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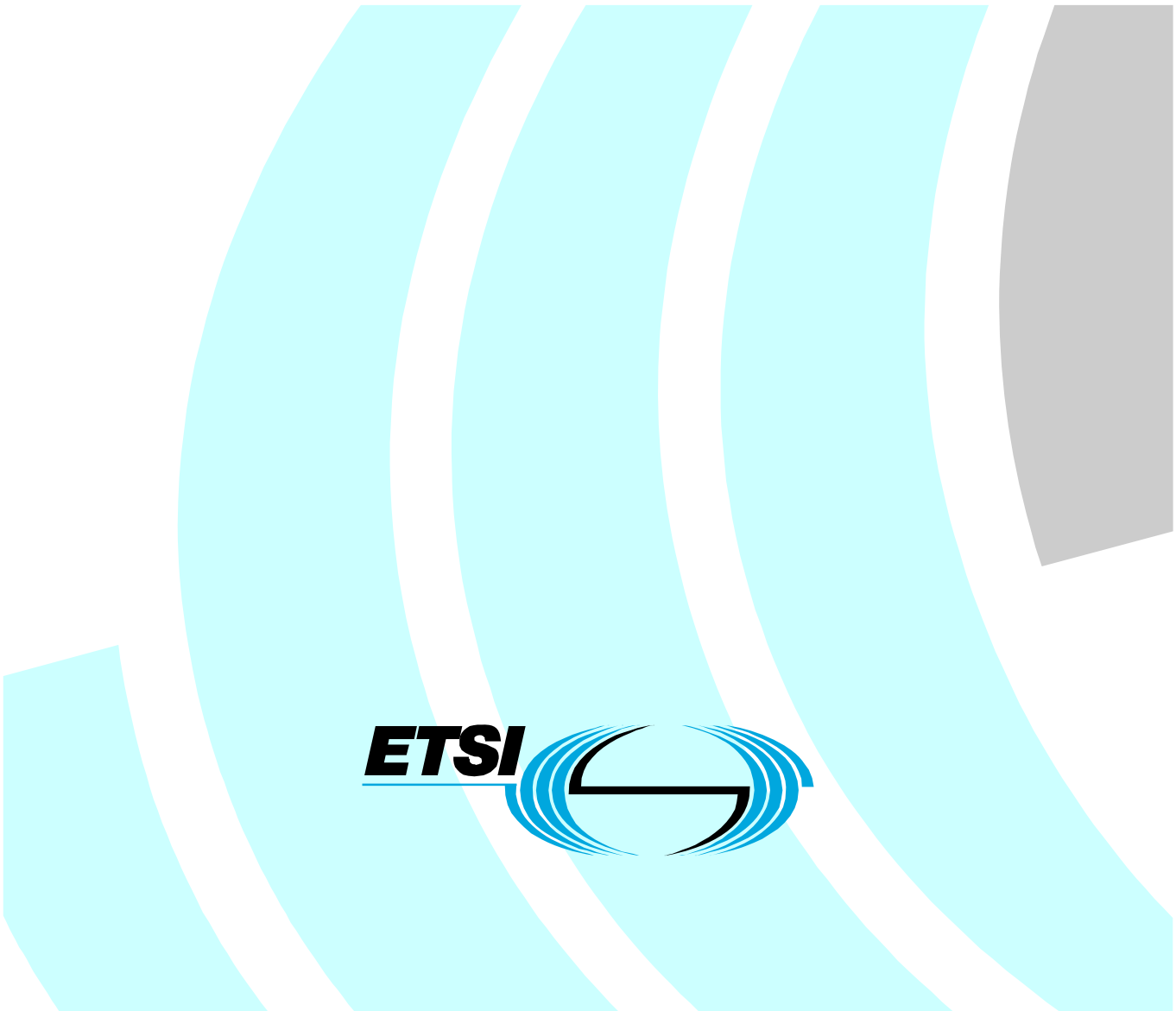
European Standard (Telecommunications series)

Advanced Surface Movement Guidance and Control System (A-SMGCS); Part 1: Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for A-SMGCS Level 1 including external interfaces



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Contents

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Vote phase of the ETSI standards Two-step Approval Procedure.

