pilots will need to provide their own DVR as evidence for a protest or appeal to the race director and then this may be corroborated by the race directors DVR if available.

11.2 Adjudication: The decision of the Race Director following any protest procedure will be final.

12. Interruption Procedures

12.1 Abandonment criteria: In the Competition of an isolated transient incident, any single heat may be abandoned and restarted at the discretion of the Race Director.

12.1.1 In the Competition of a prolonged interruption (e.g. adverse weather conditions) the Race Director may consult with the Competition Organiser and/or offer a vote to all competitors to decide if racing can continue.

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12.2 Abandonment procedure: If Qualifying has been completed at the point of abandonment then results for the Qualifying Competition will be accepted into the rankings.

12.2.1 Competition rescheduling eligibility: If Qualifying has not been completed at the point of abandonment then the Competition Organiser may apply for the whole Competition to be rescheduled at a later date, provided the postponement still meets the criteria for Qualifying Events.

13. Finals Formats

13.1 Triple Finals for All

Objective: Similar to Finals for all but mitigates the effect of a single instance of bad luck.

Limitations: Needs more time to run (can be limited to top tier finals only).

Benefits: For big title/prize Competitions where competition may be fierce, multi-leg finals provide greater emphasis on consistency and can mitigate an isolated incident during a Final.

Implementation: All competitors will be sorted by their qualifying position and put into finals. Each final will consist of the same number of competitors as each preceding Qualifying Heats. Winner of each Final will be the first to complete the race distance or the competitor who completes the most laps in the shortest time.

13.2 Double Elimination Knockout

Objective: Suited to larger competitions

Limitations: Needs more time to run.

Benefits: For big title/prize Competitions where competition may be fierce. Allows all of the qualifying pilots a chance at winning (not just the top 6). Double elimination can mitigate an isolated incident during a race and gives the competitor a second chance.

Implementation: All competitors will be sorted into heats based on their qualifying positions the heats are mixed skill, in double elimination half the pilots in a race would progress onto the next round in a 'winners bracket' the losers would move to a 'loser bracket' but would given a second chance, another loss sees them eliminated from the competition.

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14. Technical Rules

14.1 Aircraft Specifications:

14.1.1 Airframe dimensions: 300mm maximum diameter across motor shaft centres.

14.1.2 Propellers: 6 inches maximum diameter. Metal, wooden or carbon-fibre propellers are not permitted.

14.2 Airframes: 6 motors maximum. A maximum of 3 airframes can be checked in for use at a single event. If additional airframes over the 3 are required then this must be authorised by the Race Director.

14.3 Batteries: 6S limit (unless restricted by the event organiser for safety or venue reasons).

14.4 Radio control (RC) equipment: Normally 2.4GHz wideband spread spectrum control; however, any control system that is legal in the UK that doesn't need active frequency management can be used providing it does not cause interference to other competitors.

14.4.1 Power output: The maximum power output both on ground and in flight for the radio control transmitter is 100mW.

14.4.2 Compliance: The competitor is responsible for compliance with regulatory and legal requirements.

14.4.3 Pit discipline: All control equipment should be switched off in the pits to avoid congesting sometimes limited bandwidth.

14.5 Video transmission (VTx) equipment: Analog and digital video devices operating on the 5.8 GHz band may be used for first-person video.

14.5.1 Power output: The maximum power output both on ground and in flight for the video transmitter is 25 mW.

14.5.2 Bandwidth: In addition, the video output must be centred on the frequencies selected for the event with a 30 MHz maximum bandwidth. Broadcast of an additional signal with the video transmitter is not permitted.

14.5.3 Digital bitrate: Any digital video device must be set to 25 Mbps maximum.

14.5.4 Compliance: The competitor is responsible for compliance with regulatory and legal requirements.

14.5.5 Pit discipline: A pit switch to isolate the VTx when working on the model in the pits is strongly recommended. A penalty usually applies in case of unauthorised activation of a video transmitter.

14.6 [OPTIONAL] LED light unit: In order to improve the view of the models during the races for the audience, and/or to facilitate the task of the Race Director/organisational team, the organiser may request the competitors equip their models with an RGB LED light unit capable of producing different colours so that each model in flight will more easily be identifiable.

The recommended specifications for the LED light unit will be as follows:

- Minimum of 32 RGB LED light bulbs, or minimum length of 280 mm of RGB LED strips with obfuscated light source (such as COB LED).
- LED light sources must be uniformly distributed across all the arms of the model, allowing it to be clearly visible from any angle.
- Required colours: Blue - Green - Red - Yellow - Cyan - Magenta
- Capability to easily switch to an assigned colour before each race

The Race Organiser is encouraged to announce the colours and assignments as soon as possible before the event but competitors should acknowledge that circumstances outside of the Race Organisers' control may require further changes once the event commences..

14.7 Firmware aids: To progress with the technological advancements, e.g. Anti-crash and Self-righting, 'Turtle Mode' is permitted.

14.8 Launch aids: Personal launch pads are permitted as long as they don't obstruct or impede the start of other competitors. Race organisers may impose additional constraints on the dimensions, positioning and use of starting blocks.

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14.9 Electronic timing equipment: The British Championship Series and the Championship Competition itself will be run using the ImmersionRC LapRF VTX-based timing system or similar equipment. The system chosen must offer similar reliability and accuracy to an ImmersionRC LapRF system.

14.9.1 A race heat normally lasts for 2 minutes with 30 seconds to finish the lap each competitor is on.

14.10 Venue-specific restrictions: A track or venue may require further technical restrictions in order to maintain safety, most notably a reduction in battery cell count, frame or propeller size. The competition organiser must state these restrictions at the same time as the event is announced, and must not change these restrictions once the event is open for entry.