

WRTC 2018 Competition Rules



These are the official competition rules for the World Radiosport Team Championship 2018 in Germany. They replace any previous version. Any questions should be addressed to competition@wrtc2018.de or to the WRTC 2018 Mailing List (<http://www.wrtc2018.de/index.php/en/ueber-uns-2/maillinglisten-2>).

1. Contest Period

The WRTC 2018 competition will be held concurrent with the IARU 2018 HF Championship.

Start:	Saturday	July 14 th , 2018	12:00 UTC (14:00 local)
End:	Sunday	July 15 th , 2018	11:59 UTC

2. Frequencies / Bands

Only the 3.5, 7, 14, 21, and 28 MHz bands may be used. All participants must comply with the frequency regulations of the Bundesnetzagentur

(http://www.gesetze-im-internet.de/afuv_2005/-anlage_1.html) .

Contestants must not operate outside of the allocated ham-radio bands and should follow the band plans recommended

for IARU region 1(<http://www.iaru-r1.org/index.php/spectrum-and-band-plans/hf>) .

3. Modes of operation

CW and SSB.

4. Language

Only English language and common international abbreviations may be used when operating either SSB or CW.

5. Contest Exchange

- 5.1 WRTC stations must send signal report plus ITU zone (DL is ITU Zone 28). A complete exchange must be sent and logged for each valid QSO.
- 5.2 Apart from 5nn no other abbreviations are allowed when sending the exchange either on SSB or CW. Operators must say 5-9 28 on SSB resp. 5nn 28 or 599 28 on CW. Further cut numbers such as enn28 are not allowed. Operators may increase the speed of the exchange up to a maximum of 50 WPM. Voice recorders are allowed to send the exchange on SSB.

6. Valid QSOs

Each callsign may be worked once on CW and once on SSB per band. Cross-band or cross-mode QSOs are not allowed.

7. QSO Points

Each valid two-way CW or SSB QSO is worth the following QSO points:

QSO	Points
Within Europe	2
Outside Europe	5

8. Multipliers

- 8.1 The total number of DXCC countries plus IARU member society HQ stations on each band will count as multipliers, once per band regardless of the mode. IARU officials represent a maximum of four multipliers per band (AC, R1, R2 and R3).
- 8.2 IARU member society HQ stations and officials do not count for DXCC country multiplier.

9. Score

The final score will be:

$$\text{Score} = (\text{Total number of multipliers}) \times (\text{the sum of QSO points}).$$

After adjudication the Judging Committee will calculate the final score for all entries based on Cabrillo logs submitted.

10. Champions

The WRTC 2018 Champion will be the team with the highest score.

11. Special Awards

- The WRTC 2018 SSB Leader will be the team with the highest QSO total on SSB.
- The WRTC 2018 CW Leader will be the team with the highest QSO total on CW.
- The WRTC 2018 Multiplier Leader will be the team with the highest total number of multipliers.
- The WRTC 2018 Accuracy Leader will be the team with the lowest percentage of callsign/exchange errors.

As WRTC is a mixed mode contest, to apply for Single mode Special Awards a minimum of 35% of the total number of QSOs must be made in another mode.

12. Special Rules and Disqualification

- 12.1 WRTC 2018 stations must be QRT for at least 15 minutes prior to the contest start (by 11:45 UTC). The receiver volume of both radios must be turned fully off and no monitoring or transmitting is allowed within this 15-minute timeframe. The radios may be left powered on.
- 12.2 The operators are not allowed to intentionally identify themselves (i.e., revealing their own callsigns) before or during the contest or reveal their team identity in any way. Any attempt to do this such as by radio, telephone, SMS, internet, email, etc., may result in immediate disqualification. Requesting QSOs (e.g., setting schedules with special identification procedures in any way) before the contest period is strictly forbidden.
- 12.3 Operators may request QSOs with any station on another band/mode. All requests must be made during the contest period with no other attempt to reveal the team's identity. All requests can only be made on HF CW or SSB, and by no other means.

