

INTERNATIONAL FEDERATION OF MODEL AUTO RACING



IFMAR 1/8th E-buggy OFF-ROAD RACING AND TECHNICAL RULES

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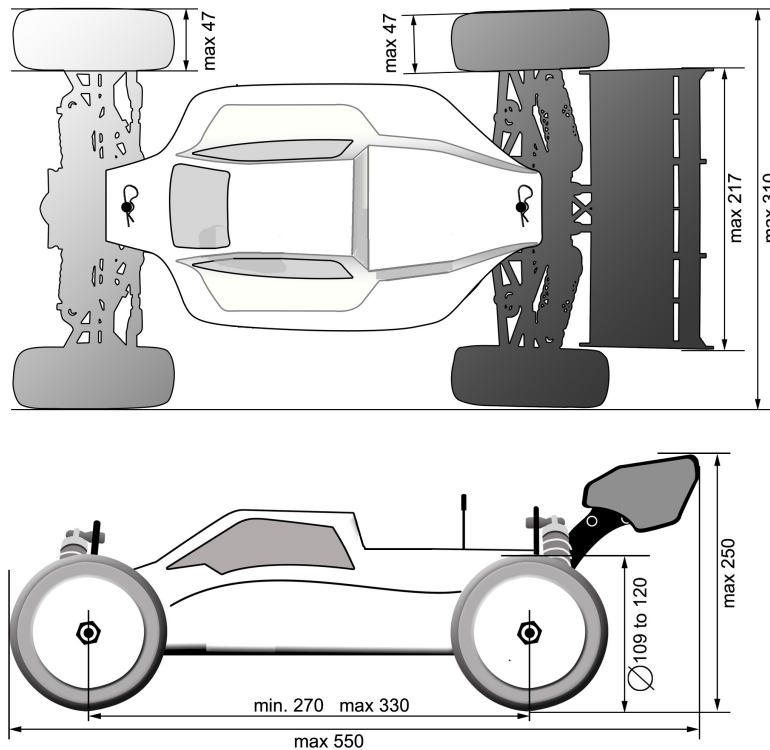
SECTION TWO - CAR/TECHNICAL

(To be read in conjunction with Section 1: General Rules for IFMAR World Championships)

2.1. GENERAL DIMENSIONS

The official measurements in the technical specifications are the metric measurements.

- 2.1.a Overall length - 550mm maximum.
- 2.1.b Overall width – 310,0mm maximum at any point of suspension travel. Technical inspector to be instructed in case of touching both sides by the wheels/tires.
- 2.1.c Wheelbase – 270,0mm to 330,0mm.
- 2.1.d Overall height - measured from the ground including roll bar at full suspension compression is 250,0mm maximum (this measurement does not include the receiver aerial).
- 2.1.e The minimum weight limit, ready to race, shall be 3.2kg/7.04lbs for 4WD cars
- 2.1.f **An Official IFMAR or approved by IFMAR measuring box/device must be used to check dimensions. To check the width of the car the box can be set with an angle of 30 degrees. With this angle the car must be able to move out of the box by its own.**
- 2.1.g The front of the vehicle chassis must be equipped with a plastic bumper (no metal at all) in such a manner that it will minimise damage in the case of it entering into contact with other participants, marshals or any person. The bumper must be made from flexible material (plastic) with all corners and sharp edges rounded off. If a rear bumper is used it must follow the same principles.



- 2.1.h The measurement of the wheelbase may be made by simple measure of axle centre distances with the suspension in any position. The Race Director should be prepared to make more exact checks in cases of doubt or protest.
- 2.1.i It is the responsibility of the drivers to ensure that their car complies with the regulations at all times that it is on the track. The race organizer may check any car for compliance with the regulations at any time during the race meeting.

- 2.1.j If a car is found to exceed the limits of dimensions on checking immediately after a race, positive proof of race damage may prevent disqualification.
- 2.1.k During technical inspection, to be done on an open to sight secured area, only the driver, one mechanic and the team manager are entitled to be present in addition to Race Officials.

2.2. ELECTRIC MOTORS

2.2.a MOTOR DIMENSIONS:

A new wording after motor approvals did take place:

Motor specs.

Can/Casings: Maximum overall length is 77.0 mm measured from the mounting face of the motor to the furthest most point of the end bell, not including solder tabs, lead wires or original manufacturer's logo or name.

Motor maximum overall diameter is 44.0mm.

Motor mounting threads must have a distance between centers of 25.0mm to 25.4mm, on a PCD based on the motor center-line.

Stator: Maximum number of stator 'slots' is 12.

Rotor: External shaft diameter at pinion location is 5.0mm.

Starting 01.01.26, all rotors must have the unique Part # etched, engraved or stamped on the external part of the shaft.

2.3. BATTERIES:

1/8 Scale Electric Off-Road Cars will be driven by Lithium based batteries with a nominal voltage of no more than 15.2 volts (4S). It is allowed to use 1 x 4S, 2 x 2S or 4 x 1S. If multiple individual batteries are connected together (in parallel or series), then all batteries used must be of the same manufacturer brand and same Part Number.

Only homologated batteries shown on the Approved Lists on the official IFMAR website will be legal for use at IFMAR sanctioned events.

