

# INTERNATIONAL AMATEUR RADIO UNION

## Region 1



## RULES FOR CHAMPIONSHIPS IN AMATEUR RADIO DIRECTION FINDING

### PART B – COMPETITION

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## **14. Categories**

14.1. Competitors are divided into the categories according to their sex and age.

14.2. Categories:

<b>Women (W)</b>	<b>Men (M)</b>	<b>Age</b>
W 19	M 19	19 and younger
W 21	M 21	regardless of age
W 35	M 40	35/40 and older
W 50	M 50	50 and older
	M 60	60 and older

14.3 Competitors belong to the M19 or W19 category up to the end of the calendar year in which they reach the age of 19.

14.4 Men competitors aged 40 or older or women competitors aged 35 or older belong to each category from the beginning of the calendar year in which they reach the given age.

14.5 To qualify as an IARU World Championship, a minimum of six societies must have applied to participate.

14.6 Each society may enter a team of up to three competitors per each category.

## **15. Training and model event**

15.1 For training purposes the organizing society shall offer a model event on both bands on the day prior to the first competition to demonstrate the transmitter features, the set-up of transmitters and antennas, the marking devices etc., which will be used in the competitions. If possible, also the terrain type and map quality shall be shown.

15.2 Competitors, Jury members, team officials, IARU officials and media representatives shall be invited to participate in the model event.

15.3 Equal opportunities for training in the model event shall be offered to all societies.

## **16. Starting order**

16.1 The start draw shall be supervised by an ARDF International Class Referee being the member of the Jury. The start draw may be public or private. It may be made by hand or by computer. The starting draw shall be done separately for each band.

16.2 The start list shall be published on or before the day prior to the competition and before the team officials' meeting.

16.3 All competitors and teams correctly entered shall be drawn, even including competitors who might not have arrived at that time.

16.4 Competitors from the same society and category may not start at the same time or consecutively. If they are drawn to start consecutively, the next competitor shall be inserted between them. If this happens at the end of the drawing list, the competitor before them shall be inserted between them.

16.5 The competitors start at equal start intervals. The normal start interval is 5 minutes.

16.6 All competitors of a particular category shall start into the same starting corridor and at the beginning of the same minute of the 5-minute cycle.

16.7 Competitors participating unofficially shall not start until 15 minutes after the last official competitor has started.

## **17. Team officials' meeting**

17.1 A team officials' meeting shall be organized on the day prior to each competition. This meeting shall start not later than 19.00 hours. The Chairman of the International Jury shall lead or supervise the meeting.

17.2 All competition material (start number bibs, start lists, transport schedules, latest information, etc) shall be handed out well before the meeting starts.

17.3 Team officials shall have the opportunity to ask questions during the meeting.

## **18. Terrain**

18.1 The terrain shall be suitable for setting competitive ARDF courses without any serious hazards to competitors and avoiding man-made objects which could interfere with direction finding activities.

18.2 The competition area shall not have been used for ARDF for as long as possible prior to the championship - at least not for the last two years - to guarantee fair play.

18.3 The competition area shall be embargoed as soon as it has been selected. All corresponding information published in the country of the championship should be handed over to the ARDF-WG Chairman for further dissemination.

18.4 Any rights of nature conservation, forestry, hunting, etc in the area shall be respected.

## **19. Courses**

19.1 The Principles for ARDF Course Planning (see Appendix 2) shall be followed.

19.2 The standard of the courses shall be worthy of international ARDF events. The technical and navigational skill, concentration and running ability of the competitors shall be tested. All courses shall call upon a range of different ARDF techniques.

19.3 Transmitters including the finish beacon shall be located not less than 400 meters apart. The transmitter nearest to the start shall be located not less than 750 meters from the start.

19.4 Course lengths shall be given as the length of a straight line from the start line via the transmitters in optimum order to the finish line. They should range from SIX to TEN kilometers.

19.5 Total difference in level of the points of the course (start, transmitters and finish) shall not exceed 200 meters.

19.6 In the event of a thunderstorm, the Chairman of the International Jury is entitled to recall the competition immediately.

## **20. Restricted areas and routes**

- 20.1 Rules set by the organizing society to protect the environment and any related instructions from the organizer shall be strictly observed by all persons connected with the event.
- 20.2 Out-of-bounds or dangerous areas, forbidden routes, line features that shall not be crossed etc. shall be described in the information and marked on the map. If necessary, they shall also be marked on the ground. Competitors may not enter, follow or cross such areas, routes or features.
- 20.3 Compulsory routes, crossing points and passages shall be marked clearly on the map and on the ground. Competitors shall follow the entire length of any marked section of their course.
- 20.4 The use of official transport during the Championship may be declared mandatory by the organizer.

