Deviation Request CS-ACNS#1 for the certification of an ADS-B Out Extended Squitter & ELS installation (Major Change) and its compliance to CS-ACNS
Consultation Paper

1 Introductory Note

The hereby presented deviation request shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004 as amended by EASA Management Board Decision No 12-2007 products certification procedure dated 11th September 2007, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

2 Deviation Requests

2.1 Continuity Requirements for Elementary Surveillance (ELS) and ADS-B functions

2.1.1 Summary of Deviation

Deviates from CS ACNS.D.ELS.045 and CS ACNS.D.ADSB.105 by not meeting a 'remote' probability requirement (1E-5 per flight hour (F.H.)) for the Continuity of the functions. But meets the requirements of Commission Implementing Regulation (EU) No 1207/2011, Annex II, Part A, 6. and Part B, 16. by having a Continuity equal to or less than 2E-4 per F.H.

2.1.2 Original Requirements

CS-ACNS:

CS ACNS.D.ELS.045 Continuity
The Mode S ELS airborne surveillance system continuity is designed to an allowable qualitative probability of 'remote'..

CS ACNS.D.ADSB.105 Continuity
(a) The ADS-B Out system continuity is designed to an allowable qualitative probability of 'remote'.

2.1.3 Industry Position

The safety analysis performed by the applicant shows that the continuity of the ADS-B and Elementary Surveillance (ELS) functions supported by the new installation does not meet the 'remote' objective defined through AMC 25.1309, FAA AC 23.1309-1() for some classes of aircraft, AC 27-1B or AC 29-2C as 1E-5 per F.H.

The applicant proposes however to demonstrate compliance to the continuity requirement from Commission Regulation (EU) No 1207/2011 by considering:

- A 'Remote' objective for qualitative aspects,
- 2E-4 per F.H. occurrence probability objective for quantitative aspects.

2.1.4 EASA position

Compliance to CS-ACNS has been elected by the applicant to insure compliance with Commission Regulation (EU) No 1207/2011, which will be required for all IFR flights in the European airspace from 2016 or later, depending on the date of issuance of the certificate of airworthiness.

Although the quantitative probability related to the 'Remote' objective of the CS-ACNS continuity requirement cannot be met by the installation proposed by the applicant, compliance to the EU regulation (EU) No 1207/2011 requirement is demonstrated, thus ensuring satisfactory operations performance within European airspace.

In addition, the applicant demonstrates that the equipment supporting the ADS-B and ELS functions meet at least the qualitative requirements associated to the 'Remote' objective through an Item Development Assurance Level 'C' in accordance with ED-79. This allows to mitigate failures caused by potential development errors to a level compliant to what is required by CS-ACNS.

For those reasons and in light of the justification and compliance data provided by the applicant, EASA accepts the deviation.