All Lithium Batteries must comply with the published data shown on the Approved Battery Lists. Batteries that are not compliant with the dimensional rules or published weights will not be allowed.

LiPo/LiFe drive batteries must be in a 'Lipo sack' at all times when being charged or discharged. This applies to any discharging procedures except during a race or when using organiser supplied resistors. Anybody not doing this will be penalised from the event. LiPo sack is defined as a receptacle designed for the purpose of charging LiPo/LiFe batteries and of a suitable construction as to contain a LiPo/LiFe fire.

The maximum charging cut-off voltage is 4.20v per cell. 4 (4S) cells in series, maximum 16.80v. Organizer can check this voltage at any time during the event.

SPECIAL ELECTRIC SAFETY RULES

At Technical inspection it will be checked that no battery shows any deformity or manipulation. Batteries have to be protected by the chassis and/or body.

Maximum voltage before any run **16.80v** before the start of the run.

For Electric Ebuggy class: penalties for battery "over" voltage

| 1S | 2S | 4S | |
|-----------|-----------|-------------|-----------|
| 4.20 or < | 8.40 or < | 16.80 or < | ok |
| 4.21-4.22 | 8.41-8.44 | 16.81-16.88 | discharge |
| 4.23-4.25 | 8.45-8.50 | 16.89-17.00 | no access |
| > 4.25 | > 8.50 | > 17.00 | DQ |

"Discharge" means, only one time allowed to have your battery discharged and checked again, if they are still too high you are not allowed to start. You must go back in line for this discharging process

"No access" means no driving in that specific heat/final

"DQ means" disqualification from the event

Technical inspection to use a calibrated measuring device to check the voltages, preferably a Fluke meter.

2.4. Transmission and Drive train:

- Single speed transmissions only
- 4WD

2.5. TYRES

- 2.5.a All tires must be black with the exception of side wall lettering and a side wall dot circle (max 6mm) or a thin line (max 3mm/) to indicate the hardness of the compound. The application of any additives within the event perimeter is strictly forbidden. The penalty for that is immediate disqualification.
- 2.5.b No spikes, tubes or additional items intended to increase traction may be either glued to the outside of tires or passed through tires from the inside. "Cut and glue" of the tires is forbidden as well.
- 2.5.c. Wheel/tire overall diameter must be:
- | | |
|--------------|--------------------------|
| Max dia. | 120.00 mm / 4.724 inches |
| Min. dia. | 109.00 mm / 4.29 inches |
| Width | 47.00 mm / 1.85 inches |
| No rim specs | |

The mentioned diameters and width must be respected before, during and at the end of a heat or final. Any car with a tire who is too big or too small will be disqualified for the heat or final.

2.6. WINGS

The rear wing with a maximum overall size 217 mm length and a chord of no more than 85 mm may be fitted.

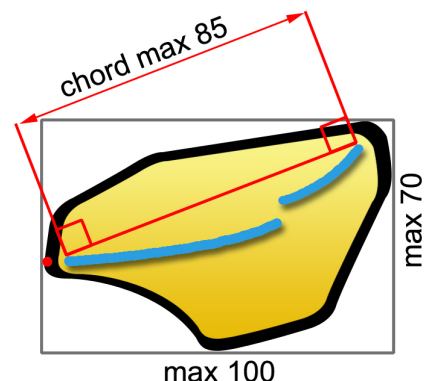
Multiplan's wings are authorized

The width of 85 mm is measured between the lower leading edge and the higher trailing edge.

The side dams of the wing must have a maximum horizontal width of 100 mm and a maximum height of 70 mm. (irrespective of the orientation)

The side dams must be able to contain a square area of minimum 40 mm width and a minimum height of 50 mm to place the car identification numbers (downloaded from IFMAR website), from 1 to 12 at both external sides of side dams.

The single of multi plans wing must be registered inside the contour of the side dams.



The wing and the side dams must be made out of flexible material with angles rounded.

2.7. APPEARANCE / BODYSHELLS

- 2.7.a Cars shall be a reasonable representation of the style of car used for Off-Road, Desert or Trial racing.
- 2.7.b Full body shells of saloon style are permitted but may only be trimmed to expose a maximum of 50% of the tyres at full suspension depression. If such body shells are fitted, provision for trimming shall be as in sub-section "d"
- 2.7.c Where a roll-cage is fitted an open wheel style body shell must be fitted underneath the cage so designed as to enclose R/C equipment and electric equipment with sufficient front and side areas to allow clear display of racing numbers.
- 2.7.d Body Style: The body has to be able to carry the Racing Numbers at the front and both sides as high as possible, side numbers can be carried out on the wing side dams as well. The body has to have a real car shape. Body shell holes/vents: Only 9 holes with a maximum diameter of 10 mm and one hole for the antenna are allowed. Windows are not allowed to be removed. All Gears must be covered from above.
- 2.7.e Body shells as described need not conform to scale but should conform to the provisions of 2.7.a.
- 2.7.f Acceptance of a Saloon body shell by another IFMAR section shall be deemed to imply approval by the Off-Road Section for racing purposes.
- 2.7.g Car must run with the body and wing with race numbers at all times while racing.

