INTERNATIONAL FEDERATION OF MODEL AUTO RACING

IFMAR ELECTRIC TRACK RACING AND TECHNICAL RULES

1/12TH & 1/10TH ISTC

INDEX

SECTION TWO – ORGANIZATION & FORMAT

2 RACE FORMAT

2.0.1 The IFMAR Electric On-road World Championships will be a 4 day event for the ISTC class and a 3 day event for the 1/12th class. The events may be run consecutively at the same venue or as consecutive separate events at different venues at the same regional areas

2.0.2 An Opening Ceremony will be held following the conclusion of the 1/12th practice on the first day of the events. Competitors will participate in a welcoming procession. Each national team is requested to wear similar shirts. A sign bearing the name of each country will be provided by the organizer for each team.

2.0.3 The track surface for the ISTC class can be either asphalt or needle carpet.

2.0.4 The track surface for 1/12th Class is recommended to be indoors on needle carpet.

In case of outdoors on asphalt track, control tire is compulsory.

2.1 RACE PACKAGE

2.1.1 Upon arrival and registration each driver will be given a race package which contains:

a. A set of numbers for his radio controlled car PLUS three additional sets.
b. Two sets of participant identification numbers for wing or spoiler.
c. One identification badge for driver and one for mechanic.
d. A complete time schedule for all practice, heats and finals for the whole event.

2.2 IDENTIFICATION NUMBERS

2.2.1 Each competitor will display his identification number in at least three positions so that they can be seen from the right and left sides and the front of the car. This number will remain the same through the entire event.

2.2.2 Numbers must be at least 25mm with a minimum stroke of 3mm and must be black numerals on a white background of at least 20 x 40mm or as supplied by race control.

2.3 BADGES

2.3.1 Two badges will be given to each competitor, one blue for driver and one yellow for mechanic.

2.3.2 Access to the pits and track will be restricted and badges must be worn at all times.

Badges will be issued as follows:-

Blue	Drivers	Drivers stand, pit, staging area, track
Yellow	Mechanics	Pits, staging area, track
Green	Press	Pits, staging area, viewing area
White	Team Manager	Pits, staging area, viewing area
Red	Race Official	All areas
Grey	IFMAR Official	All areas

2.4 OFFICIAL ANNOUNCEMENTS

2.4.1 All official announcements must be made in English.

2.4.2 Referees must be provided with a monitor to show race progress and a microphone linked direct to a speaker mounted on the driver's stand. This is to enable drivers to hear any warnings issued.

2.5 HEATS

2.5.1 There will be fifteen heats of ten drivers each. They may be divided into two groups: Group A - Heats 1 to 7, Group B - Heats 8 to 15.

2.5.2 There will be six (6) rounds of qualifying heats unless weather or unforeseen circumstances dictate otherwise. Any reduction in the number of rounds will be decided by the International Jury.

2.5.3 Starting positions; during the first round of qualifying, heat starting positions will be determined by the times achieved overall during the controlled practice rounds. During further qualifying rounds, heat starting positions will be by the overall fastest time of drivers in their heat.

2.5.4 If the race is held on carpet, each driver's best 2 (out of 6) numbers of laps, plus finishing time, will determine their qualification position. On other surfaces a driver's point score will place the driver in a final according to the following system. In each round, drivers will score points based on the laps and times achieved in relation to all other drivers.

Fastest driver in each round will score:	155 points
2nd fastest will score:	153 points
3rd fastest will score:	152 points
4th fastest will score:	151 points

and so on, scoring one point less for each driver down to last qualifying position.

If a driver does not start a heat, he receives no points. No change to the scoring method will be made if less than 150 drivers enter the World Championship. In each round, in case of a tie, the points will be equally awarded to each driver with the same lap and time score. The first driver not in the tie will score points according to their position in the qualifying list. For example:

Fastest driver	8 laps 5:10.00 will score 155 points
2nd fastest driver	8 laps 5:12.00 will score 153 points
3rd fastest driver	8 laps 5:14.00 will score l52 points
4th fastest driver	8 laps 5:15.00 will score 151 points
5th fastest driver	7 laps 5:01.00 will score 150 points - TIED
6th driver	7 laps 5:01.00 will score 150 points - TIED
7th driver	7 laps 5:01.00 will score 150 points - TIED
8th fastest driver	7 laps 5:04.00 will score 147 points

A driver will discard his worst scores based on the qualifying rounds completed to the following rules:

Out of six (6) completed rounds, the best three (3) scores will be added to decide the driver's qualifying position. Out of five (5) completed rounds, the best three (3) scores will be added to decide the driver's qualifying position.

Out of four (4) completed rounds, the best two (2) scores will be added to decide a driver's qualifying position. Out of three (3) completed rounds, the best two (2) scores will be added to decide a driver's qualifying position.

Out of two (2) completed rounds, the best one (1) score will decide a driver's qualifying position. If only one (1) round is completed, that round counts. In the case of a tie in the final qualifying positions when the driver's best scores are added together, only the scores (and the laps and times used to determine those scores) will be used to break the tie.

The discarded scores, laps and times will not be used to separate a tie. The driver with the highest single points score from the scores added will be awarded the tied position. In the case of a continuing tie, the next best scores will be considered. All best scores will be considered until the tie is broken. If a comparison of points fails to break the tie, the laps and times from the highest points will be compared.

The driver with the fastest time from their highest score will be awarded the tied position.

Example: -

Driver	Points Score	Total	Fastest Lap Time
A	l50,146,130,148	574	8 laps 5:10.00
B	148, 147,136,143	574	8 laps 5:14.00
C	149,145,131,147	572	8 laps 5:12.00
D	145,131,147,149	572	8 laps 5:16.00

Note: Driver A qualifies ahead of Driver B due to a higher single point score Driver C qualifies ahead of Driver D due to a better fastest lap time.

2.6 PRACTICE

2.6.1 There will be one day of practice (T-time, controlled practice) for each class. The track will not be available prior to commencement of each event.

2.6.2 Track layout must be at least 60% new in layout/design at the start of the event.

2.6.3 Practice will be organized using the "T-Time" format. Under these arrangements the following parameters will be used:

a. Each segment will be restricted to 10 minutes (1/12) and 7 minutes (ISTC).

b. Drivers only to be allowed to sign up for "T-Time" practice.

c. A maximum of 15 cars to be allowed on the track during any one segment.

d. Drivers will only be allowed one frequency per segment.

e. The first "T-Time" practice will be allocated by the organizers.

2.6.4 All the IFMAR Technical Rules apply during Controlled Practice, including the use of batteries and motors from the IFMAR Approved List which have been checked (and marked where necessary) by Technical Inspection.

2.7 FINALS

2.7.1 The World Championship final will be composed of three (3) separate races composed of the top ten (10) qualifiers after completion of qualifying. At the organizer's discretion, the lower finals need only be run two (2) times.