The present document has been produced by ETSI in response to European Commission mandate M/390 for the Interoperability of the European Air Traffic Management Network.

The present document has been developed in cooperation with Eurocae for compliance with the Essential Requirements of the Single European Sky Interoperability Regulation [i.1] and/or requirements given in implementing rules for interoperability based on the Single European Sky Interoperability Regulation.

The presumption of conformity which is linked to the full application of EN 303 213 multi-part deliverable can only be claimed after it has been listed in the Official Journal of the European Union as Community Specification.

General and specific requirements for presumption of conformity to SES Interoperability Regulation 552/2004 are given in the normative annexes of the present document.

NOTE: Other requirements and other EU Regulations and/or Directives may be applicable to the product(s) falling within the scope of the present document.

The present document is part 1 of a multi-part deliverable covering Advanced Surface Movement Guidance and Control System (A-SMGCS), as identified below:

Part 1: "Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for A-SMGCS Level 1 including external interfaces";

Part 2: "Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for A-SMGCS Level 2 including external interfaces";

Part 3: "Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for a deployed cooperative sensor including its interfaces";

Part 4: "Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for a deployed non-cooperative sensor including its interfaces".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

Introduction

The European Union launched the Legislation "Single European Sky" (SES) in 2002 which was adopted in 2004.

The SES legislation is based on a framework of 4 regulations, which includes the Interoperability Regulation [i.1]. The objective of the Interoperability Regulation is to ensure interoperability of the European Air Traffic Management Network (EATMN) consistent with air navigation services. Under this regulation, the use of a European Standard referenced in the Official Journal of the European Union as Community Specification (CS) is a means of compliance to the essential requirements of the Regulation and/or the relevant implementing rules for interoperability.

1 Scope

The present document is applicable to Advanced Surface Movement Guidance and Control System (A-SMGCS) Level 1. This system provides enhanced surveillance functionalities, as well as a display to controllers with accurate and unambiguous identity and position information on the entire manoeuvring and movement area.

The present document provides a European Standard for Air Navigation Service Providers, who have to demonstrate and declare compliance of their systems and procedures to the IOP regulation.

Any software elements related to the software assurance level of an A-SMGCS are outside of the scope of the present document. As such the essential requirements of the Interoperability Regulation are not considered for software elements within the present document.

The present document does not give presumption of conformity related to the maintenance requirements, environmental constraints, procedure level, effect of harmful interference and civil/military coordination.

NOTE: For these ERs, please refer to the Air Navigation Service Provider procedures.

Requirements in this EN 303 213-1 which refer to "should" statements or recommendations in the normatively referenced material (clause 2.1) are to be interpreted as fully normative ("shall") for the purpose of compliance with the present document.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] EUROCAE ED-87B (01/2008): "MASPS for A-SMGCS Level 1 & 2".

[2] EUROCONTROL (07/01/11-04 V2.0: 12/12/2006): "Operational Concept and Requirements for A-SMGCS Implementation Level 1".

[3] EUROCONTROL (07/01/09-01 V2.0: 11/2006): "A-SMGCS Levels 1 & 2 Preliminary Safety Case".

[4] EUROCONTROL (06/11/24-16 V1.0: 13/10/2006): "Final Report on the Generic Cost Benefit Analysis of A-SMGCS".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area**.** For non-specific references, the latest version of the referenced document (including any amendments) applies.

[i.1] Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (interoperability Regulation), OJ L 96, 31.03.2004.

[i.2] ETSI EN 303 213-3: "Advanced Surface Movement Guidance and Control System (A-SMGCS) Part 3: Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for a deployed cooperative sensor including its interfaces".

[i.3] ETSI EN 303 213-4: "Advanced Surface Movement Guidance and Control System (A-SMGCS) Part 4: Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for a deployed non-cooperative sensor including its interfaces".