- 12.4 Use of DX spotting (e.g., Packet, Web, etc.), skimmer or any other spotting and supplementary information network is not allowed. Operators are not allowed to receive any assistance to learn the callsign or exchange of any station other than by tuning the radio and listening by human ear.
- 12.5 The use of any callsign database or the 'Super Check Partial' tool is not allowed. If the logging software incorporates this kind of feature, it must be disabled. The logging computer(s) may display a 'Check Partial' list based only upon the callsigns already worked during the contest.
- 12.6 The WRTC Contest is the equivalent of the Ham Radio Olympic Games. To maintain the spirit and credibility that this name implies, the Judging Committee may disqualify a team that commits any of (but not limited to) the following actions:
- Violation of the rules of the contest.
 - Unsportsmanlike conduct.
 - Taking credit for excessive unverifiable QSOs or unverifiable multipliers.
- 12.7 WRTC stations should not encourage "cheerleading", i.e. QSOs in which supporters make QSOs with only a favoured team or exclusively spot that team on the DX-cluster. Cheerleading should be actively discouraged by the competitors and abuses through the use of cheerleading may result in QSOs being removed from logs as deemed necessary to assure a fair competition.
- 12.8 The decisions of the Judging Committee are final.

13. Callsign Allocation

The callsigns assigned to the competitors will be selected from special calls in a "to be determined" series. The process of assigning calls and stations will be randomly designated by lottery on Friday, July 13th, 2018 before the contest. The competition callsigns will be given to the teams by their referee at the station 15 minutes before the contest at 11:45 UTC on Saturday, July 14th, 2018. Team members are not allowed to know the callsign before this time.

14. Logging

- 14.1 Computer logging is required.
- 14.2 Each WRTC 2018 team must submit its log file in Cabrillo format to their referee until 12:30 UTC of Sunday, July 15th, 2018. In addition the log needs to be provided in the source-format of the logging-software (e.g. wt4-Files for win-test).
- 14.3 All competitors are required to use one of the following logging programs:
 - Writelog
 - Win-Test
 - TR4W (TR for Windows)
 - N1MM Contest Logger
 - DXLog.net
 - SkookumLogger

Other software that meets the requirements of Cabrillo output and database limitations may also be acceptable with written permission from the WRTC 2018 Organizing Committee at least 90 days prior to the contest. The team is solely responsible to ensure the software conforms to WRTC 2018 standards as defined in these rules. The Cabrillo log needs to assign the transmitter id "t" according to Cabrillo-standard, i.e. by two different parameters "0" and "1" to identify the radio used for the QSO. For instance Win-Test needs to be configured in M/2 with Overlay WRTC. Other logging programs need to be configured similarly to indicate the radio.

Details of the Cabrillo-format can be found on:

<http://wwrof.org/cabrillo/cabrillo-qso-templates/>

- 14.4 In any case, it is the sole responsibility of the competing teams to create Cabrillo-compliant code with the software used in the contest. The Committee does not assume any responsibility for the conversion of log data into Cabrillo format.
- 14.5 Logging software must be configured to broadcast current score information for publication during the contest.

15. Recording

- 15.1 After the contest, each team must provide to the referee a continuous stereo audio recording of Radio A and Radio B on one of the following storage devices:
 - USB2 compatible device (USB flash memory, USB hard drive)
 - CD/DVD disk

The recordings should be separated into two audio files, one for each radio. Recordings may be established in one of the following two formats:

- Two (2) separate files, one for each radio.
 - One file with each radio on a separate channel.
- 15.2 The Judging Committee has the right to remove any claimed contacts not found in the recordings. Upon demand the teams must provide additionally the associated player, e.g. if non-standard audio formats are used.