2.7.2 All finals will be of ten (10) drivers.

2.7.3 The final positions will be decided by a point system based on ten (10) points for the winner of each final on down to one (1) point for the tenth placed finisher in each separate final. The best two (2) out of three (3) finishes will count (the best out of two (2) if lower finals are run only two (2) times). In the event of a tied position, the driver with the single highest finishing position in either of the best two (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. The driver with the fastest laps and time total will be awarded the tie. If still continuing, then times from the second best position will be compared.

2.7.4 A-Main Finals

If three (3) finals are completed, the best two (2) will count as per Rule 2.7.2.

If two (2) finals are completed, the best one (1) final will count.

If one (1) final is completed, that one (1) final counts.

If no A-Main Finals are completed, the finishing order of qualifying will be used to determine the final results of the event.

A-Main Finals will have priority and may be moved in an attempt to have them completed if rain is imminent.

Time must be allowed to charge batteries.

2.8 RACE DURATION

2.8.1 1/12 track: All heats and finals will be eight (8) minutes, plus maximum of thirty (30) seconds to finish the last lap. There will be a three (3) minute break between heats.

2.8.2 ISTC 1/10: All heats and finals will be five (5) minutes, plus maximum of thirty (30) seconds to finish the last lap. There will be a three (3) minute break between heats.

2.9 STARTS

2.9.1 All starting announcements and warnings will be in English.

2.9.2 Count down for the starts will be as follows:-

During Qualifying	During Finals
2 minutes	2 minutes
1 minute	1 minute
30 seconds	30 seconds
10 seconds	10 seconds
Attention	Attention
One	START
Two	
Three (etc.)	

2.9.3 During Qualifications the „staggered start“ system will be used. Each car will start separately, within 5 seconds after its number is called. If for any reason a car did not start, the time counting for this car will begin automatically the moment one of the other cars has completed its first lap.

2.9.4 During the finals the starting grid will be five staggered rows of two cars each. Positions to be determined by qualifying results.

2.9.5 There will be no restarts due to jump starts.

2.9.6 During the finals a video record will be made of all starts for review by the Referees if necessary.

2.9.7 There will be a one meter penalty line for jump starts. Any car crossing that line before actual start will receive a one lap penalty. Any car jump starting but not crossing the one meter line will receive a ten second penalty.

2.9.8 At the 30 second warning all cars must be placed on the starting line. After the 30 second warning no cars will be allowed entrance to the racing surface until after the start of the race, at which time the mechanic may place the car on the starting grid after all the cars have left.

2.9.9 The start will be by an audible signal.

2.9.10 Any race stopped due to race equipment malfunction or official’s error will be re-run after a suitable delay.

2.9.11 Drivers must stand in the correct car number position as marked on the rostrum.

2.10 MARSHALLING

2.10.1 Marshalling shall be provided by the racers. The Race Organizers will provide 2 designated fill-in marshals to cover unforeseen eventualities. After each heat the participants in that heat will place their cars into impound and assume assigned marshalling positions for the following heat. No other person is allowed on the track (except officials) while the race is in progress.

2.10.2 When there is a break, staggering of heats or a change in the running order of heats, any driver that is responsible for marshalling will be properly notified either in person or through his country’s Team Manager.

2.10.3 Any person not marshalling or providing a qualified marshal shall lose their fastest qualifying time.

2.11 RESULTS

2.11.1 Results of each heat will be posted upon completion of the final and review by the officials.

2.11.2 The results sheet will include time, laps and finishing positions.

2.11.3 Results of each of the sub main World Championship finals will be posted following

completion of each final and review by IFMAR officials.

2.11.4 As soon as the IFMAR officials have reviewed the results of the three World Championship Finals and verified such results, the official finishing positions and points will be announced and the World Champion will be presented on the podium.

2.11.5 Awards and complete introduction of competitors and their final placing will be at the awards banquet following finals.

2.12 TRANSMITTER IMPOUND

2.12.1 All transmitters must be placed in impound upon arrival at track. Transmitters will be furnished to each competitor after completion of technical inspection and prior to their heat.

2.12.2 Transmitters in the pit areas or areas other than the drivers stand and impound, during official competition hours will cause disqualification.

2.13 TRANSMITTER INSPECTION

2.13.1 All transmitters must be tested and inspected prior to their use. A spectrum analyzer will be used for radio tuning inspection. All transmitters passing inspection will be identified and only those transmitters thus identified may be used in the event.

2.14 LAP COUNTING AND TIMING

2.14.1 Automatic lap counting, with cumulative and split lap times, will be in place for each car. Competitors are required to install a small transponder into their cars according to the organizer's instructions. An audio/video tape recording will be made.

Every competitor is allowed to use his own IFMAR approved personal transponder if the lap counting officials are informed and agree.

If an organizer is using a personal transponder system, he has to provide to all participants not having their own transponder, a transponder for every heat or final free of charge. It is strictly forbidden to ask for a rental fee. A deposit of the replacement value for the personal transponder may be demanded. If a competitor by any reason destroys or does not return a personal or normal transponder, he loses his deposit.

The driver has to ensure that his personal private transponder belongs to the marked chassis.

Significant stops (tyre changes, crashes, etc.) will be noted with times of stop and restart. This record might not include every incident, however, its intent is to verify incidents, whenever possible. AMB lap counting system or IFMAR approved equivalent must be used in duplicate.

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 round of heats within 15 minutes of the completion of the round of heats.

Chronometers must give time to 1/100th of a second, in all cases, the hundreds will be utilized.

In the case of equal results, the following best heat will separate the competitors.

If both the primary and support lap counting systems 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.

2.15 PROTESTS

2.15.1 Lap count checking need not be written and does not need a deposit. The Team Manager will, within fifteen (15) minutes of the display of the results, show to the race

direction officials the time lap sheet involved (the one displayed by the officials) and will indicate where he thinks an error has been made. This must be shown to the Race Director or scoring official. If the request is justified, correction will be made immediately. The race official will advise in writing the result of their finding and the time will be noted. After the checking, if the Team Manager persists, he may then submit a written protest along with a US$50 protest fee. The request will then be processed as a formal protest.

2.15.2 Formal protest, must be done within fifteen (15) minutes after the display of the results or the occasion it concerns, in writing and with a US$50 protest fee. Protest must be in English. The time of the display will be written on the result sheets and protests must be made within fifteen (15) minutes of that time. The protest fee is forfeited if the protest is not upheld, and returned if justified. The protest may be given to the Race Director or to an IFMAR official. Protests are processed by the Race Director and if necessary the IFMAR International Jury. Appeals against the Race Director's decision may be made to IFMAR. IFMAR is obliged to handle such an appeal.

2.16 DISPLAY OF RESULTS

2.16.1 At the end of each heat and final, and after official review, the results will be displayed for the competitors for checking and information. The result sheet will include lap times and finishing positions. The display sheet will also display the official time of posting.

2.17 CAR NUMBERS AND LAP COUNTING TRANSPONDERS

2.17.1 Only the numbers supplied by the organizer will be used on the car. 2.17.2 Each competitor is responsible for attaching the lap counting transponder to his car.

2.17.3 During qualifying any car without a transponder or with a personal transponder that has not been plugged in will not be counted.