## **21. Maps**

- 21.1 Maps and additional overprinting shall be drawn and printed according to the IOF International Specification for IOF Maps. The map scale shall be 1:15000 or 1:10000. Deviations need approval by the ARDF WG.
- 21.2 Errors on the map and changes which have occurred in the terrain since the map was printed shall be overprinted on the map if they have a bearing on the event.
- 21.3 On the day of the competition, the use of any map of the competition area by competitors or team officials is not allowed until permitted by the organizer.
- 21.4 The competition map shall cover the whole competition area including start, finish beacon and all transmitters. The starting point and the point of the finish beacon shall be clearly marked on the map.
- 21.5 Unless otherwise noted, the area covered by the map issued by the organizer shall be considered as the competition area.
- 21.6 The IARU and its member societies shall have the right of free reproduction of the event maps with courses in their official magazines.

## **22. Equipment used by competitors**

- 22.1 Every competitor shall have a direction finding receiver for the relevant band. The receivers shall meet the Technical Specifications for ARDF Equipment (see Appendix 1, section 1).
- 22.2 Start number bibs shall be clearly visible and be worn on the upper part of the body and on back and front of the competitors. The bibs shall not be larger than 25 x 25 cm with figures at least 14 cm high. The number bibs may not be folded or cut.
- 22.3 As long as the rules of the organizer do not specify otherwise, the choice of clothing and footwear shall be free.
- 22.4 On the day of the competition, the use of any telecommunication device by competitors or team officials is prohibited until permitted by the organizer. The penalty for this shall be disqualification. If the team official breaks this rule, the whole team shall be disqualified.

## **23. Starting tickets and marking devices**

- 23.1 Only ARDF WG approved starting tickets and marking devices may be used — see Appendix 3.
- 23.2 The starting ticket together with the competition map shall be handed out to the competitor 10 minutes prior to his/her start at the latest.
- 23.3 When non-electronic or combined systems are used, competitors are allowed to prepare the starting ticket, eg. by writing on it, by reinforcing it or by putting it into a bag, but not by cutting-off parts of the starting ticket.
- 23.4 When electronic systems are used, competitors must have the opportunity to practice them at the model event.
- 23.5 Competitors shall be responsible for marking their starting ticket at each transmitter using the marking device provided. They are responsible for correct markings which must be clearly identifiable.
- 23.6 Missing or unidentifiable control marks shall not be considered, unless it can be established with certainty that the competitor visited the transmitter and that the mark missing or unidentifiable is not the competitor's fault.

23.7 When systems with visible punch marks are used, at least a part of the marking must be in the appropriate box for this transmitter or in an empty reserve box. One mistake per competitor is acceptable, e.g. marking outside the correct box or jumping one box, provided all markings can be identified clearly. A competitor who attempts to gain advantage by inaccurate marking may be disqualified.

23.8 Competitors who lose their starting tickets shall be disqualified.

## **24. Start**

24.1 On arrival at the competition area, competitors shall place their receivers at the point indicated to them by the referee. Spare receivers and components, clearly marked as property of a particular team or competitor, shall be placed at an indicated point just beyond the starting line beside the starting corridor. All transmitters shall remain silent until collection of the receivers is completed.

24.2 All competitors shall have at least 45 minutes for undisturbed preparation and warm-up at the start area. Only competitors who have not started and team officials shall be allowed to enter the warm-up area.

24.3 The following information shall be shown on a special board at the start area:

- time limit
- transmitter frequencies
- starting list
- first start time (in local time)
- sample of the flag and marking device
- clock showing the official time of the competition

24.4 The start shall be organized with a pre-start before the time start, situated at one edge of the warm-up area. The competitors' names shall be called or displayed. Beyond the pre-start, only starting competitors and media representatives guided by the organizer are allowed.

24.5 Competitors shall enter the pre-start area TEN MINUTES before their own start. At the same time, they shall be given their receivers, maps and starting tickets (see 23.2).

24.6 The start shall be organized so that later competitors and other persons cannot see the maps and the route choices of the starters.

24.7 When the starting signal is given, competitors may switch on their receivers and shall run along the starting corridor. Reaching the end, they shall start searching for the hidden transmitters. Competitors shall not stop in the starting corridor except for a receiver malfunction.

24.8 Competitors, who find out a failure of their receiver, may return within their own running time to the starting line and take their spare receiver or parts from the referee. It is strictly forbidden to give or take any assistance to or from any person except referees.

24.9 At least two starting corridors shall be provided by the organizer. They shall not be longer than 250 meters. The end of each corridor shall not be visible neither from the start area nor from any part of the other corridor(s). The terrain at the end of the starting corridors should offer normal run ability. The end of the starting corridor shall be clearly marked.

24.10 Competitors who are late for their start time through their own fault shall be permitted to start. The starting referee shall determine at which time they may start which shall be as soon as possible but under consideration of the possible influence on other competitors. These late competitors shall be timed, however, as if they had started at their original start time.

24.11 Competitors being late for their start time because of a fault of the organizer shall be given a new start time.

## **25. Transmitters**

25.1 Transmitters used at IARU ARDF Championships shall meet the Technical Specifications for ARDF Equipment (see Appendix 1, section 2).