[i.4] Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation), OJ L 96, 31.03.2004.

[i.5] EUROCAE ED-128 (08/2007): "Guidelines for surveillance data fusion in advanced surface movement guidance and control systems (A-SMGCS) levels 1 and 2".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

A-SMGCS Level 1: includes a comprehensive Surveillance element capable of the location and classification of all aircraft and vehicles within the area of interest and the identification of cooperative aircraft and vehicles

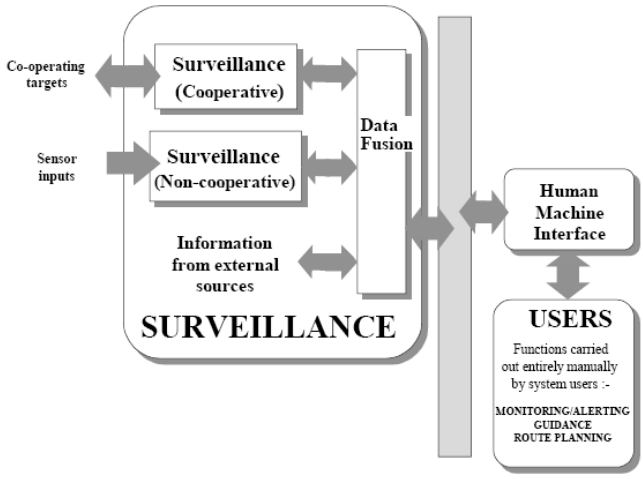

Figure 1: A-SMGCS Level 1 Functional Configuration

A-SMGCS Level 2: includes the capabilities of A-SMGCS Level 1 and uses the comprehensive surveillance data available to monitor the situation in the area of interest against a set of rules which will enable the system to alert the user to hazardous situations

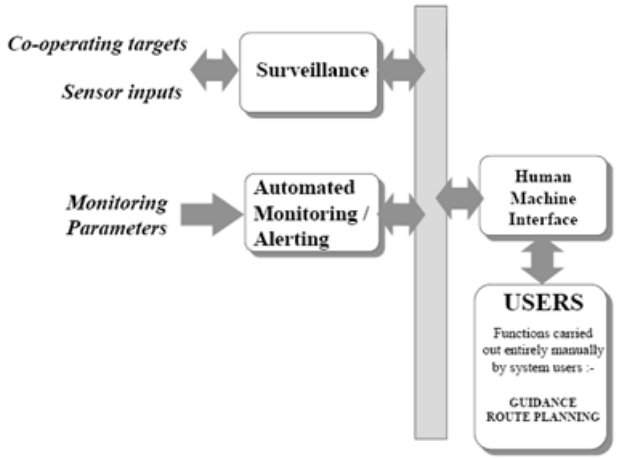

Figure 2: A-SMGCS Level 2 Functional Configuration

Advanced Surface Movement Guidance and Control System (ASMGCS): systems providing routing, guidance, surveillance and control to aircraft and affected vehicles in order to maintain movement rate under all local weather conditions within the Aerodrome Visibility Operational Level (AVOL) whilst maintaining the required level of safety

aerodrome: defined area (including any buildings, installations, and equipment) intended to be used either wholly or in part for arrival, departure and surface movement of aircraft

apron: defined area on an aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance

NOTE: De-icing platforms, including remote de-icing areas, are considered as apron areas.

availability: probability that a system or an item is in a functioning state at a given point in time

classification: function which groups targets into various types (e.g. large, medium, small)

constituents: tangible objects such as hardware and intangible objects such as software upon which the interoperability of the EATMN depends

NOTE: This is the legally binding definition in the context of Single European Sky [i.4].

manoeuvring area: that part of an aerodrome to be used for take-off, landing and taxiing of aircraft, excluding aprons

movement area: part of an aerodrome to be used for take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and aprons

procedure: standard method for either the technical or operational use of the system, in the context of agreed and validated concepts of operation requiring uniform implementation throughout the EATMN