2.17.4 During the final(s) all cars must have transponder firmly attached at the start of the race. In the event of the loss and/or failure of transponder the car will be manually counted.

2.17.5 Under no circumstances will a heat or final be re-run due to a car not having a transponder or failing to plug in a transponder or failure of such. This also applies to a car having an incorrect number.

2.18 FREQUENCIES

2.18.1 Use of fixed frequencies and 2.4GHz DSM/DSS systems.

These systems may only be used if permitted in the organizing country. However, due to the way they operate, a driver using such a system cannot ask for any delay in case of radio problems.

2.18.2 In the case of two or more drivers qualifying for the same final with the same frequency, the higher placed driver will keep his frequency and the lower placed driver(s) must change.

2.18.3 For the World Championship Final all frequencies of the finalists will be known only to the Race Director and Technical Inspector.

2.18.4 The lower placed driver who will not or can not change will not take part in their final for which they qualified.

2.18.5 If a driver must change his frequency before the start of a final due to an error by the organization, he will be allowed ten minutes. If the driver has found his radio defective or has made an error in the selection of his frequency at the start of a heat or final the race will not be delayed. The Race Director may delay the start, due to radio frequency, for a frequency inspection.

2.18.6 Anyone on other than assigned frequency will not be allowed to start the final or heat.

2.19 PENALTIES AND SANCTIONS

2.19.1 Black flag (removal of car from track) may be issued for the following reasons;

a. Drivers who impede the progress of other drivers.

b. Un-sportsmanlike driving.

c. Participants driving in a manner deemed to be dangerous.

d. Vehicles judged to be in an un-drive able or dangerous condition by the Race Director. These vehicles, after being repaired, may be allowed to re-enter the track after permission by Race Officials.

e. Vehicles losing their body must immediately leave the track and carry out necessary repairs before re-entering track.

f. Any illegal modifications or changes made to the vehicle which are found during technical inspection at the end of a heat or final will automatically cause disqualification.

g. Any vehicle which, by the fault of another driver, is damaged or obstructed during a heat or final will not, under any circumstances, be allowed to re-run in another heat.

h. All participants must strictly observe the instructions and warnings by the Race Director and Referees.

i. The bad behavior and/or deportment of any competitor, even outside an official race meeting, which could injure the promotion of the sport, may become the object of an official national or international sanction.

2.20 PIT SPACES

2.20 Pit spaces are to be allocated by the organizer for the duration of the World Championships. A minimum of 12.5 square feet of table space with a minimum depth of two feet must be provided for each competitor.

SECTION THREE - OFFICIALS

3 OFFICIALS

3.1 RACE DIRECTOR

3.1.1 The race Director is under the direct authority of IFMAR and must be approved by FEMCA/ROAR/EFRA/FAMAR) as appropriate.

3.1.2 The Race Director within the schedule of the event is responsible for insuring that the various tasks under his responsibility are correctly done. These include the following:

Time Keeping

Starts

Marshalling

Display of results

Announcements

Technical inspection

Frequency control

3.1.3 Receive any protests and call the International Jury, if necessary.

3.1.4 Make urgent decisions for safety or unforeseen situations.

3.2 TIME KEEPING SUPERVISOR

3.2.1 The Time Keeping Supervisor is responsible for recording all laps, times, and results of all drivers in all heats and finals. He is responsible for classifying the results and setting up the mains. The Race Director must verify this classification and selection.

3.2.2 After the end of all heats and sub-finals the Supervisor will review the results

before displaying.

3.2.3 In the case of a request for checking results, the Time Keeping Supervisor, along with the Race Director, will check the questioned result and make a decision.

3.3 REFEREES

3.3.1 One (1) IFMAR referee will be appointed by IFMAR. Travel and accommodation expenses will be paid for by IFMAR, EFRA, ROAR, FEMCA and FAMAR equally. The IFMAR referee will be supported by two (2) appointed deputy referees, one nominated and paid for by the host bloc and one nominated and paid for by the host country's association (see general rule 1.12). They must be unbiased and experienced persons with a good knowledge of the English language and the current IFMAR rules. They must have driving experience in electric track racing.

3.3.2 A back-up Referee must be nominated by each organization in case of temporary absence of official Referees.

3.3.3 The main task of the Referees is to observe the racing and in particular the good sportsmanship during the racing. They will ensure that the correct rules are observed by everybody.

3.3.4 The Referees may be called for information by the International Jury when a meeting is called by the Race Director.

3.3.5 Referees may not be participants in the event or serve in any other official capacity.

3.4 REFEREES' DUTIES

3.4.1 At all times during the qualifying heats and sub-finals, 2 of the 3 Referees present will be watching and observing the racing from start to finish. During the World Championship finals 3 Referees will observe the race from start to finish.

3.4.2 A Referee may issue warnings and instructions. A Referee may take action after an initial warning but in all cases a maximum of three warnings means automatic disqualification from the event. Any appeal against the Referee's decision must be made to the International Jury accompanied by protest fee.

3.4.3 A Referee will be responsible to ensure that no race is allowed to start without all marshals in position.

REFEREE GUIDELINES REGARDING OFFENCES/WARNINGS:

1. Bad sportsmanship during the race, i.e.: impeding the progress of other participants, deliberate slowing down or waiting for another car with the intent of impeding or hitting another car, deliberate crashing with another car, deliberate corner cutting, and reckless driving.
2. Unsportsmanlike conduct and behavior of drivers and mechanics involved in the racing.
3. Mechanics going on to the track during the race.
4. Any combination of three warnings will cause disqualification.

INSTRUCTIONS:

1. Cars that do not conform to the regulations before the start or during the race (example: loss of body).
2. Cars that are un-drivable or in dangerous condition due to damage or malfunction of the car.
3. Starting procedure, writing down early starts and reporting them to the Time Keeper.

(Time Keeper and Starter are responsible for starting penalties.)

4. It is not the responsibility or duty of the Referees to check if the cars conform to the technical specifications. This is the responsibility of the Technical Inspectors.
5. All warnings and instructions will be announced in English by the Referee

using a microphone linked direct to a speaker mounted on the drivers stand.

6. Each participant must be able to understand and recognize the words WARNING and INSTRUCTION.

3.5 REFEREES' AUTHORITY

3.5.1 The Referee issues warnings and ultimately may issue a black flag (disqualification) if necessary or when his warnings are not effective.

3.5.2 Warnings and instructions are announced by the Referee and he keeps a record of the warnings and instructions issued. Repeated warnings (3) will lead to disqualification from the competition. Instructions must be observed and obeyed immediately. All announcements will be made in English.

3.5.3 Reason for warning will be announced at time of issue. Further explanation, if required, will be given to the driver or Team Manager at the end of the race.

3.5.4 Under no circumstances may a warning or instruction by the Referees lead to an interruption of the race.

3.5.5 During the main event only, if two out of the three Referees agree, they will have the authority to black flag an entire team. If one member of that team is positively interfering with the racing of another car in that event.