16. WRTC 2018 Station Setup

- 16.1 Each participating WRTC team must bring everything needed for their station except items listed in Station Description.
- 16.2 Each WRTC 2018 station will have two radios – Radio A and Radio B.
 - 16.2.1 Radio A and Radio B can each use only one antenna connector. This means that every transmission and reception must go through a single antenna connector of that Radio. No external receive antennas are allowed. External band-pass filters are allowed in the receive line if desired.
 - 16.2.2 Use of any sub receiver in radios that are so equipped, is not allowed. This includes diversity receiving. Radios are not allowed to receive on two frequencies simultaneously. For a two-channel (or multi-channel) radio (which has sub-receiver or parallel reception capabilities), which allows reception of signals on different frequencies simultaneously, the sub-receiver (or that parallel reception) must not be used. If the sub-receiver is technically required to operate the bandscope/waterfall, then technical means (e.g. mono headphone adapter) need to assure that no audio of the subreceiver can be utilized.
 - 16.2.3 Operators are allowed to share audio between Radio A and Radio B. Each operator may listen to the other operator's radio and vice versa.
 - 16.2.4 Both Radio A and Radio B are allowed to transmit. The contest is a full Two-Operator Two-Transmitter type operation. The only limitation is that each radio must transmit on a different band regardless of mode (e.g., if Radio A is on 15M SSB, Radio B is not allowed on 15M SSB or 15M CW during the same time).
 - 16.2.5 Spectrum scopes (pan adapters) are allowed provided that they are used solely for spectrum visualization. The spectrum scope may be built-in to the radio or be a separate device. It may be connected to the radio or PC-A/B with the following limitations:
 - 16.2.5.1 The only output from the spectrum scope can be video, i.e. it can show current or past signal strength (spectrum, peak hold or waterfall). Other demodulation, analysis or decoding, e.g. for the purpose of content analysis, CW-decode, station identification, Skimmer, etc., is not allowed.
 - ~~16.2.5.2~~ (removed, 27th June 2017)
 - ~~16.2.5.3~~ (removed, 19th December 2017)
 - 16.2.5.4 The spectrum curve may be displayed in any suitable device, including the PC-A/B monitor screen.
 - 16.2.5.5 Additional computers or an attached control console may be used for SDR signal processing.
 - 16.2.5.6 The spectrum scope can be used to control frequency (e.g., tune Radio A/B).
 - 16.2.5.7 If a remote control console or additional computer (16.2.5.5.) is used, then signal demodulation may happen in one and only one device (either the main radio or the control console). The control console must be within the provided tent and only be controlled by one – and only one – of the operators.
- 16.3 All radios must be commercially manufactured transceivers, meeting all manufacturer specifications.
- 16.4 Each team is allowed to have two backup radios. The backup radios may only be used in case of malfunction of the main stations' radios and with approval of the referee.

