

Proposal for definition and thereby improve availability of HMD for aerobic contests.

Scope

To improve safety during aerobatics competitions especially for height infringements, there is a need of a widely open available HMD system.

To allow easier development of HMDs, the needed functionality and the way of approval should be described precisely, but without assumption of ways of solution.

Proposal

Appendix C: RULES FOR THE USE OF ELECTRONIC HEIGHT MEASURING DEVICES (HMDs)

C.1. Types of HMD

C.1.1.1 Height Measurement devices to be used in competition, have to be approved by CIVA by the approval process described in C.6

C.3 Technical characteristics

Add:

The main signal to transfer is the information if the HMD is beeping or not. The analysis of an actual height infringement lies in the HMD in the aircraft. The ground station is for recording and displaying purpose only.

Additional data to transfer by radio is optional and welcome.

Flight data shall be logged internally to provide for analysis in case of radio or ground station malfunction.

C.6. Approval of HMDs

To use an HMD during competition, the approval shall be conducted before beginning of competition flights.

For approval the HMD has to show compliance with:

C.6.1.1 Height infringement information transfer is mandatory. This is to be considered as 'HMD in cockpit is now beeping'. The infringement information should be sent about 10 times per second during infringement situation to fit in with bandwidth limitations and get data to the ground station within time limits of C.3.1.1.

In height situations away from infringement a transfer rate of once per second is adequate to save band width.

C.6.1.2 Radio range should be at least 3 km within line of sight. Compliance can be shown by test flights (e.g. by tow planes) at upper height limit at 2500m radius around ground station.

C.6.1.3 Altitude test and infringement warning test can be shown by HMD tests in simple vacuum chambers, e.g. an exsiccator with a calibrated altimeter connected.

No more than 3 HMDs shall be used in one test to avoid bandwidth collision.

If no calibrated altimeter is available, an incline tube manometer can be used.

A deviation bandwidth of 10m is considered worthy.

The water column is

Altitude/m	water column/mm
0	0
150	175
200	234
750	876
800	934
1200	1401
1250	1459

C.6.1.4. Ground station operation

The ground station shall be able to easily put the supervising focus to one HMD transmitter and to validate the correct selection. Transfer and display of altitude and position of device in focus is considered compliant.

C.6.1.5. Fixture

The glider shall provide a fixture for quick mount and release of HMD. The proposed dimensions to reuse older HMD fixtures is a footprint of maximum 104mmx200mm.

Deviations have to be announced for contests with HMDs with different dimensions.

The fixture bracket can be released to service with use of an EASA Standard Change.

Suitable standard changes are

CS-SC051d, CS-SC058a, CS-SC061a, CS-SC062a