3.5.6 Appeals to the decision of the Referees must be made in writing and presented to IFMAR. IFMAR is not obligated to act on such a protest.

3.6 INTERNATIONAL JURY

3.6.1 The International Jury consists of official representatives from ROAR, EFRA, FEMCA and FAMAR. Each Bloc will have a total of one (1) vote.

3.6.2 The relevant IFMAR Section Chairman shall always act as Chairman during International Jury Meetings and exercise a casting vote, if necessary. In the absence of the relevant IFMAR Section Chairman, the highest ranking IFMAR Official shall take the chair at any International Jury Meetings. (See Section Rules for further details).

The Race Director and Chairman are members of the International Jury but do not have a vote in the decisions. The Referees may be called by the Jury for opinions and explanations as deemed necessary. All decisions are by a simple majority vote. The Jury can request evidence and/or drivers presence pertaining to matters involved. Prior to the commencement of an International Jury Meeting, any mobile telephones in the meeting room must be turned off and placed on the meeting table until after the completion of the Meeting.

3.6.3 Jury members must be approved by their organizations.

3.7 RESPONSIBILITY OF THE INTERNATIONAL JURY

3.7.1 To decide in unforeseen situations.

3.7.2 To handle protests not covered by the Race Director's responsibility.

3.7.3 To change the race procedures or cancel the race whenever this is required due to safety aspects.

3.7.4 To see that the race is run according to the official IFMAR rules.

3.7.5 To make the decision on interrupting or canceling a race due to rain or other weather conditions.

3.7.6 The Chairman of the International Jury will make official the results of the World Championship through the ranking IFMAR official available.

3.7.7 International Jury members may not have dual duties of being a race official (other than Race Director) or Referee. Jury members may be participants in the event but must allow an auxiliary representative to serve in any protests that concerns the jury member as a participant.

4.0 TECHNICAL RULES GENERAL

4.1 TECHNICAL INSPECTION

4.1.1 Only one car per driver per class is allowed. All cars must be presented to Technical Inspection for an Initial Inspection before the start of Controlled Practice. The purpose of this Initial Inspection is to determine that the car meets the IFMAR Technical Rules for this event.

4.1.2 When the car passes this Initial Inspection, the Technical Inspector will mark the chassis of the car. Marks that are made by engraving, and/or removal of chassis material, are to be avoided. A driver may refuse to have his chassis marked by methods that remove chassis material. Once the chassis is marked, the chassis may not be changed without the approval of the Race Director. The chassis may only be changed in the case of damage that cannot reasonably be repaired.

4.1.3 Drivers must race the car he or she passed technical inspection with during qualifying and finals in accordance with the rules above.

4.1.4 All cars must be presented for technical inspection at the start of the prior heat or final, no car will be allowed on the track surface without undergoing technical inspection first including Lithium Voltage checks at random for some or all cars. Penalties for overcharging are indicated at rule 4.3 (race procedures for batteries).

4.1.5 All motors and batteries to be inspected as necessary during qualifying and mandatory during the finals. All cars in the World Championship finals will be impounded at the end of the finals for further technical inspection, such as motors, etc.

4.2 BATTERIES APPROVAL

NiCd, NiMH or Lithium based (LiPo/LiFe) cells and batteries can be submitted for IFMAR Approval. Original manufacturer or their agents may request approval.

The deadline date for submitting batteries (cells) to be approved for that year's World Championship is eight (8) months prior to the date of the Opening Ceremony of the World Championship. The applications must be submitted to IFMAR together with:

- The appropriate approval form (available on request as from 10 months before a WC race)
- Four plus one samples of the product closely representing the weight and size range stated
- A written technical specification including dimensions and weights with associated tolerances from the original cell or battery manufacturer for verification.
- Lithium based batteries must be covered by their safety test certification in accordance with UN Tests, outlined in Part 3, sub-Section 38.3 of the UN Manual of tests and criteria.
- Proof that a minimum of 2000 individual cells/batteries have been sold (by the original manufacturer or their agents) to commercial outlets in the retail or distribution sector of the hobby industry.
- A list of telephone numbers, email-addresses and postal addresses of retail suppliers, shops in each continent from whom the cells can be purchased must be provided.

A verification of availability by means of spot-checks will be made four (4) months prior to the date of the opening Ceremony of the World Championship. Failure to this verification will result in the non-approval of the product.

One (1) sample will be tested and one (1) sample of each product and paperwork will be submitted by the IFMAR Electric Section Chairman to the appropriate IFMAR Electric Section representative in EFRA, ROAR, FEMCA and FAMAR so to be matched for compliance with the rules. If a product meets all technical specifications and IFMAR availability requirements by a majority of the voting Blocs' representatives, it will be included on the Approved Product List for use at WC events.

The submittal for approval must be conforming to the procedure current at the time for IFMAR approval. Copies of submission forms are available on request.

4.3 RACE PROCEDURE FOR BATTERIES

4.3.1 IFMAR shall produce an Approved Product List which lists all the cells eligible for that year's IFMAR W.C. events. This Approved Product List shall be distributed to all competitors in the race acknowledgement package no later than two (2) months prior to the WC event.

4.3.2 All cells/batteries must comply with the published data contained in the current IFMAR Approved Battery List.

4.3.3 All cells must be submitted to Technical Inspection for checking and marking prior to being used during Controlled Practice, Qualifying and Finals. This may be completed at any time. Cells which do not bear the Organizers mark may not be used for Controlled Practice, Qualifying and Finals.

4.3.4 The Organizer and IFMAR Officials may check the legality of a competitor's cells/batteries at any time during the WC event.

4.3.5 A weight scale will be available at all times during the event for competitors to carry out weight checks on cells.

4.3.6 Cells may not be charged or changed during the race.

4.3.7 1/10th cars will be driven by a maximum of 5 NiCd or NiMH cells giving a maximum nominal voltage of 6.0v., or by LiPo/LiFe batteries with a maximum nominal voltage of 7.4v.

1/12th cars will be driven by a maximum of 4 NiCd or NiMh cells giving a maximum nominal voltage of 4.8v., or a 1S LiPo/LiFe battery with a maximum nominal voltage of 3.7v.

4.3.8 All LiPo/LiFe packs must be charged with a LiPo/LiFe-capable charger using the industry standard CC/CV. (Constant Current/Constant Voltage) charge profile.

4.3.9 Any competitor found to be charging Lithium based cells using a charger that is not specifically designed for LiPo/LiFe cells or using a charge profile other than the industry standard CC/CV, will be disqualified from the event.

4.3.10 2S LiPo/LiFe batteries may be charged to a maximum of 8.40v(LiPo) resp. 7.40v (LiFe). 1S LiPo/LiFe may be charged to a maximum of 4.20v (LiPo) resp. 3.70v (LiFe). Overcharging is a safety hazard and will not be tolerated.

4.3.11 Any competitor found to have charged LiPo/LiFe cells to above the voltages detailed in rule 4.3.10 will be disqualified from the event.