25.2 The antenna installation shall not be changed during the competition.

25.3 All transmitters including the beacon shall be well audible during the whole competition from the starting point, using a receiver of average sensitivity. All transmissions shall be monitored and recorded by the organizer.

25.4 Transmitters begin to operate after all receivers have been collected at the start. Transmitters shall remain operating until the end of the time limit of the last competitor. The beacon transmitter shall remain operating until all competitors have finished.

25.5 Transmitters shall operate on each band in the following sequence:

- finish beacon sending code MO continuously
- transmitter No.1 sending code MOE in the first minute
- transmitter No.2 sending code MOI in the second minute
- transmitter No.3 sending code MOS in the third minute
- transmitter No.4 sending code MOH in the fourth minute
- transmitter No.5 sending code MO5 in the fifth minute

- of the 5-minute cycle, starting at 0:00.

If the authorities of the organizing society make any transmitter identification compulsory such identification can only be transmitted during the active minute.

25.6 Transmitters shall be searched for by each category as follows:

- M21 category shall search all six transmitters including the finish beacon.
- M19 category shall not be scored for transmitter No. 3 (MOS)
- M40 category shall not be scored for transmitter No. 5 (MO5)
- M50 category shall not be scored for transmitter No. 2 (MOI)
- M60 category shall not be scored for two transmitters defined by the siting referee.
- W19 category shall not be scored for transmitter No. 2 (MOI)
- W21 category shall not be scored for transmitter No. 4 (MOH)
- W35 category shall not be scored for transmitter No. 1 (MOE)
- W50 category shall not be scored for two transmitters defined by the siting referee.

25.7 The order in which competitors search for and discover the transmitters is entirely at their discretion.

25.8 The finish beacon shall be placed at the entrance of the finish corridor.

25.9 Transmitters No.1 through 5 and the finish beacon shall be marked by a flag consisting of three squares 30 x 30 cm arranged in a triangular form. Each square shall be divided diagonally, one half being white and the other orange or red.

25.10 The flag shall be close to the transmitter antenna but not further away than 4 meters. The flag shall be visible to competitors when they reach the transmitter antenna.

25.11 To prove the passage of the competitors, there shall be at least two or more marking devices in the immediate vicinity of each flag.

25.13 Each transmitter must be easily recognizable by its code number (one to five), which shall be fixed to the flag for easy identification by the competitors. In case of competitions with transmitters working on two different frequency bands there must be another clear sign indicating the frequency band of the transmitter.

25.14 All transmitters shall be guarded. Normally each transmitter is attended by the transmitter operator and a member of the International Jury.

25.15 The time at which each competitor finds a transmitter shall be recorded.

## **26. Finish and time-keeping**

26.1 The competition ends for a competitor when crossing the finishing line.

26.2 The finish corridor begins at the finish beacon and ends at the finish line. Its entrance shall not be wider than 10 m. It shall be clearly marked on both sides by uninterrupted tape. The last 20 m shall be straight. The length of the corridor shall be indicated by the siting referee at the team officials meeting a day prior to the competition.

26.3 The finish line shall be at least 3 m wide and shall be at right angles to the direction of the run-in. The exact position of the finish line shall be obvious to approaching competitors.

26.4 The finishing time shall be measured when the competitor's chest crosses the finish line. Times shall be rounded down to whole seconds. Times shall be given in either hours, minutes and seconds or in minutes and seconds only.

26.5 After a competitor has crossed the finish line, the starting ticket and, if so required, the competition map have to be handed over to the organizer.

26.6 Having crossed the finish line, a competitor may not re-enter the competition terrain without the permission of the organizer. A competitor who retires shall announce this at the finish immediately and hand in the map and starting ticket. That competitor shall in no way influence the competition nor help other competitors.

26.7 There shall be medical facilities and personnel at the finish, who are also equipped to work in the forest.

26.8 The time-keeping system shall meet the Technical Specifications for ARDF Equipment (see Appendix 1, section 3).

## **27. Results**

27.1 The place of an individual competitor depends on (first) the number of transmitters found and (second) his or her running time. Only transmitters which are scored for the particular category are considered. Competitors who have failed either to find any transmitter or who have exceed the time limit, shall not be classified.

27.2 The place of a team depends on (first) the sum of transmitters found and (second) the sum of times reached by the two classified team members possessing the best results.

27.3 Two or more competitors or teams having the same result shall be given the same placing in the results list. The position(s) following the tie shall remain vacant.

27.4 Provisional results shall be announced and displayed in the finish area during the competition. The official results shall be published not more than 2 hours after final approval of the provisional results by the Jury. They shall be handed out on the day of the competition to each team manager and to accredited media representatives and presented openly at three different places for general information at least.

27.5 The official results shall include all participating competitors and teams.

27.6 At the end of the championship every competitor, Jury member, team official and accredited media representative shall receive an official results list and the competition maps. Further result lists and maps may be sold at a small charge to all interested.