- 16.5 Radio A and Radio B are each limited to 100 watts (KEY DOWN in CW, single tone in SSB) maximum power output. The power will be measured by a peak power monitor provided by the WRTC 2018 Organizing Committee. The monitor has two detectors which must be connected directly to Radio A's and Radio B's respective antenna connectors. The power monitor acts on forward power only. Any devices connected after the detectors must not amplify the transmitted signal. All transmit- and received signals of one radio must pass the power detector of that radio. No bypassing of the detector is allowed.
- 16.6 Band-pass filters are allowed for both Radio A and Radio B. External antenna tuners are allowed for all antennas. These devices must be connected after the power detector. Any power losses from these devices may not be compensated for in any way.
- 16.7 Two networked PCs are allowed (PC-A at Radio A, PC-B at Radio B). The PCs should be named PC-A and PC-B (or similar) within the team's logging software before the contest begins. No wireless connections are allowed from the PCs except for wireless keyboards resp. mice. No Wi-Fi or Bluetooth network connections are allowed. Network connections between logging computers must utilize the Ethernet switch provided by the WRTC 2018 Organizing Committee. Each team will provide two straight Ethernet cables to connect PC-A and PC-B to the Ethernet switch. Each team should also provide an Ethernet crossover cable to use in case of an Ethernet switch failure – or should plan on bringing a backup Ethernet switch (3 ports, minimum).
- 16.8 The teams must provide an audio output for both radios for use by the referee. This may be in parallel with the recording device described in rule 16.9 if desired. The audio must be isolated so the referee may listen to either channel or both at the same time. The team may provide headphones for the referee or the referee may bring his or her own. In either case, it is the team's responsibility that the referee can monitor both radios continuously. If the referee uses his or her own headphones, it must not interfere with the team's audio in any way. The audio output should be terminated in a 3.5mm headphone female jack for the referee to plug into. If desired, the referee may bring an audio switch box to choose Left/Right or Both audio channels.
- 16.9 The teams must provide the equipment for recording the WRTC contest operation, including both the received and transmitted audio of Radio A and Radio B. With this equipment the teams must generate the audio recording described in section 15. The recording must be uninterrupted and comprehensive for the entire period of operation. A third PC is allowed for this purpose, but may not be networked to PC-A or PC-B in any way. Operators are not allowed to review the recorded audio except for troubleshooting purposes while under the referee's supervision.
- 16.10 Teams may adjust the length of the 80M antenna to move its resonance from the low end of the band to the SSB portion or back. This may be done by opening or closing a connection at the ends of the 80m-dipole. The center, the length of the various sections and ends of the antenna must not be moved. This adjustment must be made while standing on the ground. No climbing of the antenna structure or other objects is permitted. In the case of a failure of the wire antenna(s), only the WRTC support staff is allowed to repair it. It is not allowed to move the antenna ends without explicit permission from the WRTC 2018 Organizing Committee.
- 16.11 Participants are not allowed to change or cut antenna coaxial cables provided by the organizer. All such cable lengths must remain unchanged. Any filters or other devices allowed as previously described must be connected after the entire length of cable provided.

- 16.12 Before the competition the Teams are allowed to use third party technical support to organize and install the station as well as to install and test software or other permitted devices and peripherals. The support team must leave the site area by 11:30 UTC on Saturday, July 14th, 2018 at the latest.
- 16.13 During the competition the Referee may permit repair of any equipment or antennas reported damaged during the operation. This can be done by the operators or by the WRTC support staff only. No third party is allowed in the operating area at any time during the competition.
- 16.14 All equipment used by any team must be located inside of the tent (except generator, antennas and cables). Participants must stay in the tent and/or designated control area from Saturday, July 14th, 2018, 11:45 UTC until Sunday, July 15th, 2018, 12:30 UTC.

17. Definitions

17.1 Radio

Radio A	Radio B
<ol style="list-style-type: none"> 1. Allowed to transmit 2. Main receiver reception 3. Sub-receiver reception is not allowed 4. VFO A and VFO B transmit 5. A triplexer should be used on the triband antenna to provide 10/15/20 meter antenna inputs. See special triplexer section in the station description. 6. Allowed to use band-decoder 7. Allowed to use audio and RF filters 8. Can share audio with Radio B 9. Must share audio with Referee 10. Can be replaced by backup Radio (in case of failure) 11. Radio A cannot transmit on the same band as Radio B. The operator may listen on the same band as Radio B at any time. After one QSO is made on a band, all QSOs for that band must be made on the same radio during that time. Either radio may use any antenna but may not share that antenna with the other radio. 	<ol style="list-style-type: none"> 1. Allowed to transmit 2. Main receiver reception 3. Sub-receiver reception is not allowed 4. VFO A and VFO B transmit 5. A triplexer should be used on the triband antenna to provide 10/15/20 meter antenna inputs. See special triplexer section in the station description. 6. Allowed to use band-decoder 7. Allowed to use audio and RF filters 8. Can share audio with Radio A 9. Must share audio with Referee 10. Can be replaced by backup Radio (in case of failure) 11. Radio B cannot transmit on the same band as Radio A. The operator may listen on the same band as Radio A at any time. After one QSO is made on a band, all QSOs for that band must be made on the same radio during that time. Either radio may use any antenna but may not share that antenna with the other radio.