4.3.12 The use of any additional heating of any type to heat a LiPo/LiFe Battery is not allowed. The use of any cooling devices or "freeze" sprays of any type to cool a LiPo/LiFe battery is not allowed.

4.3.11 1/10th. cars using Lithium based batteries may not have a second battery on board except for the one supplied in the electronic timing device (transponder).

1/12th. cars are allowed to use an additional receiver pack, which must not supply power to the drive motor.

4.4 TECHNICAL SPECIFICATION BATTERIES

A NiCd or NiMH

1 NiCd or NiMH cells are rated at 1.2 volts nominal. The size of individual cell(s) to be:-

Diameter 23.0 mm +0/-1 mm. Overall length 43.0 mm +0/-1.5 mm.

Measurements include original manufacturers heat shrink. Overall length is the maximum length of the complete cell including the positive button before attaching/soldering any link wires or battery bars. Dimensions taken at ambient temperature and at 90 degrees to the centre-line of the cell. It is known that 'fast charging' of cells may result in cell expansion/distortion.

However, cells must never exceed the above maximum dimensions when used at a WC event.

2 Weight of individual cells:-

The original manufacturers of cells are allowed a maximum of +/- 2 gr tolerance on the nominal weight of the cell stated on the technical specification/data sheet submitted at the time of approval. The min/max weights will be detailed in the IFMAR Approved Battery List, and cells must never exceed the weight tolerances stated on the IFMAR Approved List. Any changes to the technical specifications of cells after the original approval will require re-approval using the time frame as applicable.

3 1/10 cars using NiMh or NiCd will be driven by a maximum of 5 cells and 6.0 volts nominal maximum.

1/12 can use NiMh or NiCd for propulsion. The numbers of cells is limited to 4, in this case a receiver battery pack to power the receiver and Servo is allowed. Under no circumstances may power from the receiver pack contribute to the power to the motor.

B. Lithium Based (LiPo/LiFe) Batteries:

1 Lithium Based (Li-Poly/LiPo/LiFe) battery packs must have a hard, protective case that completely envelopes the cell(s). The case should be made from ABS or a similar material. The two halves of the case must be factory sealed in a way that any attempt to open the case will destroy the case. The only opening in the case that is allowed is for the exit of wires or pin type connectors.

2S Battery: - Maximum external case sizes:

Length: 139.0 mm
Width: 47.0 mm. (The max. width includes any side exit. wires).
Height: 25.1 mm. (Chassis location features additional to this dimension are allowed)

2 Saddle-Pack cells are allowed, but must comply with the above width and height.

Furthermore they must not exceed a combined length of 139.0mm max. when placed end to end.

1S Battery :- Maximum external case sizes:

Length: 93.0 mm.
Width: 47.0 mm. (Side exit wires are allowed outside this dimension).
Height: 18.5 mm. (Chassis location features additional to this dimension are allowed).

Saddle-pack cells are not allowed.

3 Individual cells used in the construction of the battery pack shall be rated at 3.7 volts nominal. Individual cells may be wired in parallel. For 2S packs: the maximum “In Series” is two to give a pack voltage of maximum 7.4v nominal. For 1S packs; the maximum “In Series” is one to give a pack voltage of maximum 3.7v nominal.

4 The battery pack shall have leads extending from the case for the positive and negative electrical connections using wire of adequate size to handle discharge rates acceptable to racing applications. Alternatively, ‘Female connection tubes’ to connect the power wires are allowed but the metal tubes must be well enough below the surface of the moulded case so to avoid short circuit if the pack is placed on a conductive surface. The connection points shall be clearly marked positive and negative.

5. The case must have the original suppliers label intact, clearly stating the name of the manufacturer/importer, the part number of the pack, the rated voltage, the chemistry (LiPo/LiFe), the pack capacity and the C- rating of the pack. The Brand name/logo label shall be easily readable.

4.5 MOTORS

Only IFMAR approved motors may be used. Approved motors must meet the following specifications and be commercially available four (4) months prior to the World Championship. Availability requirements must be met at the time of submittal. Submittal deadline to be four (4) months prior to that year's event to be placed on that year's list.

4.5.1 Manufacturers must submit motors direct to a testing laboratory, the name and address of which will be supplied, on request, by the IFMAR Electric Section Chairman. Manufacturers will be responsible to pay all laboratory fees for testing. Upon receipt of laboratory confirmation from the manufacturer to the IFMAR Electric Section Chairman that the product meets all specifications and the Chairman is satisfied that all IFMAR availability requirements have been met the product will be included on the approved products list for use at WC events.

4.5.2 An approved products list of motors approved for use in the World Championships must be posted on the IFMAR website and the organizer's website (if available) four (4) months prior to the event and the list shall be included in the race acknowledgement package sent to each competitor no later than two (2) months prior to the event.

BRUSHED MOTORS

Specifications: '05' sized displacements.

Can diameter to be a maximum of 36.02mm

Can length to be Maximum of 53mm measured from the mounting face of the motor to the furthest point not including solder, tabs or lead wires.

Shaft diameter is .125 inch.

Production Tolerances allowed.

Ceramic magnets only (cobalt and rare earth magnets specifically not allowed).

Current is supplied to the armature by 2 brushes.

Armature - The rotor is to have three poles with windings.

Stack length without epoxy - minimum 21mm and maximum is 22.8mm.

Only Copper wire is to be used for the winding.

No Split rotor is allowed.

The laminations have to be one after the other without anything between.

The thickness of the stack plates is 0.35mm + 0.05mm**.**

The armature has to be permanently marked by the manufacturer, detailing the number of 'winds' and the name of the manufacturer

A minimum of 5,000 units must be available at the time of approval. A minimum of three hundred (300) motors must have been sold to at least three (3) distributors or hobby shops or OEM's at the time of submittal. The manufacturer has to provide an address of a hobby shop or the like, that any driver who wishes to obtain these motors at the time of approval can do so.

Approved motors may be modified by re-winding, balancing, truing of commutators, epoxying, ball bearings, brushes and custom brush systems only.

No hybrid (mixing of parts from approved motors) allowed.

BRUSHLESS MOTORS:

General definition of a Brushless Motor:

a) Sensored or sensorless motors are allowed.

b) The motor has to be rebuildable. Ball bearings are allowed.

c) If the motor is sensored:

- It must use a six position JST ZH connector model number ZHR-6 or equivalent connector with 6 JST part number SZH-002T-P0.5 26-28 awg contacts or equivalent.

Wire sequence must be as follows:

Pin #1 - Black wire ground potential
Pin #2 - orange wire phase C
Pin #3 - white wire phase B
Pin #4 - green wire phase A
Pin #5 - blue wire temp control, 10 k Thermistor referenced to ground potential
Pin #6 - red wire + 5.0 volts d.c. +/- 10%.

Compatible speed control must use the 6 position JST header part number X-6B-ZR-SMX-TF (where the X denotes the style of the header), or equivalent.

- The power connector has to be clearly marked A, B, C.

A for phase A
B for phase B
C for phase C

d) `05` size specifications

Can:

Overall maximum diameter is
36.02mm measured at whatever point yields the maximum dimension, excluding solder tabs or lead wires.