## **28. Prizes**

28.1 The title of World Champion or Regional/Continental Champion shall be awarded for the 3,5 and 144 MHz competitions and for each official category separately.

28.2 The following prizes shall be awarded in all competitions:

- 1st place Gold medal and certificate
- 2nd place Silver medal and certificate
- 3rd place Bronze medal and certificate
- 4th–6th place Certificate

28.3 If two or more competitors or teams have the same placing, they shall each receive the appropriate medal and/or certificate.

28.4 In the team classification, each classified member of the team shall receive the appropriate medal and/or certificate.

28.5 The organizer shall arrange a dignified prize-giving ceremony.

28.6 The prize-giving ceremonies shall be performed by the representatives of the organizing society and the IARU Regional Organization.

28.7 During the prize-giving ceremony, the national flags of the first three competitors/teams should be flown and the national anthem of the winner may be played.

## **29. Fair play**

29.1 All persons taking part in an ARDF event shall behave with fairness and honesty. They shall have a sporting attitude and a spirit of friendship. Competitors shall show respect for each other, for officials, journalists, spectators and the inhabitants of the competition area. The competitors shall be as quiet as possible in the terrain.

29.2 It is absolutely forbidden to give or take any assistance to or from any person, including competitors, or to utilize any means of transport, except:

- assistance provided by referees within the scope of their defined duties, as long as that assistance is equally available to all competitors;
- it is the duty of all competitors to help injured runners. No competitor will be disqualified for giving or receiving such an assistance, as long as he or she does not gain competitive advantage by doing so.

29.3 Doping is forbidden. The ARDF WG or during a championship the Jury may require doping control procedures to be conducted.

29.4 The organizer, with the consent of the ARDF WG, may decide to publish the venue of the competition in advance. If the venue is not made public, all officials shall maintain strict secrecy about the competition area and terrain. In any case, strict secrecy shall be kept about the courses.

29.5 Any attempt to survey or train in the area embargoed by the organizer is not allowed. Attempts to gain any information related to the courses, beyond that provided by the organizer, are not permitted before and during the competition.

29.6 Team officials, competitors, media representatives and spectators shall remain in the areas assigned to them.

29.7 Members of the international Jury and transmitter operators shall neither disturb nor detain any competitor, nor supply any information whatsoever. They shall remain quiet, wear inconspicuous clothing and shall not help competitors approaching transmitters. This also applies to all other persons in the terrain.

29.8 A competitor who breaks any rule, or who benefits from the breaking of any rule, shall be disqualified.

## **Appendix 1: Technical Specifications for Amateur Radio Direction Finding Equipment**

### **1. Receivers**

- 1.1 Receivers and antennas of any type may be used by the competitors.
- 1.2 Any receiver producing audible interference in the 3,5 MHz or 144 MHz band at a distance of 10 meters or more shall not be used in the competitions.
- 1.3 The International Jury may require tests on any competitor's receiver prior to its use in the competitions.

### **2. Transmitters**

- 2.1 It is the responsibility of the organizing society to ensure that all transmitters in use comply with the relevant radio regulations in force in the country of operation with regard to their electric parameters, identification and to their being operated only by duly authorized operators.
- 2.2 All transmitters within one competition shall have the same parameters and the same antenna installation.
- 2.3 The frequency of the beacon transmitter shall be significantly different from the frequency of the other five transmitters.
- 2.4 When not scheduled to be transmitting, neither transmitter nor its antenna may radiate any RF energy.
- 2.5 Antennas shall provide omnidirectional horizontal radiation patterns.
- 2.6 Specifications for the 3.5 MHz transmitters:
  - Carrier frequency \* 3510 ... 3600 KHz
  - Frequency stability better than 50 ppm
  - Undesired products level conforming to the national regulations
  - Output RF power 1 - 5 W
  - Mode A1A (keyed unmodulated carrier)
  - Keying speed 8 ... 12 WPM
  - Antenna vertical
- 2.7 Specifications for the 144 MHz transmitters:
  - Carrier frequency \* 144.5 ... 144.80 MHz
  - Frequency stability better than 50 ppm
  - Undesired products level conforming to the national regulations
  - Effective Radiated Power (ERP) 0,25 - 1 W
  - Mode A2A (keyed carrier modulated by AF tone or continuous carrier modulated by keyed AF tone)
  - Modulation depth 75 ± 5%
  - Keying speed 8 ... 12 WPM
  - Antenna polarization horizontal
  - Antenna height 2 ... 3 meters above ground level

*Note: ( \* ) Carrier frequency ranges indicated in these Rules are those normally used by IARU Region 1 societies. Organizers in other Regions may employ different ranges to meet their band plan regulations. According to Part A 7.4 of these Rules transmitter frequencies are to be stated in bulletin 2, which is to be dispatched 5 months before the event.*

### **3. Time-keeping system**

- 3.1 The official competition time shall correspond to the official local time.
- 3.2 Two independent time-keeping systems, a primary and a secondary, shall be used.
- 3.3 The maximum deviation of the clocks at the start and finish line is ONE SECOND against the official time during the whole competition.
- 3.4 The maximum deviation of the transmitting periods is FIVE SECONDS against the official time during the whole competition. The maximum transmitting overlap of two transmitters is FIVE SECONDS.