2.8. DRIVER AIDS

The use of traction control devices, active suspension devices and any steering control aided by gyroscopes/'G'-force sensors is strictly forbidden. Sensors are only allowed for the purpose of passive data recording and not for adjusting the performance of the car whilst in motion. It is the object of this rule to ensure that the IFMAR 1/8th Electric Off-road World Championship be a test of driver skill.

SECTION THREE - ORGANISATION & PROCEDURES

3 ALLOCATIONS FOR WORLD CHAMPIONSHIPS

- 3.0.a The number of drivers will be decided by IFMAR (see General Rules, Section 1), with a maximum of 180 drivers.
- 3.0.b For allocation and re-allocation procedures see IFMAR General Rules (see Section 1).

3.1 THE TIMETABLE

- 3.1.a In Regards of Racing program and structure we are considering 2 possibilities, a 3 days event limited to 144 drivers or a 5 days event open to 180 drivers (3 finals for everyone).

3 days event run from Friday to Sunday both included, for 144 drivers (12 groups of 12 drivers) with practice on Friday (reseeded based on results of last 2 rounds of practice) , Qualifying on Saturday (5 runs 3 to count) and Finals on Sunday (3 finals for everyone).

5 days event, run from Tuesday to Saturday, both included for 180 drivers (15 groups of 12 drivers). 1 day of Free Practice (Tuesday), 1-day Controlled Practice (Wednesday), 1,5 day qualifying (Thursday & Friday morning), 1,5 days finals (Friday afternoon & Saturday).

In both events possibilities (144 or 180) REGISTRATION & Technical Inspection can be open the day before for the best running of the event.

3 Days event:

Thursday: Registration and technical inspection.

Friday: Practice and seeding / Opening ceremony

Saturday: Qualifying

Sunday: Finals / Awards' Banquet in evening.

5 Days event:

Monday: Registration and technical inspection

Tuesday: Controlled practice

Wednesday: Controlled practice with seeding / Opening ceremony

Thursday + Friday: 1.5 days for Qualifying

Friday + Saturday: 1.5 days for Finals / Awards' Banquet in evening.

Details of the timetable for the overall event with specific details on practice, qualifying and finals has to be included in the Status Report for the consideration of the IFMAR Section Executive (see General Rules). Track to be closed for a minimum of 3 days or longer if the organizer needs more time to prepare track and facilities

- 3.1.b An opening ceremony will take place at which competitors will participate in a welcoming procession. Each National Team is asked to wear similar shirts. A flag and a sign bearing the name of each country will be provided by the Organizer.
- 3.1.c In the event of rain, racing will proceed irrespective of the weather, within reason. All races, will take place at the appointed time, wet or dry. If heavy electrical storms occur, racing will be suspended. The Race Director, together with the Referees, will make the decision.

3.2 RACING FORMAT

3.2.a QUALIFICATION HEATS:

a) If the host country wants to, and the facilities can accommodate 180 drivers, qualifying rounds can be up to 15 cars. This decision will be made by the Section Chairman, the Referee and the Race Director

b) Each driver should be entitled to a maximum of 5 attempts at qualification, weather permitting.

c) Starting for qualifying will be with "Flying start". The track will be opened normally with a 3-minute warning to the start, this will be announced through the sound system, you will also get the time "2 minutes to start", "1 minute to start", "30 seconds to start" and "10 seconds to start". Deliberate stops waiting for the signal at the track and cutting the track to find a better position in it are infringements to be penalized unless otherwise authorized by common decision of the Race Director and the Referees communicated at the Team Manager Meeting.

The announcement: "Clock is running" will indicate that the heat has started. All qualifying runs and finals are run by "time plus next lap" system.

Qualifying heats are of **5 minutes duration**.

d) All drivers will be entitled to run finals.

TIMETABLE (option A, 144 drivers)

Friday: Registration and technical inspection 3 rounds of free practice 5 minutes of duration 2 rounds of timed practice for reseeding, 10 minutes in duration. Best 3 consecutive laps inside the whole 10 minutes in points will be used for reseeding purposes. Opening ceremony. Sort out problem round (if needed)

Saturday: 5 rounds of qualifying Sunday Last chance final + 3 rounds of finals + Exhibition final (youth and/or +45) Price giving ceremony.

All days recommended to end by 18:30.

TIMETABLE (option B, 180 drivers)

Tuesday: Registration and technical inspection 4 rounds of free practice 5 minutes of duration, 1 round of 10 minutes.

Wednesday 2 rounds of timed practice for reseeding, 10 minutes in duration. Best 3 consecutive laps inside the whole 10 minutes in points will be used for reseeding purposes. See also 3.3a. Opening ceremony. Sort out problem round (if needed).

Thursday: 3 rounds of qualifying.

Friday: 2 rounds of qualifying + lower finals.

Saturday: Practice + Last chance final + 3 rounds of finals + Exhibition final (youth and/or +45) Price giving ceremony.

In both events possibilities (144 or 180) REGISTRATION & Technical Inspection can be open the day before for the best running of the event.