17.2 Computer

Computer A	Computer B
<ol style="list-style-type: none"> 1. May be interconnected with Computer B 2. Allowed to key Radio A only. 3. Can exchange messages with Computer B 4. Voice and CW keyers are allowed 5. Super Check Partial is not allowed 6. Log must be converted to Cabrillo format after the contest 	<ol style="list-style-type: none"> 1. May be interconnected with Computer A 2. Allowed to key Radio B only 3. Can exchange messages with Computer A 4. Voice and CW keyers are allowed 5. Super Check Partial is not allowed 6. Log must be converted to Cabrillo format after the contest

17.3 Operator

Operator A	Operator B
<ol style="list-style-type: none"> 1. Operator of Radio A 2. Operator A can change position (chair) with Operator B at any time 3. Allowed to populate the band-map 4. Can exchange messages with Operator B 5. Must share audio with the Referee throughout the contest 6. Can share audio at any time with Operator B 7. Can operate any of the allowed devices 	<ol style="list-style-type: none"> 1. Operator of Radio B 2. Operator B can change position (chair) with Operator A at any time 3. Allowed to populate the band-map 4. Can exchange messages with Operator A 5. Must share audio with the Referee throughout the contest 6. Can share audio at any time with Operator A 7. Can operate any of the allowed devices

18. Disclaimer

In the event of force majeure or the occurrence of an event beyond control, the WRTC2018 Organizing Committee might implement changes, deletions or additions to the event and its rules. Additionally the WRTC 2018 Organizing Committee reserves the right to change the ruleset for technical, administrative or legislative reasons. These changes may be implemented upon short notice.

19. Conditions of entry

By submitting an entry in the WRTC Contest the competing teams confirm that:

1. The rules of the contest have been read and understood and they are bound by them;
2. They operated within the limitations of all rules stipulated;
3. They agree to make the log and the audio recording, as well as photo and video material of its operation prepared by the organizer available to the general public at the sole discretion of the WRTC Organizing Committee;
4. All actions and decisions of the WRTC Judging Committee are official and final.

Addendum

I. Frequency allocations in Germany

In Germany frequencies for the amateur radio service are assigned by the Bundesnetzagentur and are listed on this website:

http://www.gesetze-im-internet.de/afuv_2005/anlage_1.html

As German laws are only written in German language, an excerpt of the relevant frequency allocations is provided here:

Frequency range
3,500 – 3,800 kHz
7,000 – 7,200 kHz
14,000 – 14,350 kHz
21,000 – 21,450 kHz
28,000 – 29,700 kHz

II. IARU Region 1 band plan

The IARU region 1 band plan is a recommendation for all radio amateurs how to use the bands, as revised at the Interim Meeting Vienna 2016, effective 01 June 2016.

The latest version can be found on the website of the IARU:

<http://www.iaru-r1.org/index.php/spectrum-and-band-plans/hf>

III. Poor Signal Policy

The transmit signal quality needs to follow standard engineering practices. The judging committee reserves all measures in case of excessive bandwidth in order to stop the interference.

Change history

Date	Change	Author
November 5 th , 2017	Original document	DL8OBF
June 29 th , 2017	Removed 16.2.5.2.	DL8OBF
	Changed 16.10	
December 19 th , 2017	Modified 16.2.5.5. and 16.2.5.7., removing limitation of one additional PC	DL8OBF
	Removed 16.2.5.3.	
	Modified rule 5.2.	
	Reworded Rule 2	
	Provided 'poor signal policy'	
	Extended 16.5.	
January 1 st , 2018	Corrected spelling mistakes and improved wording	DL8OBF
January 11 th , 2018	Removed referees from §13	DL8OBF
	Included additional requirements in 14.2 and 14.3	