Approval document for an IGC Position Recorder

Issuing Authority: *Full name and contact details of the National Airsport Control (NAC) Authority*

Date of effect: XX YYY ZZZZ *(in setting this date, give time for comments to be made)*

References:

A. FAI Sporting Code Section 3 (Gliders and Motor Gliders) (SC3)
   Particularly: SC3 Appendix A to Chapter 4 on Position Recorders
B. Annex B to the Code (SC3B), Glossary items on Position Recorder and Validation, and paras 1.7, 2.1.1.2, 2.2.2.
C. Annex C to the Code (SC3C), particularly para 6.1 and 6.2, also 1.1, 1.5, 3.3.
D. Specification for the IGC file format, Appendix 1 to the Technical Specification for IGC-approved Flight Recorders

1.1. This document authorises the use of the GPS recording device described in para 2 for use as an IGC Position Recorder (PR) for flights under the jurisdiction of the above NAC under the rules and procedures for PRs in the FAI Sporting Code Section 3 (Gliding), in particular under References A-D above. At the date of publication of this document, Reference A allows IGC Position Recorders to be used for flights for Silver and Gold IGC Badges.

1.2. This document covers only the PR recording function and the data in the IGC-format file that is downloaded from it (Reference D and 3.3 below). Other functions in the PR and other modules that can be connected, are not the responsibility of the NAC or IGC.

Type of IGC Position Recorder

2.1. Name of IGC Position Recorder: flyWithCE Flight Recorder FR300

Manufacturer:	Name:	flyWithCE Uroš Podlogar s.p.
	Address:	Ulica Lojzeta Hrovata 9 4000 Kranj Slovenia
	email:	uros.podlogar@flywithce.com
	web:	www.flywithce.com
	Contact name(s):	Uroš Podlogar

2.3. Details of the PR.

Size:	77 x 28 x 18 mm
Weight:	15g
Connections:	USB 1.1/2.0

3. **Compliance with the IGC Sporting Code**

This type of IGC Position Recorder complies with the Sporting Code requirements for Position Recorders (References A-D above) as follows.

3.1. The WGS84 ellipsoid Earth Model is used for all fixes in the IGC file (SC3 Chapter 4 para A2 refers).

flyWithCE Flight Recorder uses GPS which uses WGS84 Earth Model.

3.2. All fixes in IGC files downloaded from this Recorder are all obtained from real-time GPS data, and no predicted fixes are recorded (SC3 Chapter 4 para A3 requirement).

GPS chip outputs the position type. All prediction fixes are marked by GPS status and are not written.

3.3. The downloaded IGC file can be electronically validated at any time to ensure that the file is identical to when it was initially downloaded (SC3 Chapter 4 para A6 requirement).

3.3.1 The Download program/method is:

flyWithCE Logbook application is used for downloading IGC file from flyWithCE Flight Recorder device. During download personal computer has to be connected to Internet, because flyWithCE web server is used to sign the downloaded flight. If Internet connection is not available than G record is not generated in IGC file (flight can be reloaded at later time when Internet connection is available and then G record will be generated).

Flight declaration has to be entered before the flight. User can change flight declarations at later time, but then G record will be deleted (or will no longer be valid if user will change the declaration in text editor).

Program flyWithCE Logbook is available with flyWithCE Flight Recorder or on web site:
http://www.flywithce.com/#download

3.3.2 The file validation program to be used with such downloaded IGC files is:

IGC file can be validated with program vali-fwc.exe, which is available on web site:
http://www.flywithce.com/#download

3.4. Recording of Altitude. References: SC3 Chapter 4 para A7, Annex C to SC3 para 6.2c, Reference D.

3.4.1 Altitude data from this IGC PR - for accurate measurement is from figures in the IGC file for:

GPS altitude above the WGS84 Ellipsoid, applying the margin over Pressure Altitude requirements as specified in the Sporting Code (Reference A), currently 100 metres.

3.4.2 The IGC file – Field for Pressure Altitude. In IGC files from this type of Position Recorder, the field for Pressure Altitude is recorded as

Logbook version 4.30 or newer - Zero, in accordance with SC3C para 6.2 and Reference D,

Logbook version 4.20 or older - GPS Altitude is repeated in the field for Pressure Altitude. When analysing such IGC files, this must not be used as if it was real Pressure Altitude.

4. **Engine Recording**

This PR is not able to detect the operation of a Means of Propulsion (MoP).

For gliders with a MoP, SC3 4.5.4 and SC3C 12.1 apply. *(See Guidance Note 3 at the end).*

5. **Mounting in the Glider**.

5.1 This Position Recorder may be mounted anywhere in the glider.

5.2 The Official Observer must be able to show that it was in the glider for the flight concerned, and that the IGC file used to assess the flight came from it.

6. **Authority**. This approval document is issued by XXX *(the relevant NAC body or committee, as listed at the beginning of Page 1)*

Signature

Signature of NAC Official

Name:
Position in NAC:
Email address:

Any queries or comments about this document should be sent to the above, with a copy to the Chairman of the IGC GFA Committee (currently: ian@ukiws.demon.co.uk).

(GFAC is responsible for giving advice to NACs on technical aspects of PRs and their downloaded IGC files, also for checking that PRs and their Approval documents comply with the IGC Sporting Code. PR Approval documents that comply with the Code will be published on the IGC GNSS web site in the same way as documents for IGC-approved Flight Recorders).

Guidance Notes

Note 1: Ref: Para 1: At the date of this document, the Sporting Code allows Position Recorders to be used only for flights for IGC Silver and Gold badges. IGC could change this in the future, and the definitive rules on the flights for which IGC PRs may be used are in the current version of SC3 in the Appendix to Chapter 4.

Note 2: Ref: Para 3.4: The Sporting Code defines a margin of GPS altitude over the traditional Pressure Altitude figures. At the time of publication of this document, the margin is 100m. The margin is set for the following reasons:

2.1. GPS altitude does not use the ICAO International Standard Atmosphere which is the IGC and international datum for aircraft altimetry, and

2.2. GPS altitude data in IGC files from low-cost GPS receivers has been seen to have short-term variations (electronic "noise") compared to the smoother graph of Pressure Altitude.

Note 3: Ref: SC3C, the last para in para 6.2c and para 6.2d. The references require that, where GPS altitude is to be used for accurate measurement, IGC files from the PR should be provided to GFAC together with IGC files from an IGC-approved Flight Recorder for the same flight, so that the accuracy and reliability of altitude figures can be compared.

Note 4: Ref: Para 5. If ENL is not recorded, for gliders with a Means of Propulsion (MoP), SC3 4.5.4 and SC3C 12.1 apply, and one of the following must be carried out:

4.1. Carry a separate device that records MoP use and is acceptable to the NAC, or:
4.2. Seal the MoP is such a way that the Official Observer can detect if it has been operated, or:
4.3. Disable the MoP prior to flight to the satisfaction of the Official Observer and NAC.

Note 5: An IGC-approved Flight Recorder (FR) may also be used for Silver and Gold flights, and for IGC-approval documents of FRs, see the GFAC and IGC web pages:
www.ukiws.demon.co.uk/GFAC or
www.fai.org/gnss-recording-devices/igc-approved-flight-recorders

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