The order of the heats will be: -

FOR 15 HEATS:

| ROUND | START ORDER HEAT # |
|-------|---|
| 1 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 |
| 2 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 |
| 3 | 7, 8, 9, 10, 11, 12, 13, 14, 15, 1, 2, 3, 4, 5, 6 |
| 4 | 7, 8, 9, 10, 11, 12, 13, 14, 15, 1, 2, 3, 4, 5, 6 |
| 5 | 13, 14, 15, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 |
| 6 | 13, 14, 15, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 |

- 3.2.b Each driver shall be entitled to a maximum of 5 attempts at qualification, weather permitting.
- 3.2.c An audible warning will be given in English language at one (1) minute and at thirty (30) seconds during the warm-up period. At the starting time, an audible and visible signal will be given for a rolling start.
- 3.2.d Flying Start: Timing/counting starts for each car separately the first time that car passes the start-line or as maximum as when a 150% of a standard lap-time for the track has passed since the clock is running. The start/finish line must be clearly marked on the track surface and side barriers.
- 3.2.e All drivers will be entitled to participate in a final.
- 3.2.f The top qualifier will receive the Top Qualifier's trophy at the Awards' Banquet.
- 3.2.k The Race Director may authorize track repairs or improvements with the referees agreement. Team Managers will be informed. This may include watering in order to ensure tracks stability for the duration of the event.
- 3.2.l During heats and finals, a maximum of two (2) mechanics per driver and the designated Team Manager are allowed in the pits. The Team Manager cannot act as a third mechanic.

3.3 TIMED PRACTICE SYSTEM

3.3.a TIMED PRACTICE SYSTEM for 3 days event

a) The practice for drivers will only be run in the way of rounds in heat order. On Friday there will be 5 rounds of practice, 1st, 2nd & 3rd of 5 minutes duration and a 4th and 5th of 10 minutes track time. Two last rounds of controlled practice will count for reseeding These rounds will be of 10

minutes duration. Best 3 consecutive laps inside the whole 10 minutes in points will be used for reseeding purposes.

Results of the timed practices will be published (laps and times). Points will be awarded according to the result selected for reseeding in each round. The best single point result scored out of these two rounds will be used to sort drivers by performance and to reseed them before the real qualifying rounds.

In event of a tie second point result will be taken into account to solve the tie.

b) Reseeding: After timed practice and subject to frequencies and common sense the top 36 drivers will be placed in the first 3 heats with equal number of each country up to a maximum of 5 drivers in each heat. The first 3 drivers take 1st place in the first 3 heats, next 3 in second place at each heat and so on. Use this system to include 144/180 drivers and avoid small teams being placed in the same heat. The sort out problems round after reseeding can be done alternatively Friday afternoon after the opening ceremony or early Saturday morning (on a 3 days format).

3.4 QUALIFYING SYSTEM

In each round drivers will score points based on laps and times achieved.

Fastest competitor (based on laps & time) in each Round will score zero (0) points, second place 2 points, third place 3 points, fourth place 4 points and so on.

If two (or more) competitors achieve an equal time in any Round they will be awarded equal points. The next competitor not included in the tie will be awarded points corresponding to his position in the particular Round.

(NOTE: drivers not recording a time in any round score points corresponding to the total of entrants to the event, not modifying other drivers result inside that round, failure to marshal at a round will result in a 16-place demotion that will be applied to the drivers final qualifying position when all qualifying has been completed).

Overall Qualifying positions are decided by each drivers "best" (lowest) points being added together, based on the number of rounds to count. In the event of a tied position the driver with the single highest finishing position in either of the best Rounds that counted will be awarded the tie (eg. $1+3 = 4$ beats $2+2 = 4$). In the event of a continuing tie then the laps and times from the best points Round will be compared. The driver with the fastest laps and time will be awarded the tie. In the case of a continuing tie, then the times from the second-best scores will be compared.

Out of 5 (five) completed rounds 3 (three) to count.

Out of 3 (three) and 4 (four) completed rounds 2 (two) to count.

Out of 1 (one) and 2 (two) completed rounds 1 (one) to count.

3.5 FINALS

12 fastest drivers will qualify for A-final.

Drivers placed from 13 to 25 will be placed to B-final.

01-12 → A-final

13-25 → B-final

26-37 → C-final

38-49 → D-final

50-61 → E-final

62-73 → F-final

74-85 → G-final and rest to be done in the same scheme up to 144 or 180.

Finals will start with the last chance final for drivers qualified to B final.

All finalists entitled to a practice final except those at the B final that run the last chance final.

There will be 13 drivers and the fastest will bump up to A-final, 13th position on the grid. From there the finals will run from lower finals towards A-final.

Duration of finals will be 10 minutes. All finals are run 3 times, counting 2 fastest by points. The winner of a final gets 1 point; the second gets 2 points and so on up to 13 points for the 13th driver. In the event of a tie regarding time in a Final, the points will be equally awarded to each driver and the next driver not tying will be two points more. In the event of a tied position the driver with the single highest finishing position in either of the best 2 finals that counted Will be awarded the tie. In the event of a continuing tie then the laps and times from the highest finishing position will be compared. In the case of a continuing tie, then the times from the second best position will be compared. When some drivers of a final do not run a final, they will be awarded the remaining points in the order of their car numbers. If final rounds are cancelled due to weather conditions, 1 out 1 or 2 rounds is calculated.

Running order finals 1st:- B-final (Last Chance final) X! / G / F / E / D / C / B / A

2nd: X! / G / F / E / D / C / B / A

3rd: X! / G / F / E / D / C / B / A

- 3.5.a Youth final, 17 years and younger, see General rules to be fit into the Finals program.