NOTE: This is the legally binding definition in the context of Single European Sky [i.4].

system: aggregation of airborne and ground based constituents, as well as space-based equipment, that provides support for air navigation services for all phases of flight

NOTE: This is the legally binding definition in the context of Single European Sky [i.4].

target: any aircraft, vehicle or obstacle, whether stationary or moving, which is located within the coverage area of the SMR and which is of sufficient size to be operationally significant

test targets: form of either fixed reflectors or active devices transponders, mounted at fixed positions within the Coverage Volume

update: renewal of target reports relating to all targets under surveillance

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

A-SMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATM	Air Traffic Management
AVOL	Aerodrome Visibility Operational Level
CEN	Comité Européen de Normalization
CS	Community Specification
DFP	Data Fusion Processor
doa	date of announcement
dow	date of withdrawal
EATMN	European Air Traffic Management Network
EC	European Communities
EN	European Norm - (standard)
ER	Essential Requirement
ESO	European Standardization Organization
EUROCAE	EUROpean organization for Civil Aviation Equipment
EUROCONTROL	EUROpean organization for the safety of air navigation
HMI	Human Machine Interface
ICAO	International Civil Aviation Organization
IOP Regulation	InterOPerability Regulation
MASPS	Minimum Aviation Systems Performance Specification
MLAT	MultiLATeration
PRA	Position Registration Accuracy
SES	Single European Sky
SMR	Surface Movement Radar

4 Requirements for implementing A-SMGCS Level 1

An A-SMGCS Level 1 System shall consist of the following constituents as a minimum for the implementation, operation and maintenance:

1) Surface Movement Radar.

2) Multilateration (MLAT).

Data Fusion and HMI are considered as part of the System but are not at this time defined as constituents.

NOTE 1: Guidance for the Data Fusion can be found in ED-128 [i.5].

NOTE 2: The Data fusion could be part of a larger data fusion processor providing other ATS functions.

NOTE 3: The Data fusion may be a separate part of the cs in the future.

4.1 Constituents of an A-SMGCS Level 1 System

The following clauses identify the constituents of an A-SMGCS.

NOTE: Data Fusion and HMI are currently defined at System level, however they have been included here, since they may become constituents in the future.

4.1.1 Constituent - Surface Movement Radar (SMR)

The Surface Movement Radar constituent of an A-SMGCS is covered in EN 303 213-4 [i.3] (non-cooperative sensors).

4.1.1.1 Interfaces for SMR

The interfaces for SMR constituents shall comply with the requirements as defined in ED-87B [1], clause 2.5.1.1.

4.1.2 Constituent - Multilateration (MLAT)

The Multilateration constituent of an A-SMGCS is covered in EN 303 213-3 [i.2] (cooperative sensors).

4.1.2.1 Interfaces for MLAT

The interfaces for MLAT constituents shall comply with the requirements as defined in ED-87B [1], clause 2.5.1.1.

4.1.3 Interface for Data fusion

The interfaces for the data fusion in an A-SMGCS shall comply with the requirements as defined in ED-87B [1], clause 2.5.1.1.

NOTE: Guidance for the Data Fusion can be found in ED-128 [i.5].

4.1.4 Human Machine Interface (HMI)

The requirements for the HMI are further described in clauses 4.2.5 and 4.3.1.4 of the present document.

NOTE 1: The HMI could be part of a lager HMI, providing other ATS functions.

NOTE 2: The HMI could be a separate part of the cs in the future.

4.1.4.1 Interface for HMI

The interface for the HMI shall be capable to exchange data with the data fusion processor.

4.2 Design Requirements for A-SMGCS Level 1 Systems

4.2.1 Design Requirements on System Level

4.2.1.1 Modularity

The System shall comply with the design requirements as defined in ED-87B [1], clause 1.8.2.

4.2.1.2 System Integrity

The System integrity shall comply with the design requirements as defined in ED-87B [1], clause 3.1.1.1, second and fifth paragraphs.