#### **4. Other equipment**

4.1 Any other equipment used by the organizer (service radio net, time-keeping system, computers, electronic marking devices etc.) shall not cause audible interference to competitors' receivers.

## Appendix 2: Principles for course planning

### **1. Introduction**

#### **1.1 Purpose**

These principles aim at establishing common standards for the planning of ARDF courses in order to ensure fair competitions and to safeguard the unique character of ARDF.

#### **1.2 Application of these principles**

Courses in all international ARDF events shall be planned in accordance with these principles. They should also serve as general guidelines for the planning of other competitive ARDF events.

### **2. Basic principles**

#### **2.1 Aim of good course planning**

The aim of course planning is to offer competitors courses correctly designed for their expected abilities. Results shall reflect the competitors' technical and physical ability.

#### **2.2 Siting referee's golden rules**

The siting referee shall keep the following principles in mind:

- the unique character of ARDF: the combination of direction finding under time stress and the physical ability
- the fairness of the competition
- competitors enjoyment
- the protection of wildlife and the environment
- the needs of the media and spectators

##### **2.2.1 Unique character**

Every sport has its own character. The unique character of ARDF is to find a number of transmitters hidden in unknown terrain against the clock. This demands special skills: handling of the direction finding receiver and interpreting measurements, accurate map reading, route choice evaluation, concentration under stress, quick decision making, running in natural terrain, etc.

##### **2.2.2 Fairness**

Fairness is a basic requirement in competitive sport. Unless the greatest care is taken at each step of course planning and transmitter placing, luck can easily become significant in ARDF competitions. The siting referee shall consider all such factors to ensure that the contest is fair and that all competitors face the same conditions during every part of the course.

##### **2.2.3 Competitors enjoyment**

The popularity of ARDF can only be enhanced if competitors are satisfied with the courses they are given. Careful course planning is therefore necessary to ensure that courses are appropriate in terms of length, physical and technical difficulty, transmitters siting, etc. In this respect it is particularly important that each course is suitable for the competitors doing that course.

##### **2.2.4 Wildlife and the environment**

The environment is sensitive: wildlife may be disturbed and the ground as well as the vegetation may suffer from overuse. The environment also includes people living in the competition area, walls, fences, cultivated land, buildings and other constructions, etc. It is usually possible to find ways to avoid interference with the most sensitive areas without damage. Experience and research have shown that even large events can be organized in sensitive areas without permanent damage if the correct precautions are taken and the courses are well planned.

It is very important that the siting referee ensures that there is access to the chosen terrain and that any sensitive areas in the terrain are discovered in advance.

### **3. ARDF course**

#### **3.1 Terrain**

The terrain shall be chosen so that a fair competition is being offered to all competitors. To safeguard the character of the sport, the terrain should be run able and suitable for testing the ARDF skills of the competitors. On a good ARDF course, competitors are forced to concentrate on navigation throughout the race. Sections requiring no attention to navigation should be avoided (if possible).

Alternative routes force competitors to use the map to assess the terrain and to draw conclusions from it. Route choices make competitors think independently and will split up the field, thus minimizing "following". A good course shall disperse the competitors throughout the competition area and not bring them together. The transmitters should be intentionally placed and numbered so that competitors of different categories have different "optimum first" transmitters. The direction of the starting corridor carries also a certain weight in these considerations.

Courses should not contain route or transmitter order choices resulting in any advantage or disadvantage which cannot be foreseen from the receiver or the map by a competitor under competitive conditions. Course sections which encourage competitors to cross the start or finish area or forbidden or dangerous areas must be avoided.

### **3.2 Start**

The start area should be so situated and organized that:

- there is a warm up area and shelter sufficient for all competitors
- waiting competitors cannot see taking bearings or route choices made by those who have already started.

The starting point should not be located in the best part of the competition area – an area of 1.5 km in diameter around the start cannot be used for transmitters.

The starting corridors shall be easy-to-run and clearly marked, especially at their ends and the following terrain should be open for running.

All transportation from the start to the finish (garments of competitors, accompanying people) shall be well organized in order to prevent information transfer in reverse direction.

### **3.3 Transmitters**

Transmitter sites are the most important element of an ARDF course and will largely determine its quality. It is particularly important that the map portrays the ground accurately in the vicinity of the transmitters. There shall be no objects disturbing the electro-magnetic field and therefore obstructing correct measuring in the vicinity of the transmitters.

It is necessary to choose transmitter sites with greatest care. Especially the 'acute angle' effect must be avoided meaning that incoming competitors will be led into the transmitter site by outgoing runners.