3.6 ACCOMMODATION REQUIREMENTS

- 3.6.a The drivers' area must accommodate all drivers and be equipped with tables, seats and lights to work there on an standard timeframe up to 20:00. The area must be covered and protected from adverse weather conditions. The drivers' rostrum must be accessible from the drivers' area.
- 3.6.b The drivers' rostrum must accommodate ten/twelve (10/12/) drivers with a minimum of 80cm space for each driver. The width of the rostrum must be a minimum of 1.25 metres. Height of the rostrum-floor to be between two (2) and four (4) metres. Access to the rostrum must be by a solid stair, with a minimum width of 1.2 metres. A strong parapet is mandatory. The rostrum must be protected against bad weather or sunshine.

Position on the rostrum. During qualifying drivers have to stand on their number on the rostrum with the mechanics in the pitlane on the same numbered box.

For finals drivers go up in order of qualifying position, 1 till 10 or 12 to choose their position and mechanics will make sure they stand under their drivers or in the same order as the drivers. Drivers who are small in length (160 cm or smaller) are allowed to use a small box/step/stand/transmitter box (height around 20 cm/8 inch) to stand on. To check length there will be a mark put on the driver's rostrum on one of the poles at 161cm, so it is easy to check drivers that use a small stand. Final decision in case of discussions by the RD or Ifmar referee.

- 3.6.c The drivers' rostrum must be placed in a position that provides equal view of the track to each of the drivers at any place on the rostrum, during practice or racing. The view must not be obstructed by any object (pillar, flagpole, other drivers, etc). The distance from the front of the rostrum to the nearest part of the track must be between two (2) and four (4) metres.
- 3.6d Timing and lap counting area must be located at a slow part of the track, with a good view for all lap counting officials. The number of a car must be readable for at least two (2) seconds from that area. Adequate space must be provided for lap counting officials. The area must be protected against bad weather. Interruptions to lap-counting officials by driver, managers or others must be prevented.
- 3.6.f A results board must be positioned at a convenient place not far from the timing and lap counting area and shall be accessible to all competitors and team managers. The scoreboard shall be protected against wind and rain. Copies of all results must be available upon request of officials.

- 3.6.g Referees must be provided with an exclusive vantage point for their use only and separated from all drivers and mechanics. There must be a means of direct communication (intercom) between the Referees and both the drivers' rostrum and the flag marshal.
- 3.6.h All official announcements concerning the race must be made in English in the pit area, drivers' stand and mechanics' area.
- 3.6.i A supply of clean running water and compressed air must be available enabling competitors to clean their cars, a minimum of 4 outlets for each service is recommended.
- 3.6.j Power to charge batteries and use powered hand tools must be available with at least 1 connection per each 4 participants

3.7 SAFETY

- 3.7.a The safety of the spectators is of prime importance and must be considered when laying out track and spectator areas.
- 3.7.b The safety of officials, helpers, competitors and accompanying people are of equal importance, but it is assumed that they are more aware of any potential danger.
- 3.7.c Spectators, competitors, marshals and officials must be efficiently protected against the cars by adequate barriers.
- 3.7.d Track markers must be shaped and placed in a way that prevents cars from being projected into the public when hit at full speed.
- 3.7.e Technical inspection must always include the safety aspects of the cars. No sharp edges or other protruding parts of cars that may cause serious injuries in case of an accident are permitted.
- 3.7.f First Aid supplies must be available throughout the event (including practice) in case of necessity.
- 3.7.g A First Aid officer must be present throughout.
- 3.7.h Police and emergency services must have access to all areas, both public and restricted.
- 3.7.i An insurance against accidents and legal liability is compulsory. A copy of the Insurance Certificate must be enclosed with the Contract for the event.
- 3.7.j Since this is an electric event with Lipo batteries the organizer should make sure fire extinguishers are available and buckets with water to extinguish a fire.

3.8. LAP COUNTING & TIME KEEPING REQUIREMENTS & PROCEDURE

- 3.8.a. During IFMAR sanctioned events the lap counting is to be done automatically by means of an automatic lap counting system and transponders fitted on to each of the cars' body shell.
- 3.8.b AMB/MyLaps lap counting system or IFMAR approved equivalent must be used in duplicate. The Two approved independent automatic systems must be used simultaneously at IFMAR sanctioned events. IFMAR will check both systems. Both systems must produce a record of all the individual lap times of all cars and the number of laps and final time after finishing. Lap times and final time must be in seconds to 1/100th second (and minutes/hours). Both systems will be operated by the organising club.
- 3.8c Detailed requirements follow:
 - 1. Lap times must be in seconds to 1/100th second and final times in hours, minutes, and seconds to 1/100th second.
 - 2. Printouts must be kept with the record sheet, on which the final result is written down.
- 3.8.d The results from the first and second system are compared and in case of differences, the time keeping official must examine the data produced and in particular the lap time sheets. The final decision on the result is the responsibility of the Time-Keeper.
- 3.8.e The time keeping official is responsible for publication of the final results. He must store all the data produced by the two (2) systems until the end of the meeting which can then be used in case of protest against the results.