4.2.1.3 Availability and Continuity of Service

The Availability and continuity of service for A-SMGCS shall comply with the requirements as defined in ED-87B [1], clause 3.1.1.2 and Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], Op_Perf-10-Availability and Op_Perf-12-Continuity of Service 1.

4.2.1.4 Identification

The functional requirement for identification shall comply with the requirements as defined in ED-87B [1], clause 3.2.2.1.

4.2.1.5 Position Registration Accuracy

The functional requirement for position registration accuracy shall comply with the requirements as defined in ED-87B [1], clause 3.4.1.2.

4.2.1.6 Logical architecture

The logical architecture of the system shall comply with the requirements as defined in ED-87B [1], clause 2.3.

4.2.1.7 Safety

4.2.1.7.1 Failure effect

An A-SMGCS Level 1 system shall be designed in such a way, that erroneous data from any constituent would have an acceptable impact on safety.

NOTE: This requirement is derived from clause 7.2.3 Requirement Op_Ds-7-Failure effect "d" [2].

4.2.1.7.2 Reliability

The reliability of the system shall comply with the requirements as defined in Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], Op_Ds-5-Self-checking system, Op_Ds-8-Self-restartable, and Op_Env-4-Adverse effects.

4.2.1.7.3 Human capabilities

An A-SMGCS Level 1 system shall be designed in such a way, that the human capabilities shall be compatible with the principals described in ED-87B [1], clause 2.5.2.

4.2.1.7.4 Safety Assessment

A safety assessment for A-SMGCS Level 1 system shall be provided. The safety objectives shall comply with the requirements as defined in Operational Concept and Requirements for A SMGCS Implementation Level 1 [2], clause 2.1.

NOTE: The safety assessment may follow the methodology from A-SMGCS Levels 1&2 Preliminary Safety Case [3].

4.2.1.8 Capacity and Quality

4.2.1.8.1 Handle Traffic Movements

The handling of traffic movements shall comply with the requirements as defined in Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], clause 7.2.3, Op_Range-2-Capacity, Op_Range-1-Visibility conditions, Op_Range-3-Mobile types , Op_Range-4-Mobile types , Op_Range-5-Speeds and Orientation, Op_Range-6-Velocity.

4.2.1.8.2 System capacity

The system design shall take into account that capacity requirements will vary considerably from airport to airport depending on the volume of traffic and the aerodrome complexity. As a minimum, System Capacity shall be sufficient to meet the number of expected targets for the aerodrome with a specified margin of spare capacity to permit safe operation and future growth.

NOTE: This requirement is taken from ED-87B [1], clause 3.1.2.

4.2.1.8.3 Accuracy

The accuracy shall comply with the requirements as defined in ED-87B [1], clause 3.2.2.3.

4.2.1.8.4 Resolution

The resolution shall comply with the requirements as defined in ED-87B [1], clause 3.3.2.2.

4.2.1.8.5 Update rate

The update rate shall comply with the requirements as defined in ED-87B [1], clause 3.2.2.5.

4.2.1.8.6 Coverage Volume

The coverage volume shall comply with the requirements as defined in ED-87B [1], clause 3.2.1.

4.2.1.8.7 Classification

The classification shall comply with the requirements as defined in ED-87B [1], clause 3.2.2.2.

4.2.1.9 Evolution

The evolution shall comply with the requirements as defined in ED-87B [1], clause 1.8.3.

4.2.2 Design Requirements for Surface Movement Radar

The design requirements for Surface Movement Radar as part of an A-SMGCS are covered in EN 303 213-4 [i.3].

4.2.3 Design Requirements for Multilateration

The design requirements for multilateration as part of an A-SMGCS are covered in EN 303 213-3 [i.2].

4.2.4 Design Requirements for Data Fusion

No design requirements for Data Fusion are currently available.

NOTE 1: Guidance for the Data Fusion can be found in ED-128 [i.5].

NOTE 2: The Data fusion could be part of a larger data fusion processor providing other ATS functions.

NOTE 3: The Data fusion may be a separate part of the cs in the future.