Overall minimum diameter is
34.00mm measured at whatever point yields the minimum dimension, excluding solder tabs or lead wires.

Maximum length is
53.00mm 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.

Minimum length is
50.00mm 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 mounting holes must be on 1.00- inch (25.40mm) centers.

Stack/Stator:

The Stack or Backiron must be continuous. The laminations have to be one after the other without anything in between. Stack/Backiron minimum length 19.30mm, maximum 21.00mm. The thickness of the Stack/Backiron laminations is 0.35+/-0.05 mm. All laminations must be of the same material. Inside diameter of Stack or Windings equals the central space between the laminations or assembly of windings and must accept 'plug' gauges of 12.5 mm minimum, 16.0 mm maximum. These dimensions to be measured with the centre of the 'plug' gauge in-line with the centre of the motor Can. (ie. Concentric to can).

Winding:

Delta and Y wound stators are permitted. Only circular (round) pure copper wire permitted. No turn limit.

Rotor:

Shaft diameter must be 0.125 inches (3.175mm). Only one piece, two pole bonded Neodymium or Ferrite magnetic rotors are permitted. Magnet minimum length 23.00mm, maximum 27.00mm. Magnet minimum diameter 12.00mm, maximum 5.50mm.

e) All motors must have the original manufacturer's logo or name moulded into the end bell.

f) A minimum of two thousand (2000) brushless motors must be available at the time of approval. A minimum of three hundred (300) brushless motors must have been sold to at least three (3) distributors or hobby shops or OEM's at the time of submittal. The manufacturer has to provide an address of a hobby shop or the like,

that any driver who wishes to obtain these motors at the time of the approval can do so. No hybrid (mixing of parts from approved brushless motors) allowed.

4.6 DRIVERS' AIDS

4.6.1 It is the objective of this rule to ensure that the 1/12th and 1/10th ISTC Electric On-road World Championships be a test of driver skill. IFMAR seeks to limit the type of driver aids to a minimum to achieve this objective. Traction control, active suspension and steering control by gyroscopes are not allowed. Sensors fitted to the car for the purpose of measuring suspension movement, wheel speed or tyre slip whilst the car is in motion are not allowed.

4.6.2 Unless an electronic or mechanical driver aid is listed below in rule 4.4.3 it is not allowed for use in IFMAR 1/12th and 1/10th ISTC Electric On-road World Championships.

4.6.3 The fixed single ratio transmission may not include a mechanical device/ s between the drive motor output and the gearbox input for the purpose of controlling torque (e.g. 'slipper' clutch/fluid clutch).

A differential may include a mechanism for apportioning torque over the axle/s (e.g. limited slip differential). This mechanism must only be capable of setting or adjustment manually whilst the car is stationary. A mechanical or electronic speed controller may include a mechanical or electronic device to limit the current/voltage passed from the batteries to the drive motor (e.g. timed delay, current limiter, keyboard programs). Setting or programming of such a device must only be possible whilst the car is stationary. Changes to the setting or program during a race are not allowed.

4.6.4 Radio control receivers carried in the car may only have two devices (normally the steering servo and speed controller) connected, plus an optional separate battery supply for powering of the radio control equipment/devices. The use of any further channels to receive electrical signals from sensors carried in the car is prohibited.

4.6.5 Any competitor found in contravention of the spirit or fact of rule 4.4 will be disqualified from the World Championship Meeting.

SECTION FIVE - TECHNICAL RULES 1/12

5. TECHNICAL RULES 1/12

The official measurements in these Technical Rules are the metric measurements.

5.1 GENERAL SPECIFICATIONS

5.1.1 For the purpose of the IFMAR World Championships, GTP, Le Mans Prototypes (LMP675 & LMP900), World Sports Cars (WSC) and FIA GT Racing Classes 1 & 2 (GT1 and GT2) bodies only are allowed.

5.1.2 When starting the race, a body shell must be neatly finished and complete.

5.1.3 Only body shells which are registered with IFMAR may be used. Body shell manufacturers may register at any time, but not less than four months prior to that years' IFMAR World Championship to be eligible for that event.

One sample of a body shell, together with photographs of the full-size car on which the body shell is based, must be sent to the IFMAR Electric Section Chairman.

When registered by IFMAR, the body shell will be added to the register of body shells allowed for use at IFMAR World Championship events for that class.

The body shell must be a reasonable, realistic, facsimile of the full-size car on which it is based, with particular attention to realistic height, cockpit area, scoops, vents, wings and aerodynamic devices.

5.1.4 All open-cockpit body shells must have a realistic driver figure fitted in an appropriate position in the cockpit at all times when racing. The driver figure must consists of at least a driver's head/helmet, shoulders and arms and should be reasonable scale size.

The driver figure must be painted in a realistic appearance, color and garb.

5.1.5 All closed cockpit cars must have transparent windshields and/or side windows and/or rear windows.

Open or painted windshields and/or side windows and/or rear windows are not allowed. This will be determined by reference to the photographs submitted by the manufacturer when registering the body shell.

5.1.6 WINGS

5.1.6a Wings may only be fitted where they are shown on the photographs submitted by the body shell manufacturer for registration with IFMAR. Wings may be moulded in to the body shell as part of the continuous material used for the body shell, or may be attached separately.

5.1.6b One (1) separate front wing may be attached directly, and only, to the body shell. The front wing must be supplied by the original body shell manufacturer with the bodyshell as registered with IFMAR and be fitted as supplied without modification.

5.1.6c One (1) rear wing only may be used with the body shell. The rear wing may be:

EITHER

Moulded in to the original body shell as part of the continuous material used for the body shell. This is defined as the part of the bodyshell, from the centre of the rear axle line extended rearwards, which sweeps upward from the horizontal.

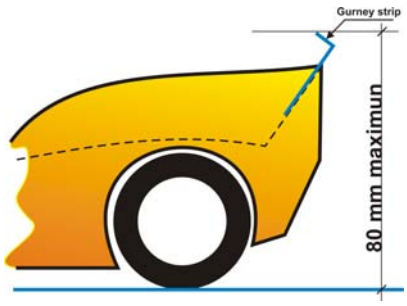
OR

Attached directly to the body shell or chassis by separate supports. In this case the part of body shell from the centre of the rear axle line extending rearwards must be horizontal, or swept downward from the horizontal. Separate wings must conform to the sizes shown in 5.1.14. Side dams to the sizes shown in 5.1.14 must be attached directly to the separate wing only.

No part of the wing may be closer than 6.5 mm to any part of the body other than the tail fins or side dams.

5.1.7 Side dams moulded in to the original body shell, or supplied with the original body shell, registered with IFMAR, must not exceed a maximum dam length of 102 mm and maximum height of 2 5 mm. These dimensions include moulded-in portions of body.

5.1.8 No additional items may be fastened to the body exterior other than the rear trim tab / Gurney strip.



5.1.9 The body and chassis must be securely joined at all times when the car is on the track.

If the body comes loose or falls off during a race, the car must be removed from the track until the body shell is securely re-attached.