- 3.8.f Electronic systems must be connected to a reliable power source with UPS back-up, a generator as primary power source may be used only if there is concern regarding the continuity of a reliable power source. If a generator is used must be of a commercial standard and all connections and plugs must be secure ensuring no accidental or easy disconnection can be facilitated. When the two electronic systems are run simultaneously, the backup must be powered from an independent power source.
- 3.8.g Both the first and the second time keeping and lap counting system must satisfy the requirements of IFMAR and therefore must be proposed and explained on the Sanction Questionnaire.
- 3.8.h The official result sheets containing results of all heats and finals must be sent to the relevant IFMAR Section Chairman within ten (10) days of the race. The final classification of the qualifying heats must also be completed and sent to the IFMAR Section Chairman.
- 3.8.i If both the primary and support lap counting system fail during a qualifying heat or final, the heat or final will be re-run as soon as is practicable. Under no circumstances will any lap score or time, other than those from the official time-keeping equipment, be accepted for any purpose to do with the running of an IFMAR race.
- 3.8.j Every competitor must use his own AMB/MyLaps compatible personal transponder. Changing the transponder is allowed if the lap counting officials are informed and agree. Competitors are required to install their transponder into their cars according to the organiser's instructions
- 3.8.k The secure fitting of the transponder to the car's body shell or chassis remains the responsibility of the driver.
- 3.8.l If a driver loses a transponder during the race or if the transponder is not working, the driver and pit-crew will be notified by a race official as soon as possible.
- 3.8.m If a lap counting problem occurs, transponders must be moved to a better position on the car on the Race Director's instruction.
- 3.8.n The provision of on-site copying facilities is mandatory.
- 3.8.o A suitable working computer with proper race proven programmes must be provided to sort lap times, print results from heats and sort final positions from each series of races within fifteen (15) minutes of the completion of the series of races.
- 3.8.p Automatic lap counting, with cumulative and split lap times, will be in place for each car. An audio/video tape recording will be made from the timing loop.

3.9. RACE OFFICIALS – REFEREES.

See General Rules.

3.10. ARRANGEMENT OF HEATS

- 3.23.a The arrangement of the heats will be done according to seeding practice, see 3.3.

3.11. REGISTRATION

- 3.11.a Drivers' registration must take place on the day prior to the race and on the morning of the first day until 12:00.
- 3.11.b IFMAR may authorize later registration as requested by Team Managers or Block Representatives. If a driver has not registered by midday of the first day of the event then his place can be reallocated except if such notification has been given.
- 3.11.c During registration, every driver will be given an envelope which includes:
A detailed schedule including starting times of each heat, three (3) sets of numbers for the car, (3) sets of numbers for the wing, one (1) set of numbers for the transmitter, one (1) badge each for the driver (this badge must show his passport-size photograph) and mechanic. The size of car numbers to be minimum 40mm high x 30mm wide with a stroke of minimum 8mm in black on a white background measuring minimum 55mm in height by minimum 40mm width. Any other necessary information.
- 3.11.d One badge/pass must be provided for each country's Team Manager.

3.11.e When registration of drivers is carried out, each driver will sign a form that states that he accepts, and will abide by the published rules of the event.

3.11.f The following colour badges will provide access to pits and track:

| | |
|------------------------------|--|
| Orange badges/Team Managers: | – pits, staging area, special viewing area |
| Blue badges/drivers: | – drivers' stand, pits, staging area |
| Yellow badges/mechanics: | – pits, staging area |
| Green badges/Press: | – pits, staging area, special viewing area |
| Red badges/race officials: | – all areas |
| Grey badges/IFMAR officials: | – all areas |

3.12. RADIO FREQUENCIES.

3.12.a. Use of 2.4GHz DSM/DSS systems or standard crystal equipped transmitters. Only radio frequencies of the competent body of the country concerned will be used. Other frequencies may only be used with the approval of the Organizer, who then takes no responsibility. The Organizer may refuse non-authorized frequencies, providing competitors have been notified in the Race Invitation.

3.13. TRANSMITTERS & TRANSMITTER IMPOUND

3.13.a. With 99% of the drivers using 2.4GHz DSM/DSS systems, NO radio impound needed: HOWEVER,

Radio's may only be switched on for drivers that have to run their heat or final and the group that warms-up the engine and is to run the next heat or final. All other Radios must remain switched off in the paddock area, except when maintenance or adjustments are required. All radio maintenance must be carried out in area designated "radio maintenance area"

The designated area should be as far away as practical from the drivers' rostrum should be identified during the team managers meeting.

At any time the race director can change this decision to implement a radio impound if they receive complaints about radio problems from at least 3 countries and they feels the request is valid and is required for safety.

No delays or protests will be accepted due to radios not being impounded. Use of 2.4GHz DSM/DSS systems. Due to the way they operate, a driver using such a system cannot ask for any delay in case of radio problems.

Drivers who come from the rostrum must give their radio to their mechanics before going to their Marshall position. Not obeying these simple rules can cause a penalty.

3.14. TECHNICAL INSPECTION

3.14.a Technical Inspection must take place before the start of the racing. Cars must be presented for inspection after being called by the officials.

3.14.b Technical Inspection must include a thorough check-out of the car and a simple check of the transmitter. Transmitters are limited to the manufacturers' recommended voltage. External transmitter battery packs are not permitted.