4.2.5 Design Requirements for HMI

The general requirements for the HMI shall comply with the requirements as defined in ED-87B [1], clause 2.5.2.

4.3 Acceptance testing requirements for A-SMGCS Level 1 System

4.3.1 Acceptance testing requirements on System Level

4.3.1.1 General Tests

The system shall perform the build tests as defined in ED-87B [1], clause 4.5.

4.3.1.2 Tests on modularity and interchangeability

The system shall perform the build tests as defined in ED-87B [1], clause 4.6.

4.3.1.3 Acceptance testing requirements for Data Fusion

The Data Fusion shall perform the build tests as defined in ED-87B [1], clause 4.6.

4.3.1.4 Acceptance testing requirements for HMI

The HMI shall perform the build tests as defined in ED-87B [1], clause 4.8.

4.3.2 Acceptance testing requirements on Constituent Level

4.3.2.1 Acceptance testing requirements for Constituent Surface Movement Radar

The build requirements for Surface Movement Radar as part of an A-SMGCS is covered in EN 303 213-4 [i.3].

4.3.2.2 Acceptance testing requirements for Constituent Multilateration

The build requirements for multilateration as part of an A-SMGCS is covered in EN 303 213-3 [i.2].

4.4 Maintenance Requirements for A-SMGCS Level 1 Systems

The present document does not give presumption of conformity related to the maintenance requirements.

4.5 Requirements for operation of A-SMGCS Level 1 Systems

4.5.1 Requirements for operational responsibility

The operational responsibility shall be as defined in Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], clause 7.2.3, Op_Resp-1-Users, Op_Resp-2-Assignment, Op_Resp-3-A-SMGCS category

4.5.1.1 System performance below specified minima

The user shall be informed and appropriate actions shall be defined, if the system performance is below specified minima.

5 Testing

The testing of an A-SMGCS Level 1 System is covered with the build requirements from clause 4.3.

Annex SA (normative): Standards Annex

The present annex provides a relationship between the present document and the Essential Requirements of the Single European Sky Interoperability Regulation [i.1].

A-SMGCS Systems Level 1 shall comply with the Essential Requirements of the Interoperability Regulation as defined and described in the traceability matrixes of the present annex (see tables SA1 and SA2).

SA.1 Correspondence between the present document and the Single European Sky Interoperability Regulation for A-SMGCS Systems Level 1

Table SA1: Traceability from Interoperability Regulation to clauses of the present document

(Essential) Requirements (ERs) of SES Interoperability Regulation, Annex II, Part A	Clause(s) of the present document	Qualifying remarks/Notes
ER 1 Seamless operation.	4.1.3 4.1.4.1 4.2.1.1 4.2.1.2 4.2.1.3 4.2.1.4 4.2.1.5 4.2.5 4.3.1.1 4.3.1.2 4.5.1.1	The present document does not give presumption of conformity related to maintenance of the system.
ER 2 Support for new concepts of operation.	4.2.1.4 4.2.1.7.4 4.2.1.8.1 4.2.1.8.2 4.2.1.8.3 4.2.1.8.4 4.2.1.8.5 4.2.1.8.6 4.2.1.8.7 4.5.1	
ER 3 Safety.	4.2.1.7.1 4.2.1.7.2 4.2.1.7.3 4.2.1.7.4 4.5.1.1	
ER 4 Civil-military coordination.		The present document does not give presumption of conformity.
ER 5 Environmental constraints.		The present document does not give presumption of conformity.
ER 6 Principles governing the logical architecture of systems.	4.2.1.6	
ER 7 Principles governing the construction of systems.	4.2.1.1 4.2.1.2 4.2.1.3 4.2.1.7.1 4.2.1.7.2 4.3.1.1 4.3.1.2	