The mechanical performance of the transmitter, antenna and registering device with a flag shall be rugged. The transmitter and its accessories shall continue operation for about eight hours under ANY circumstances. The antenna of the transmitter shall be properly installed and the transmitter final stage shall be well tuned into the antenna. The counterpoises shall be installed in a way that they do not offer any problems to competitors running over them.

Flags should be positioned such that competitors may see them when they have reached an area about ten meters around the transmitter. For fairness, the visibility of the flag should be the same whether or not there is a competitor near it.

If transmitters used in competitions on two bands are being sited too close to each other they may mislead competitors having navigated correctly to the area of the wanted transmitter. In these cases, the flags of particular bands shall be of different colors (e.g. red/white flags for 3.5 MHz and orange/white flags for 144 MHz) and shall be clearly marked with regard to the transmitter number and the frequency band. If transmitters on different bands have to be sited closer than 200 m, they shall be installed at the same place with the two flags about 5 m apart showing competitors that transmitters for both bands are being installed.

### **3.4 Finish**

The arrangement of the finish beacon, finish corridor and the whole finish area shall be distinct, clear and not confusing.

The finish corridor shall be easy-to-run, as straight as possible and at least 3 m wide. Two protective zones along both sides of the finishing corridor are recommended for better visibility and to prevent spectators from getting into the competitors' way.

#### **4. Siting referee**

The siting referee should be fully acquainted with the terrain before he or she starts to plan the course. The siting referee should also be aware that on the day of the competition the conditions regarding map and terrain could be different from those which exist at the time the courses are planned.

The person responsible for course planning shall have an understanding and appreciation of the qualities of a good course gained from personal experience. He or she shall also be familiar with the theory of course planning and appreciate the special requirements of different categories.

The siting referee shall be able to assess, on site, the various factors which can affect the competition, such as the conditions of the terrain, the conditions of radio wave propagation, the quality of the map, the presence of participants and spectators, etc.

The siting referee is responsible for the courses and the running of the competition between the start and the finish line. It is strongly recommended that the siting referee's work shall be checked by another qualified referee to avoid errors which might have serious consequences.

### **Appendix 3: Approved starting tickets and marking devices**

1. The only automatically approved control registering systems is the traditional pin punch and starting ticket system.
2. The starting ticket shall satisfy the following specifications:
  - it shall be made of resistant material and not exceed 7cm x 16 cm in size,
  - each punch box shall have a minimum side length of 18 mm,
  - one box shall be clearly marked as reserve box,
  - the size of figures in punch boxes shall be at least 12 x 8 mm.
3. The use of any other control registering system requires prior approval of the ARDF WG.

#### **Appendix 4: IARU ARDF International Class Referees**

1. An IARU ARDF International Class Referee is an experienced ARDF official supervising at ARDF events the strict observation of the Rules.

2. There are two classes of the IARU ARDF International Class Referees:

- Active Referees and
- Honorary Referees

Unless otherwise noted, only Active Referees are considered in the ARDF Rules.

3. Candidates for nomination as an IARU ARDF International Class Referees shall fulfill the following conditions:

- to be a holder of a valid amateur radio transmitting license
- to be a member of an IARU member society
- to be presented by the ARDF manager of his society
- to be familiar with ARDF Rules, guidelines and all ARDF WG documents concerned.
- to be able to communicate in English
- to be physically able to serve in the competition terrain

4. Candidates for nomination as an IARU ARDF International Class Referee shall be submitted by his or her national member society to the relevant regional ARDF WG confirming that the candidate fulfills the conditions listed in paragraph 3. The Chairman of the ARDF WG shall send the request for nomination (with his comment) to the relevant regional Executive Committee for final approval. After approval of the Executive Committee, a written certificate is issued to the newly appointed referee.

5. The number of IARU ARDF International Class Active Referees shall not exceed FIVE per one member society.

6. Any referee who has not served once as Jury member at national or international ARDF events organized by the IARU or one of its societies for five consecutive years, shall be moved automatically to a Honorary Referee. At the start of every year the ARDF WG shall update the list of IARU ARDF International Class Referees, moving – if the case appears – inactive referees from the list of Active Referees to the Honorary Roster. Honorary Referees may be turned back to the Active list by request of his or her society.

7. Societies having IARU ARDF International Class Referees shall send as per December 31<sup>st</sup> a list to the chairman of the ARDF WG showing the activities of their referees in the year ended.

## **Appendix 5 : Starting list preparation**

At the evening of day one (arrival day) of a championship the nominations of all competitors shall be in the hands of the organizer.

To prepare the starting list all nominations are to be split up into their corresponding categories and these into one of the following two groups:

- categories with up to 40 competitors - in which competitors shall start as singles ;
- categories with more than 40 competitors - in which two competitors shall start together .

*Note: When presenting the list of competitors to the organizing society (see part A – Organization, para.8.3.) team leaders are requested to indicate also the starting sequence of the competitors in the categories.*

To guarantee fairness and to avoid any chances of manipulation it is obvious that the preparation of the starting list becomes of outstanding importance for any championship. The following balloting procedure has been designed to fulfill these requirements and organizers shall make themselves acquainted with the balloting method well in advance of the event. Although appearing rather complex - especially the following procedure in written form - organizers will soon gain experience how to handle the system. Furthermore it is to be expected that suitable computer software shall be offered shortly by the ARDF WG.