3.14.c Only one car per driver will be accepted. All transmitters must be marked with a driver identification number and only these transmitters, thus identified, may be used in the event.

3.14.d When a car or transmitter does not comply with the rules, changes may be carried out before presenting it for final approval.

3.14.e Cars which have passed Technical Inspection must be marked with the drivers identification number, consisting of the heat number and the car number. This number must be engraved on to the chassis plate. Only one (1) car per driver.

3.14.f For each competitor the race has officially started after technical inspection and approval of his car.

3.14.g The Technical Inspector may request inspection of any entrant's car at any time during the race, without giving reasons.

- 3.14.h The marked part of the car, the main chassis, may only be changed with the approval of the Race Director. The original marked chassis must be left with the Race Director.

3.15. TEAM MANAGERS' MEETING

- 3.15.a A Team Managers' Meeting must be held prior to the race and it must be held in the host nation's language and at least English. The Race Director must call the meeting and Team Managers, Referees and other officials must be present.
- 3.15.b The Team Managers' Meeting must be held between fifteen (15) and thirty (30) minutes before the start of racing.
- 3.15.c The following points should be covered in the Team Managers' Meeting; security and safety items, the starting procedure and explanation, disciplinary questions, other items concerning the contestants, changes in the organization or procedures, presentation of the main officials and Referees.

3.16. FLAGS

- 3.16.a The use of the following flags is compulsory: Starting Flag - the National flag of the host country where the race is being held. Finish Flag - a chequered flag. Black Flag - all black flag.
- 3.16.b Black Flag: The car in question must immediately stop in the pit to receive instructions (see Sections 3.13 and 3.14). The black flag will be used by either a referee or the Race Director if a car is judged to be in an undriveable or dangerous condition. If after repairs have been carried out and after the Race Director or Referee has approved the repair, the driver may continue his race. Cars which lose their bodies or other parts must immediately stop and carry out the necessary repairs after which they may re-start.
- 3.16.c The Black Flag is operated by the Flagman (Starter), who receives his instructions to do so from either the Race Director or the Referees. Under no circumstances may he use the black flag on his own authority. The Black Flag is always shown with the corresponding car number.
- 3.16.d Not responding to the black flag within two (2) laps will lead to disqualification of the participant concerned.

3.17. CAUSES FOR PENALTIES

Penalties in time, laps or even disqualification will be issued by the IFMAR referees for the following:

- a) Unsportsmanlike behaviour.
- b) Deliberate corner cutting.
- c) Re-entering the race from other than the point at which the car left the track.
- d) When repairs are made to the car other than in the pit area of the track.
- e) If the car is pushed over the finish line (it must finish under its own power).
- f) Not returning to the pits after finishing a race.
- g) If orders of Race Officials are not obeyed.
- h) If acting contrary to IFMAR rules.
- i) If a driver changes his complete car for whatever reason.
- j) If a driver changes his frequency without the permission of the Race Director.
- k) The bad behaviour and deportment of any competitor during the race meeting which could injure the image of the sport. This may become subject to National or International (IFMAR) sanction.
- l) If a car fails technical inspection, that round time will be disallowed.
- m) If a driver jump starts in any final, the Referees will give a 'Stop and Go' penalty.

3.18. REFEREES' WARNINGS

- 3.18.a Warnings and penalties issued by the referees must be noted on the result sheet and on the result board for the drivers (preferably in red).
- 3.18.b Time penalties must be awarded as stop and go penalties, where possible. The Referees should inform the driver and announce the penalty through the sound system. Within the next three (3) laps, the driver must bring the car to a specially-indicated area. The area will be controlled by the Start Marshal who will pick up the car and watch the Referee for an indication that the car can be returned to the track. The car must return to the track through the pit lane, during which time, if the driver wishes, the car may be repaired after the stop and go penalty has been completed. In the case where the driver does not stop, or cannot comply, a one (1) lap penalty will automatically be given.

3.19. PROTESTS

- 3.19.a Only drivers participating in the race may enter a protest.
- 3.19.b A protest can only be made through the Team Manager.
- 3.19.c Protests may concern: The organization (acting contrary to the rules), officials (acting contrary to the rules), results (only when proof can be presented showing the result is wrong), other competitors (acting contrary to the rules to seek advantage or disadvantage for the protestor).
- 3.19.d Only written protests handed over to the Race Director within ten (10) minutes of the publication of results of the heat or occasion to which it is concerns, will be considered.
- 3.19.e Fifty (50) U.S. dollars or the equivalent in the host country's currency has to be paid to the Race Director, who will only then accept the protest. The time of receipt of the protest must be recorded.
- 3.19.f The protest must contain relevant information for the Race Director to be able to discuss the protest and decide.
- 3.19.g Protests are dealt with by the Race Director and if necessary the International Jury.
- 3.19.h The decision on the protest must be made within thirty (30) minutes of it being lodged and accepted. Only for important reasons and when the International Jury has to meet, may the decision be delayed to sixty (60) minutes maximum. When the protest concerns finals, either the decision must be taken ten (10) minutes before the start of the following final or the start of the next final must be delayed until ten (10) minutes after the decision.
- 3.19.i After the final race, there will be a 'protest period' of thirty (30) minutes after the provisional results have been published in writing on the score board. For this purpose, the publishing time of the provisional results must be noted down on the result sheets. During these thirty (30) minutes, protests against the results may be presented to the Race Director who will then act accordingly. If no protests are presented within the thirty (30) minutes 'protest period', the provisional results become official and final and may be announced.
- 3.19.j The applicant of a protest cannot appeal against the decision.
- 3.19.k If the protest is upheld, the protest fee of fifty dollars (\$50 U.S.) must be returned immediately.
- 3.19.l The Race Director may without a protest being made, correct results or earlier decisions which he may deem necessary after consultation with his organizing staff and the referees.