(Essential) Requirements (ERs) of SES Interoperability Regulation, Annex II, Part B	Clause(s) of the present document	Qualifying remarks/Notes
ER 1.1 Seamless operation of airspace management.		Not covered by EN 303 213 multi-part deliverable.
ER 2.1 Seamless operation of air traffic flow management.		Not covered by EN 303 213 multi-part deliverable.
ER 3.1.1 Seamless operation of flight data processing.		Not covered by EN 303 213 multi-part deliverable.
ER 3.1.2 Support for new concepts of operation for flight data processing.		Not covered by EN 303 213 multi-part deliverable.
ER 3.2.1 Seamless operation surveillance data processing systems.	4.1.1.1 4.1.2.1 4.2.1.1 4.2.1.2 4.2.1.3 4.2.1.8.4 4.3.1.3 4.5.1.1	
ER 3.2.2 Support for new concepts of operation for surveillance data processing systems.	4.2.1.9	
ER 3.3.1 Seamless operation of HMI systems.	4.2.5 4.3.1.4	
ER 3.3.2 Support for new concepts of operation for HMI systems.	4.2.1.7.3	
ER 4.1 Seamless operation of Communications systems and procedures for ground-to-ground, air-to-ground and air-to-air communications.		Not covered by EN 303 213 multi-part deliverable.
ER 4.2 Support for new concepts of operation for Communications systems and procedures for ground-to-ground, air-to-ground and air-to-air communications.		Not covered by EN 303 213 multi-part deliverable.
ER 5.1 Seamless operation of Navigation systems and procedures.		Not covered by EN 303 213 multi-part deliverable.
ER 6.1 Seamless operation of Surveillance systems and procedures.		Not covered by EN 303 213 multi-part deliverable.
ER 7.1 Seamless operation of Systems and procedures for aeronautical information services.		Not covered by EN 303 213 multi-part deliverable.
ER 7.2 Support for new concepts of operation for systems and procedures for aeronautical information services.		Not covered by EN 303 213 multi-part deliverable.
ER 8.1 Seamless operation of systems and procedures for the use of meteorological information.		Not covered by EN 303 213 multi-part deliverable.
ER 8.2 Support for new concepts of operation for systems and procedures for the use of meteorological information.		Not covered by EN 303 213 multi-part deliverable.

Table SA2: Traceability from clauses of the present document to Interoperability Regulation

Clause(s) of the present document	(Essential) Requirements (ERs) of SES Interoperability Regulation, Annex II, Part A and B	Qualifying remarks/Notes
4.1.1.1	ER 3.2.1 Seamless operation surveillance data processing systems.	
4.1.2.1	ER 3.2.1 Seamless operation surveillance data processing systems.	
4.1.3	ER 1 Seamless operation.	
4.1.4.1	ER 1 Seamless operation.	
4.2.1.1	ER 1 Seamless operation. ER 7 Principles governing the construction of systems. ER 3.2.1 Seamless operation surveillance data processing systems.	
4.2.1.2	ER 1 Seamless operation. ER 7 Principles governing the construction of systems. ER 3.2.1 Seamless operation surveillance data processing systems.	
4.2.1.3	ER 1 Seamless operation. ER 7 Principles governing the construction of systems. ER 3.2.1 Seamless operation surveillance data processing systems.	
4.2.1.4	ER 1 Seamless operation. ER 2 Support for new concepts of operation.	
4.2.1.5	ER 1 Seamless operation.	
4.2.1.6	ER 6 Principles governing the logical architecture of systems.	
4.2.1.7.1	ER 3 Safety. ER 7 Principles governing the construction of systems.	
4.2.1.7.2	ER 3 Safety. ER 7 Principles governing the construction of systems.	
4.2.1.7.3	ER 3 Safety. ER 3.3.2 Support for new concepts of operation for HMI systems.	
4.2.1.7.4	ER 2 Support for new concepts of operation. ER 3 Safety.	
4.2.1.8.1	ER 2 Support for new concepts of operation.	
4.2.1.8.2	ER 2 Support for new concepts of operation.	
4.2.1.8.3	ER 2 Support for new concepts of operation.	
4.2.1.8.4	ER 2 Support for new concepts of operation. ER 3.2.1 Seamless operation surveillance data processing systems.	
4.2.1.8.5	ER 2 Support for new concepts of operation.	
4.2.1.8.6	ER 2 Support for new concepts of operation.	
4.2.1.8.7	ER 2 Support for new concepts of operation.	
4.2.1.9	ER 3.2.2 Support for new concepts of operation for surveillance data processing systems.	
4.2.2		Covered in EN 303 213-4 [i.3].
4.2.3		Covered in EN 303 213-3 [i.2].