5.1.10 Wheel arches must be cut-out if the original full-size car ran that way. This will be determined by reference to the photographs submitted by the manufacturer when registering the body shell with IFMAR.

5.1.11 The body shell may not be trimmed higher than the lower body trim lines. When a body shell is registered with IFMAR a lower trim line must be moulded in to the body shell, or a minimum distance from the highest point on the body shell to the lower trim line must be specified by the body shell manufacturer.

5.1.12 No part of the chassis, wheels, tyres, suspension or mechanical/electrical equipment may be visible outside the body shell when viewed in any plane.

5.1.13a Openings in the body shell (e.g. scoops, vents) must be appropriate to the full-size car on which the body shell is based. This will be determined by reference to the

photographs submitted by the manufacturer when registering the body shell.

Additional openings in the body shell are allowed only for the original cockpit (in open cockpit cars) wing mounts, antenna, roll-over mast (if allowed) and lap recording equipment.

No other openings in the body shell are allowed.

5.1.13b Rollover antenna may be fitted. If fitted, it must have a blunt end for safety reasons. If a rollover mast and radio antenna are fitted, the antenna must be part of the mast along its length. Maximum height from ground 35 cm.

5.1.14 DIMENSIONS

5.1.14a Body shell dimensions in millimeters

	Max	Min
Overall width	172	155
Overall length	380	320
Clearance around openings	10	-
Clearance around wheel arches (except shaped wheel arches)	10	-
Rear Wing (separate) Width	172	-
Chord	52	-
Side Dams - Length	55	-
- Width	20	-

5.1.15 Bumpers are not required. If fitted, bumpers must be constructed so as to minimize injury that may result from being hit by the car. Wire bumpers shall be made of wire not less than 2.5mm or more than 4mm in diameter. Bumpers made from sheet type material shall be not less than 2.5mm thick or more than 6.5mm thick, with all exposed edges smooth and well-rounded. Rigid blade-like bumpers made of hard, non-resilient material such as metal, brittle plastic, plywood, masonite, etc., will not be allowed. All cars may run a rear bumper, which must be behind the rear tyres. Bumpers may extend 6.5mm beyond the sides of the body, or to 172mm whichever is less.

5.1.16 Tyres must be black except sidewall detailing. Wheels and tyres must not be of such a material they cannot damage the surface of the track. Tyre treatments will be at the discretion of the organizers, including health and track damage considerations.

5.1.17 Tyres: Min. width is 13mm. Max. Width is 38m.

Any tyre diameter will be allowed. The tyre width is measured at the widest part of the tread or sidewall. The diameter must be maintained over at least the minimum width of the tyre. The tyre sizes apply at the start of the race.

Each tyre on the car must only be constructed from one (1) compound (shore rating/density) of foam rubber.

5.1.18 Wheel nuts and/or axles must not protrude beyond the wheels. No more than 1.5mm of wheel outside diameter must be exposed (not covered with rubber) on the outer side of wheels.

5.1.19 Wheel rim diameter is 29mm Min. and 38mm Max. (This includes all non-rubber parts of the wheel and tyre.)

5.1.20 All cars must comply to the dimensional requirements.

5.1.21 Cars are not permitted to race with a reverse facility.

5.1.22.a The minimum weight limit, ready to run, is 730 gr including transponder. The weight of the car must not be below the weight limit at any time during the race. Race distortion or damage must be disregarded.

5.1.22.b When racing on a track surface which can be damaged (e.g. carpet) a minimum ground clearance of 3mm must be maintained at all times (excluding Spur gears for

1/12th cars). Before and after each heat, race or final, cars must pass over a 3mm block without any part of the chassis or body touching the block. Cars failing this test prior to their race will not be allowed on the track. Cars failing this test after their race will have their heat/race/final time disallowed. The organizer will state in the Status Report and the Stage 1 Report if this rule applies to their track surface, such statement to be agreed by a three to one majority of EFRA, FEMCA, ROAR and FAMAR.

SECTION SIX - TECHNICAL RULES 1/10th ISTC

6.0 PURPOSE

The essence of the 1/10th ISTC class is competition between realistic models of saloon/sedan cars raced in Touring Car Series for Class Two FIA Touring Cars.

All Cars must comply with the ISTC Technical Rules to be eligible to race in Timed Practice, Qualifying and Finals.

Bodies must be a 1:10 scale in character reproduction of touring car (sedan) 2 and 4-door vehicles that exist ore have exist, and raced in international Touring Car series

For homologation purposes, the bodies dimensions will be checked according the Global Body Specifications.

Bodies may be homologated by ROAR, EFRA, FEMCA or FAMAR up to four (4) months before the event.

This combined list will be made available by IFMAR to the organizer for inclusion in the Stage II Report. For technical inspection it is necessary that all body shells on the list can be identified by means of a manufacturer's and/or homologation number issued by a Bloc. This number must be molded in at the right upper edge of the windscreen

6.1 APPEARANCE

6.1.1 Cars entered for the ISTC Event shall be scale representations of full size FIA Class Two Touring Cars currently racing in International Touring Car Series' (e.g. ITC, BTCC, NATC, Japan Touring Cars, etc.) held from time to time. Notwithstanding this broad definition, all Cars must use a four (4) door body shell to be eligible for this Event.

6.1 .2 A register of body shells will be maintained by IFMAR Electric Section. Only body shells registered four (4) months prior to that years' Event will be eligible for use on Cars.

6.1.3 Cars shall be neatly finished.

All details of front and rear lights, air intakes and windows must be clearly contrasted from surrounding paintwork.

6.1.4 Any decals may be carried on the car and wing.

6.2 CHASSIS AND DRIVE TRAIN

6.2.1 Two (2) wheel drive to front or rear wheels or four (4) wheel drive is allowed.

6.2.2 Chassis must have independent suspension to all four wheels. Each driven wheel must have a flexible joint (e.g. dogbone/s or universal joint/ s) in its driveshaft. Drive train and suspension design is free from restriction. 'Flat pan' (1/l2th and 1/l0th Track style) chassis are not allowed.

6.2.3 No part of the chassis, including wheels/tyres/axles, may protrude outside the body shell when viewed from above. No part of the motor, batteries or electronic equipment may protrude outside the body shell when viewed in any plane. Rollover masts may not be fitted.

6.2.4 Materials used in the chassis and drive train are not restricted, although the use of special metal alloys (titanium/magnesium/etc.) in parts is discouraged, to reduce costs.

6.2.5 The chassis must not be shaped to gain an aerodynamic advantage. In principle, the underside of the chassis must be flat and parallel to the ground along the entire

length of the body shell. Aerodynamic shaped parts (splitters/diffusers/tunnels/etc.) may not be fitted to the chassis.

6.2.6 Wheel nuts/axles must not extend more than 2mm beyond the wheels when viewed from above.

6.2.7 Only one Car per driver per class is allowed.

6.2.8 The use of one-way bearings in the rear axle is not allowed. The cars must be able to have a braking effect on the rear wheels from the electronic speed controller.

