



**EASA**  
European Aviation Safety Agency

# CS-ACNS

Friedhelm Runge  
Chief Expert Avionics & Electrical Systems

21. October 2015

**Your safety is our mission.**

An agency of the European Union 



# Why CS-ACNS and not AMC

- Accepted Means of Compliance (AMC) ok, but to what requirement? => Certification Specification (CS) which contain requirements
- EASA grants Certificates against CS
- SES Interoperability Regulations under Regulation (EC) No 552/2004 accept EASA certification process for the conformity assessment.
  - Certification Process => CS



# Applicability of CS-ACNS

- For new certification projects TC/STC installing functions described in CS-ACNS
- Selection per applicable Section
  - Not all section may be applicable
  - If applicable, section is applicable in total
- Voluntary for running projects
- Needed for voluntary compliance demonstration against SES Interoperability Regulations
- No re-certification if compliance is demonstrated e.g. CRI, Special Condition



# CS-ACNS – Applicability

## Applicable to A/C which have to comply with those IRs

These Certification Specifications are applicable to all aircraft for the purpose of compliance with equipage requirements with respect to on-board Communication, Navigation and Surveillance systems. Furthermore, compliance with the appropriate section of these Certification Specifications ensures compliance with the following European regulations:

- (a) Commission Regulation (EU) No 965/2012 of 4 September 2012 laying down requirements and administrative procedures concerning the operation of aircraft, Commission Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on the operation of aircraft in the European Union. **=> IR-OPS**
- (b) Commission Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the equipage of aircraft for the operation in the European sky; and **=> Surveillance -SES**
- (c) Commission Regulation (EU) No 1206/2011, of 22 November 2011 laying down requirements on aircraft identification for surveillance for the single European sky.
- (d) Commission Regulation (EC) No 29/2009 of 20 January 2009 on data link services for the Single European Sky. **=> Data Link SES**
- (e) Commission Implementing Regulation (EU) No 1079/2012 of 16 November 2012 laying down requirements for voice channels spacing for the Single European Sky. **=> VHF SES**



# CS-ACNS compliance recording

- AFM statement to allow operation in airspace having mandated capability
- CS-ACNS section to be listed in TCDS



## ➤ CS ACNS Book 1 (Certification Specifications)

Subpart A - General

Subpart B – Communications (COM)

Subpart C – Navigation (NAV)

Subpart D – Surveillance (SUR)

Subpart E – Others (TAWS, RVSM)

## Book 2 (Guidance Material)

Subpart A - General

Subpart B – Communications (COM)

Subpart C – Navigation (NAV)

Subpart D – Surveillance (SUR)

Subpart E – Others (TAWS, RVSM)

Plus Appendices





## CS-ACNS Structure (2)

- Book 1 defines the requirements and
- Book 2 provides Accepted Means of Compliance and Guidance material
  
- Section A – General
  - Scope
  - Definitions
  - Instructions for Continued Airworthiness



## Subpart B – Communication (COM)

- SECTION 1 – VOICE CHANNEL SPACING (VCS)
  - Replaces JAA TGL 7 – no new requirements
- SECTION 2 – DATA LINK SERVICES (DLS)
  - New, covered so far with special conditions, supersedes AMC 20-11





# Subpart D - Surveillance (SUR)

- Section 1: Mode A/C only surveillance (CS ACNS.AC); (new, use outside Europe or small A/C)
- Section 2: Mode S Elementary Surveillance (CS ACNS.ELS);
  - Supersedes TGL 13 Rev 1, differences provided in Appendix D, (verification of all parameters)
- Section 3: Mode S Enhanced Surveillance (CS ACNS.EHS);
  - Superseeds AMC 20-13, differences provided in Appendix E, (additional: barometric pressure setting)
- Section 4: 1090 MHz Extended Squitter ADS-B (CS ACNS.ADS)
  - (new, addresses ADS-B in Radar Airspace, different from AMC 20-24 for Non-Radar Airspace)



## Subpart E — Others

- SECTION 1 – TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)
  - Replaces TGL 12, no differences
- SECTION 2 – REDUCED VERTICAL SEPARATION MINIMUM (RVSM)
  - Replaces TGL 6 Rev. 1, no differences



# CS-ACNS vs previous guidance

Subject	Previous guidance	Differences with CS-ACNS
RVSM	TGL 6 Rev 1	None
8.33 KHz	TGL 7	None
TAWS	TGL 12	None
Mode S Elem S.	TGL 13 Rev 1	Appendix D
Mode S Enh S.	AMC 20-13	Appendix E
ADS-B Out (*)	AMC 20-24 (Non Radar Airspace) (**)	New (Radar Airspace) Note : differences with FAA AC 20-165A are listed in Appendix J

## (\*) GM1 ACNS.D.ADSB.001 Applicability

(...) The requirements of CS ACNS.D.ADSB fully cover (and exceed) the requirements of AMC 20-24 (Certification Considerations for the Enhanced ATS in Non-Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090 MHz Extended Squitter). Therefore, aircraft that comply with CS ACNS.D.ADSB also comply with AMC 20-24 but not vice versa. (...)

(\*\*) AMC 20-24 remains a valid standard (not superseded )



# CS-ACNS current development

- Subpart C – Navigation (NAV)
  - Currently empty
  - In development to provide certification material for Performance Based Navigation (PBN) in accordance with the ICAO PBN manual
- Integration of elements from CS-AWO is considered
- Regular CS-ACNS maintenance task



# Update on SPI regulation

- The Surveillance Performance and Interoperability Regulation (EU) No 1207/2011 having transponder airspace requirements have been updated with Regulation (EU) No 1028/2014 from 26. Sept. 2014 to shift the mandates:
  - New Aircraft >5.7 t or > 250 kt max cruise from 8 June 2016 need Mode S ELS, ADS-B out, fixed wing Mode S EHS (+1.5 year)
  - All aircraft >5.7 t or > 250 kt max cruise from 07 June 2020 need Mode S ELS, ADS-B out, fixed wing Mode S EHS (+2.5 years)
- EASA received the mandate to develop SPI update



# Deviations/questions for Transponder

- ADS-B continuity is classified a major failure but SPI regulation demands only  $2 \times 10^{-4}$  (coming from ED-126) => deviation is published
- Altitude source? Like in TGL-13 the one used to fly the aircraft should be the one that provides the altitude data to the transponder.
- Not all transponders meet the ICAO Annex 10 Amdt 85 requirement (addressed in ED-73E/DO-181E and called by ETSO-C112d)



# EASA

European Aviation Safety Agency

European Aviation Safety Agency

Thank you for your attention

**Your safety is our mission.**

An agency of the European Union