At larger competitions with many societies having nominated the maximal number of competitors in all or nearly all categories the manual procedure to set up the start-list cannot be carried out keeping all conditions that are essential. The manual procedure has then to be replaced by a computer program that fulfills all given conditions.

### **Balloting procedure to prepare the starting list for categories with up to 40 competitors:**

*Note: Categories might be merged during the balloting process if this does not increase the number of the starting groups.*

Single competitors and those belonging to teams of two or three have to be spread equally over the three thirds of the starting period. This is easy for teams of three: every competitor shall be placed into a different starting third. Competitors of teams of two and single runners, however, are to be spread by the following balloting procedure:

Balloting shall start by drawing lots for the two person teams (alphabetical order of the societies involved). For this procedure a balloting box has to be filled with three lots each marked with the number of the corresponding starting third. Two of these lots shall be drawn for the first two person team and the two runners shall start in the corresponding starting thirds. The lot which is still in the box shall be drawn for the next two person team. As there are no more lots in the box the three lots shall be replaced into the box and another lot shall be drawn for the second runner of the second two person team. The remaining two lots shall be drawn for the third team. The box shall then be refilled again and balloting continues until all two person teams have been distributed equally over the three starting thirds. The same procedure shall be applied to distribute the single runners.

Now follows the determination of the starting sequence of this category. Lots carrying the numbers of their starting thirds (as used before) have to be marked also with the name of the society they stand for (except all blanks, of course, which are to be employed in this process as well - see further below). Three balloting boxes are required - one for each start third. Into each of these boxes one lot for each runner of a three person team is to be placed. Also the lots of the balloting procedure of the teams of two and the single runners must be added to the corresponding boxes. Eventual unequal numbers of lots in any of the three boxes must be compensated by blanks. Further blanks are to be added to every box until the total of lots in each box corresponds to a third of the starting groups of the category having the highest number of starting groups in the championship. There must be a minimum of 27 lots spread over the three boxes, however, because a society can send up to 27 competitors (3 runners in 9 categories).

For the final preparation of the starting list please see further below.

### **Balloting procedure to prepare the starting list for categories with more than 40 competitors:**

Competitors of these categories have to be split up into "top-runners" and "other-runners". To become being selected into the top-runners list the organizer shall consider the results lists of the last two ARDF Championships and doing so it will be irrelevant if the same or another sportsman has been nominated for the category concerned. Decisive is only the society to whom she or he belongs. It will be taken for granted that a new sportsman of a certain society will be as good as his previous colleague.

For ARDF World Championships top-runners shall be selected on basis of the last two ARDF World Championships. For Regional Championships the results of the last two Regional Championships shall be considered.

Considering the results of the two 3,5 MHz and the two 144MHz competitions of the last two championships and starting with position no. 1 and working down from top to bottom the organizer shall note separately for every category all those societies which have had runners in top positions. All competitors (of a certain category) nominated by these societies shall then be listed as "top runners" until reaching *at least* 50% of the total number of competitors in this category. For this procedure it shall be irrelevant if these societies have nominated teams of three or two or single runners. The other *competitors* of this category shall be listed as "other runners".

*If the results lists of the last two championships do not yield 50% "top-runners" competitors from the remaining societies should be considered. The sequence of the societies shall be in alphabetical order. The introduction of the new categories requires during a transition period the following adoption when selecting "top-runners":*

WOM=>W19, W21, W35, W50  
JUN => M19  
SEN=> M21  
OT => M40, M50  
VET=> M60

*As for categories with less than 40 participants follows now the preparation of the two independent balloting procedures for "top-runners" and "other-runners". First teams of two and single runners shall be distributed equally over the three start thirds. Then to each box of the three thirds an equal number of runners of the three person teams has to be added (not to forget eventual blanks) and finally the lots shall be drawn - as described below - to determine the starting sequence of the "top-runners" of this category. Nearly the same procedure shall be applied to establish the starting sequence of the "other-runners". However, before drawing, the blanks have to be placed into those start groups which are already filled with blanks of the top runners of the same category. Then the lots of the "other runners" are being drawn and distributed over the various start groups.*

**Final preparation of the starting list:** lots resulting from the previous balloting procedures for each category and each starting third have been placed already into boxes - one for each starting third and category. Drawing one lot after the other and starting with box number 1 (and starting e.g. with the seniors category) the organizer sets up the starting list for this category. If the first third has been finished, starting thirds two and three shall follow. If by changing from one box to the next the last drawn society and the one drawn out of the new box are the same, the lot drawn last shall be placed one start group later and the empty space be filled by the following lot. A similar procedure applies if two runners of the same society should have been drawn for the same start group (within different categories, of course). If placing of such a lot into the next later start group should be impossible (because the following group(s) is/are being filled already with this very society for other categories) that lot shall be placed at the first possible location in exchange for a lot that might be in this position. If a replaced lot should also not fit the exchange process has to continue and in case this should occur at the end of a starting third, the exchange process has to return to the start of this third only.