6.3 DIMENSIONS

The official measurements in these Technical Rules are the metric measurements.

	Min. (mm)	Max. (mm)
Wheelbase	250	270
Width (without body shell)	170	190
Width (with body shell)	175	195
Length (overall, with body shell fitted)	360	460
Height (to top of roof – ready to race)	115	175
*Ground clearance (ready to race)	5	-
Wing width (including endplates and supports)	125	190
Wing chord (including any flaps or extensions	20	40
Wing endplate (when separate)	-	40 x 20
Flap or gurney tab extension above plane of wing	-	3
Wheel diameter (excluding tyre bead)	47	50
Wheel width (including tyre bead)	24	26
Tyre width (across sidewalls when fitted to wheel)	24	28
Tyre diameter (when mounted on wheels)	63	67

* Ground clearance – for use on carpet and other surfaces which could be damaged.

6.4 WEIGHT

6.4.1 Weight, ready to race excluding timing equipment, at all times during the race:

4WD - 1450 grams minimum

2WD - 1350 grams minimum.

6.5 WINGS

6.5.1 Only one wing allowed, fitted in the same place as the wing on the original car. The wing may overhang the rear of the body of the car by 10 mm.

6.5.2 The height of the wing may be adjusted, but the wing including endplates must not extend higher than the roofline.

6.5.3 Front splitters/spoilers must be moulded in to the body shell in the same position as the original car.

6.5.4 One tab or gurney flap only allowed which must be fitted securely to the rear wing, and must be contained within the wing dimensions, and the maximum height of 115mm.

6.5.5 Wings/splitters/spoilers/tabs/gurney flaps must be fixed rigidly to the body and/or wing, and may not be moved whilst the car is in motion.

6.6 TYRES

6.6.1 A controlled tyre (a tyre together with a selection of one (1) of two (2) different densities of inserts or a pre-assembled combination of tyre, insert and rim decided

by the IFMAR Electric Executive must be used.

The manufacturer who was selected to supply the tyre and/or the two (2) inserts for the previous IFMAR ISTC World Championship event is not eligible to supply tyres and/or the two (2) inserts for the next IFMAR ISTC World Championship event.

6.6.2 The type of tyre and two (2) inserts or the pre-assembled combination of tyre, insert and rim are decided by the IFMAR Electric Executive together with the race organizer (race organizer recommends three (3) types of tyres and six (6) types of inserts or the equivalent number of tyre combinations in order of preference). The race organizer has to forward the recommendations to the IFMAR Electric Section Chairman eight (8) months before the event. The final decision will be made six (6) months before the event by a majority vote of the IFMAR Electric Executive.

The recommended types of tyres, the recommended types of inserts and/or the pre-assembled tyres must be commercially available in the four (4) Blocs at the time of the organizer's recommendations, (eight (8) months prior to the events) and remain available up until the final decision six (6) months prior to the events. The selected controlled tyre and controlled inserts must continue to be commercially available in the four (4) Blocs from six (6) months prior to the event up until the commencement of the events.

6.6.3 Molded rubber tyres only allowed, no sponge or closed-cell foam tyres allowed. No modifications or additions can be made to the controlled inserts, e.g. gluing the insert into the tyre.

Tyre material must not damage the racing surface.
Tyres must be black except for sidewall detail.
Tyres must have a IFMAR marking on both sides.
Foam inserts may be fitted inside the tyre.
Pneumatic tyres are NOT allowed.

Any driver using any other type of tyre will immediately be disqualified from the event and from all future IFMAR World Championship events.

6.6.4 Tyres are restricted in use during the Event:

Open Practice - four sets of four tyres only (no marking required) Timed Practice - one set of four tyres only

Qualifying - three sets of four tyres only

Finals - two sets of four tyres only (three sets for the World Championship Final)

Drivers must have their wheels and tyres marked by Technical Inspection. This marking may take place at any time.

Wheels/tyres must be marked by the Technical Inspector before being presented to Technical Inspection for timed practice heats, qualifying heats or finals.

Unmarked wheels/tyres may not be used on the car during qualifying heats and finals.

Technical Inspection shall be responsible for recording the number of tyres used by each driver.

6.7 BODYSHELLS

6.7.1 Body shells must be a scale replica of the original car used in the relevant FIA or National class. The original car must be a four-door type. Replicas of two-door original cars are not allowed.

6.7.2 Body shells may not be cut above the lower door line nor above the rear bumper line. When a bodyshell is registered with IFMAR a lower trim line must be moulded in to the body shell, or a minimum distance from the highest point on the body shell to the lower trim line must be specified by the body shell manufacturer.

6.7.3 Body shells must be securely fixed to the chassis at all times during a race. 6.7.4 Only one cutout, maximum l0mm diameter, may be made in the body except for clearance for the wheels (wheel arches), body mounting holes and lap timing

equipment.

6.7.5 All wheel arches must be cut out as on the original car. No more than l0mm clearance between the wheels and the wheel arches is allowed.

6.7.6 Cars shall be neatly finished. Details of all front and rear lights, air intakes, front grills and windows must be clearly contrasted from the surrounding paintwork.

6.7.7 All windows must be clear or translucent grey/black. Windows may not be cut out. However the driver may have his name on the side window.

6.7.8 Only body shells which are registered with IFMAR may be used.

6.7.9 One (1) sample of a body shell, together with photographs of the full-size car (showing at least three (3) views: front, side and rear) on which the body shell is based, must be sent to the IFMAR Electric Section Chairman five (5) months prior to the event together with a homologation fee of $US200. When registered by IFMAR, the body shell will be added to the register of body shells allowed for use at IFMAR ISTC World Championship events and the applicant will be notified.

6.7.10 The body shell must be a realistic scale facsimile of the full-size car on which it is based, with all features in proper proportion to each other. Lines indicating the shut-lines on the full-size car for bonnet (hood), boot (trunk) all doors and windows are to be moulded in to the body shell. Particular attention must be paid to realistic scale height, width, length, cabin area, scoops, vents, wings and aerodynamic devices. The decision of IFMAR to register the body shell will be final.

6.8 NUMBERS

6.8.1 Cars will carry three numbers. One number on each side, one number on the bonnet/hood or roof. Numbers must be at least 35 mm high, with a minimum stroke of 5 mm. Number decals may not be trimmed to eliminate the background.

6.9 BUMPERS

6.9.1 Foam bumpers may be fitted. No part of the bumper may extend outside the bodyshell when viewed from any direction, nor be lower than the chassis.

6.10 SPEED CONTROLLER

6.10.1 Mechanical or Electronic Speed Controllers are allowed. Reverse facility in speed controllers is not allowed.

Speed controllers may only have timed delay, current limiters and keyboard programs. These programs must only be capable of adjustment whilst the car is stationary.

FINISH

AMENDED OCTOBER, 2004
AMENDED JANUARY, 2005
AMENDED SEPTEMBER, 2005
AMENDED MARCH 2008
AMENDED NOVEMBER 2008
AMENDED NOVEMBER 2009