

## Proposed Special Condition on ATN B1 Data Link installation

Applicable to aircraft that require certificates in accordance with Regulation (EC) No 1702/2003 intending to fly into European airspace above FL 285.

### Introductory note:

The following Special Condition has been classified as an important Special Condition and as such shall be subject to public consultation, in accordance with EASA Management Board decision 02/04 dated 30 March 2004, 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."*

### Statement of Issue:

Some applicants have applied for airworthiness approval of a Data Link system installation supporting Air/Ground "Air Traffic Services". These installations are intended to comply with the applicable articles of the "Commission Regulation (EC) No 29/2009, of 16 January 2009, laying down requirements on Data Link services for the Single European Sky (SES)". This rule was published in the Official Journal of the EC on the 16th of January 2009. It applies to the entire European airspace above FL285.

Data Link services will be mandated in the Single European Sky for ATC communications. With the introduction of Data Link technology, information which was previously transmitted by voice communications may be replaced by Data Link messages. In order to maintain equivalent safety levels, appropriate interoperability between aircraft installed systems and ground communications facilities must be ensured.

Although a number of Data Link services have been defined by the European Organisation for Civil Aviation Equipment (EUROCAE), only those which have been sufficiently validated by the LINK 2000+ Programme are subject to mandatory introduction in European airspace. Annex II to Commission Regulation (EC) No 29/2009 provides a high level definition of the four mandated Data Link services: DLIC (Data Link Initiation Capability), ACM (ATC Communications Management), ACL (ATC Clearances) & AMC (ATC Microphone Check).

AMC 20-11 (*Acceptable Means of Compliance for the Approval of use of Initial Services for Air-Ground Data Link in Continental Airspace*) is superseded by this Special Condition.

In accordance with Regulation (EC) No 29/2009, certification airworthiness processes, when applied to airborne systems, are considered acceptable

procedures for the conformity of airborne constituents.

The purpose of the Special Condition (SC) is to ensure that compliance with the required interoperability and performance requirements in accordance with the appropriate applicable articles of the Regulation (EC) No 29/2009 is adequately demonstrated as part of the airworthiness approval process. The following SC has been established for the Data Link system certification process, in accordance with Part 21, 21A.16B(a)1.

This SC will be incorporated in future Certification Specifications.

### **Special Condition**

A system capable of providing Data Link Services that complies with the safety, performance and interoperability standards as detailed in the Appendix 1 must be installed if operations are to be conducted within the airspace as defined by the Commission Regulation (EC) No 29/2009.

1. The following Data link services must be provided:
  - 1.1 Data Link Initiation Capability (DLIC), to enable the exchange of the necessary information for the establishment of Data Link communications between ground and aircraft systems.
  - 1.2 ATC Communication Management (ACM), to provide automated assistance to flight crews and air traffic controllers for conducting the transfer of ATC communications (voice and data).
  - 1.3 ATC Clearances (ACL), to provide flight crews and air traffic controllers with the ability to conduct operational exchanges.
  - 1.4 ATC Microphone Check (AMC), to provide air traffic controllers with the capability to send an instruction to several Data Link equipped aircraft, at the same time, in order to instruct flight crews to verify that their voice communication equipment is not blocking a given voice channel.
2. The Data Link installation must support multi-frequency operation.

## Appendix 1

### **Safety, performance and interoperability standards**

#### **1- Data link services**

The following services shall comply with the interoperability requirements allocated to the airborne system as defined in the Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1 (ATN B1 Interop Standard), EUROCAE Document ED 110B

##### **1.1- Data Link Communications Initiation Capability (DLIC):**

The DLIC service shall enable the exchange of the necessary information for the establishment of Data Link communications between ground and aircraft Data Link systems.

The DLIC service shall be available to support:

- a) the unambiguous association of flight data from the aircraft with flight plan data used by an ATS unit,
- b) the exchange of the supported air-ground application type and version information,
- c) the delivery of the addressing information of the entity hosting the application.

The exchanges between airborne and ground Data Link systems for the execution of DLIC service shall comply with:

- d) operating methods, time sequence diagrams and messages for the DLIC initiation and DLIC contact functions specified in Section 4.1 of the EUROCAE Document ED 120 incl. change 1 & 2,
- e) safety requirements specified in Section 4.2.2 of the EUROCAE Document ED 120 incl. change 1 & 2, as applicable to airborne systems
- f) performance requirements specified in Section 4.3.2 of the EUROCAE Document ED 120 incl. change 1 & 2.

##### **1.2- ATC Communications Management service (ACM):**

The ACM service shall provide automated assistance to flight crews and air traffic controllers for conducting the transfer of ATC communications (voice and data) comprising:

- a) the initial establishment of CPDLC with an ATS unit,
- b) the transfer of CPDLC and voice for a flight from one ATS unit to the next ATS unit, or to instruct a change of voice channel within an ATS unit or sector,
- c) the normal termination of CPDLC with an ATS unit.

The exchanges between airborne and ground Data Link systems for the execution of ACM service shall comply with:

- d) operating methods and time sequence diagrams specified in Sections 5.1.1.1.1 to 5.1.1.1.7 and 5.1.1.2 of the EUROCAE Document ED 120 incl. change 1 & 2,
- e) safety requirements specified in Section 5.1.2.3 of the EUROCAE Document ED 120 incl. change 1 & 2, as applicable to airborne systems, excluding requirements relating to downstream clearance,
- f) performance requirements for the en route phase specified in Section 5.1.3.2 of the EUROCAE Document ED 120 incl. change 1 & 2.

### **1.3- ATC Clearances and Information service (ACL):**

The ACL service shall provide flight crews and controllers with the ability to conduct operational exchanges comprising:

- a) requests and reports from flight crews to air traffic controllers,
- b) clearances, instructions and notifications issued by air traffic controllers to flight crews.

The exchanges between airborne and ground Data Link systems for the execution of ACL service shall comply with:

- c) operating methods and time sequence diagrams specified in Sections 5.2.1.1.1 to 5.2.1.1.4 and 5.2.1.2 of the EUROCAE Document ED 120 incl. change 1 & 2,
- d) a common subset of the message elements specified in Section 5.2.1.1.5 of the EUROCAE Document ED 120 incl. change 1 & 2, as appropriate to the en route operational environment,
- e) safety requirements specified in Section 5.2.2.3 of the EUROCAE Document ED 120 incl. change 1 & 2,
- f) performance requirements for the en route phase specified in Section 5.2.3.2 of the EUROCAE Document ED 120 incl. change 1 & 2.

### **1.4- ATC Microphone Check service (AMC):**

The AMC service shall provide air traffic controllers with the capability to send an instruction to several Data Link equipped aircraft, at the same time, in order to instruct flight crews to verify that their voice communication equipment is not blocking a given voice channel.

The exchanges between airborne and ground Data Link systems for the execution of AMC service shall comply with:

- a) operating methods and time sequence diagrams specified in Sections 5.3.1.1.1, 5.3.1.1.2 and 5.3.1.2 of the EUROCAE Document ED 120 incl. change 1 & 2,
- b) safety requirements specified in Section 5.3.2.3 of the EUROCAE Document ED 120 incl. change 1 & 2,
- c) performance requirements specified in Section 5.3.3.2 of the EUROCAE document ED 120 incl. change 1 & 2.

**2- Multi-frequency operation:**

Multi-frequency operation shall comply with ARINC Specification 631-5.