After all lots of the first category have been drawn and their starting positions been marked balloting must continue for the other categories under the same conditions as mentioned before until the starting list is set up completely.

If arranged in a suitable way the drawing procedure as mentioned above offers excellent opportunity for media and public attention. The best time for drawing would be the morning of the day after arrival. Studying the results lists of the last two earlier championships well before this day the organizer has ample time to prepare all that is required to finish this spectacular procedure within a reasonable time. Supervised by one or several Jury members the lots being drawn - carrying so far only the names of the societies - could be fixed on a large board (or any other suitable display) visible to all present. As the inscription of all participants has been finished by now the organizer should have at his disposal a name-list of all competitors with indications of their team leaders in which *sequence their runners* should start. So each lot on the board shall be marked with the name of the corresponding competitor and the organizer can enter all details into his computer system to print the start list for immediate distribution.

Although spectacular, it is obvious that a manual balloting procedure will consume a certain time span (two to three hours should be considered). So if the organizer should prefer to employ an electronically balloting procedure he shall obtain permission by the chairman of the ARDF Working Group as early as possible but not later than three months before the start of the championship *indicating at the same time the software that is to be applied.*

*Any computer program must perform the same conditions as the manual balloting procedure. Improvements considering the balloting procedure as such are permitted.*

*The permission by the chairman* shall be granted only if a) the organizer intends to use an approved software for the balloting process, or b) the organizer obtains approval for his own software.

To obtain approval of any balloting software, this software together with description and documentation of the algorithms used has to be sent to the chairman of the ARDF WG *at least six months before the championship.* The software shall be tested and having been passed the software becomes "approved software for balloting in ARDF Championships". Such software shall be added to a software pool and becomes public domain for use at International Championships.

*An electronically balloting procedure shall be carried out on a computer determined by the ARDF WG Chairman. The organizing society shall present the list of all participants. The result lists of the last two championships shall be supplied by the chairman.*

## Appendix 6: Rules for Youth Regional ARDF Championships

*These Rules are based on the Rules for Championships in Amateur Radio Direction Finding. The points as stated below replace equally numbered points of part A and B of the Rules.*

Y1.6 A Youth Regional ARDF Championship is the event to award the title of Youth Regional Champion in ARDF. A Youth Regional ARDF Championship is organized by an amateur radio society authorized by its corresponding IARU Organization.

Y3.1 A Youth Regional ARDF Championship is an annual event.

Y4.3 Application sheets are to be received by the Chairman of the ARDF WG not later than January 31st two years prior to the year of the Championship.

Y5.4 Each society may enter two teams in each category and a number of team officials. The organizer shall fix the maximum number of officials per team, in accordance with the available facilities. This maximum number shall be the same for each team and shall be at least 5.

Y5.5 Not valid at Youth Regional ARDF Championships.

Y6.4 Not valid at Youth Regional ARDF Championships.

Y9.1 The International Jury for Youth Regional ARDF Championships shall consist of the following members:

- Chairman of the Jury
- Secretary of the Jury
- Siting referee
- representative of each participating society

Y9.2 The Chairman of the Jury at a Youth Regional ARDF Championship shall be an ARDF International Class Referee authorized by the relevant regional ARDF WG.

Y9.3 The referees in the competition area, at start and finish and the siting referee shall be experienced referees provided by the organizing society.

Y9.4 The names of the members of the International Jury shall be recorded and announced at the first Jury meeting at the Championship at the latest.

Y14.2 Categories:

Women (W)	Men (M)	Age
W 15	M 15	15 and younger

Y14.3 Competitors belong to the M15 or W15 category up to the end of the calendar year in which they reach the age of 15.

Y14.6 Each society may enter two teams of up to three competitors per each category.

Y19.3 Transmitters including the finish beacon shall be located not less than 400 meters apart. The transmitter nearest to the start shall be located not less than 500 meters from the start.

Y19.4 Course lengths shall be given as the length of a straight line from the start line via the transmitters in optimum order to the finish line. They should range from THREE to FIVE kilometers for the D15 category and FOUR to SIX kilometers for the M15 category. The number of transmitters which are to be searched for shall not exceed the length of the course in kilometers.

Y25.6 Transmitters shall be searched for by each category as follows:

- M15 category shall search for three to all five transmitters.
- W15 category shall search for three to four transmitters.

The transmitters which are not to be searched for are determined by the siting referee.

Y24.3 The following information shall be shown on a special board at the start area:

- time limit
- transmitter frequencies
- starting list
- first start time (in local time)
- sample of the flag and marking device
- clock showing the official time of the competition
- transmitters to be searched for by particular categories.

Y25.14 All transmitters shall be guarded.