3.20. PRIZES & PRIZE CEREMONY

- 3.20.a Immediately after the finish of the race and before the drivers leave the drivers' rostrum, the unofficial winner must be declared for the public and a symbolic first place award is presented. This award must be returned to the Organizer immediately after the unofficial ceremony.
- 3.20.b The banquet and awards' presentation is to be held on the evening of the main finals or the following day/evening. Competitors are to receive a trophy as per rule 1.9. of the General Rules
- 3.20.c Winners are not entitled to claim prizes.

- 3.33.d Cash prizes or any other means of payment (paper tickets or coins of an obvious exchangeable value) are strictly forbidden.
- 3.20.e At the conclusion of the Banquet and Awards' Presentation, a results' folder showing the qualification results and the final positions should be available in paper or electronic format. report.

3.21. NATION / Bloc's CUP

- 3.21.a IFMAR will hold a BLOC's Cup, with drivers competing as a team representing their BLOCS. Before the start of the official qualifying rounds each BLOC will provide the Race Director with a with a maximum of four (4) names of drivers which will represent their Bloc at this Blocs Cup. Out of this four drivers the best result in points according to their final position achieved of the best three (3) of them will be added together and give the result of their Bloc Team. Each bloc can nominate 2 teams if all blocs have taken at least 20 allocations.

3.22. RADIO COMMUNICATION

RADIO COMMUNICATION IS ALLOWED BETWEEN DRIVER AND ONE MECHANIC.

- a: Only designated public service bands with a maximum power output of 500 mW are allowed.
- b: Radio communication can only be used by the driver and one (1) of his mechanics under the rostrum, only while the driver is on the drivers' rostrum for the duration of the race.
- c: A single ear piece or one-sided head set type that is not audible to others and does not reduce the ability to hear the referees' calls must be used.
- d: All equipment must comply with the local & country radio communications rules.
- e: Not allowed, any 2.4 GHz radio equipment.
- f: Radio equipment cannot be used at any other time within or around the complex.
- g: Race management has the right to test, decline or withdraw the use of any and all equipment without question.

Note: Rules, b, c & f, do not apply to race management.

SECTION FOUR – TRACK REQUIREMENTS

4. TRACK

Minimum width: Four (4) meters.

Minimum length: Three hundred (300) meters.

The track lay-out for the IFMAR World Championship event must be new or renewed in more than a 60 % of its lay-out and/or surface.

Any pre-event race must be held at least 4 weeks prior to the actual event and the soil to build the track must remain the same as for the actual WC event, but with a completely or partly (minimum 60%) new layout.

4.1 SURFACE

Artificial surfaces must be of the same type used for road construction. They must not be potentially dangerous or pollutant. Within the total length of the track fifty per cent (50%) minimum must be from natural soil.

Any straight longer than ten (10) meters must be from natural soil.

Any section made from artificial surface must not be longer than ten (10) meters.

A natural soil section of a minimum of five (5) meters must always separate two (2) artificial surface sections.

At location of the lap counting antenna, there must not be any metallic structure.

Deterioration of the natural soil area must not uncover obstacles in the transit area between natural soil and artificial surface (overlapping slope must be smooth and of sufficient length).

The track must be suitably drained.

4.2 JUMPS AND OBSTACLES

When constructing jumps, the safety of the public and marshals must be the main priority.

Any combination of multiple jumps will be considered as a one-jump section and each track will have a minimum of four (4) jump sections

4.3 SAFETY

Safety for everybody must be the most important aspect when designing the track.

4.4 MAINTENANCE

The track surface may only be repaired at the end of qualifying.

Repairs or improvements may be made, at any time, with the concurrence of the Race Director and the Referees.

4.5 OTHER TRACK SPECIFICATIONS

- 4.5.1 A pit lane must be provided that has a convenient and safe entrance and exit to and from the racing surface. It must be separated from the racing surface by a secure barrier of the same specifications as the inner barriers for the class of cars being raced.

There must be a second barrier of at least the same specifications of the outer barrier between the pit lane and the working pit areas. The design of the pit lane entrance and exit must be done to prevent high speed racing in the pit-lane.

- 4.5.2 All repairing, or servicing of cars must be done with the vehicle fully behind the barrier between the pit lane and the working pit area, and not in or over the pit lane. Cars may be placed on top of the exterior pit walls for servicing provided the wall has been designed so that the car is secure and stable.

- 4.5.3 An engine testing/tuning area will be provided at a reasonable distance, away from the pit tables.
No engine to be started in the pit tables area.

FINISH

IFMAR ASSOCIATED PLATINUM MEMBERS.

IFMAR would like to thank its Platinum members for their membership.

Cayote / Hobbywing