Clause(s) of the present document	(Essential) Requirements (ERs) of SES Interoperability Regulation, Annex II, Part A and B	Qualifying remarks/Notes
4.2.5	ER 1 Seamless operation. ER 3.3.1 Seamless operation of HMI systems.	
4.3.1.1	ER 1 Seamless operation. ER 7 Principles governing the construction of systems.	
4.3.1.2	ER 1 Seamless operation. ER 7 Principles governing the construction of systems.	
4.3.1.3	ER 3.2.1 Seamless operation surveillance data processing systems.	
4.3.1.4	ER 3.3.1 Seamless operation of HMI systems.	
4.3.2.1		Covered in EN 303 213-4 [i.3].
4.3.2.2		Covered in EN 303 213-3 [i.2].
4.5.1	ER 2 Support for new concepts of operation.	
4.5.1.1	ER 1 Seamless operation. ER 3 Safety. ER 3.2.1 Seamless operation surveillance data processing systems.	

NOTE: Other requirements and other EU Regulations and/or Directives may be applicable to the product(s) falling within the scope of the present document.

Annex A (normative): Checklist

The purpose of the present annex is to provide a comprehensive traceability of evidence on constituents and system levels against clauses of the Essential Requirements (ERs) of the Single European Sky Interoperability Regulation [i.1], analyzing keywords of these same essential requirements.

These keywords mainly address the phases of design, build, operation and maintenance of systems and constituents as well as specifically required qualities or attributes as defined in the ERs of the SES Interoperability Regulation.

A-SMGCS Systems Level 1 shall comply with the Essential Requirements of the Interoperability Regulations as defined and described in the tables of the present annex.

A.1 Interoperability Regulation Annex II Essential Requirements; Part A: General requirements

1	**ER 1 seamless operation**		
	Regulation (EC) 552/2004 requires that: "Air traffic management systems and their constituents shall be designed, built, maintained and operated using the appropriate and validated procedures, in such a way as to ensure the seamless operation of the EATMN at all times and for all phases of flight. Seamless operation can be expressed, in particular, in terms of information sharing, including the relevant operational status information, common understanding of information, comparable processing performances and the associated procedures enabling common operational performances agreed for the whole or parts of the EATMN".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
1.1	designed	n/a	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 1.8.2 Modularity, clause 3.1.1.1 System, paragraph two and five, clause 3.1.1.2 System Availability and Continuity of Service. EUROCONTROL Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], clause 2.1 Objectives, clause 2.4 Benefits, clause 4.1 ATC Controllers, 7.3.2 Quality of Service Requirements Op_Perf-10-Availability and Op_Perf-12-Continuity of Service. DFP: EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.5.1.1 Surveillance. HMI: EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.2.2 HMI, clause 2.5.2 HMI, first paragraph, clause 2.5.2.1 General Requirements for ATC Workstation HMI.
1.2	built	n/a	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2, clause 4.5 General Tests. DFP: EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 4.6 Surveillance Element Tests.. HMI: EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 4.8 HMI Tests.
1.3	maintained	The present document does not give presumption of conformity.	The present document does not give presumption of conformity.

1	**ER 1 seamless operation**		
	Regulation (EC) 552/2004 requires that: "Air traffic management systems and their constituents shall be designed, built, maintained and operated using the appropriate and validated procedures, in such a way as to ensure the seamless operation of the EATMN at all times and for all phases of flight. Seamless operation can be expressed, in particular, in terms of information sharing, including the relevant operational status information, common understanding of information, comparable processing performances and the associated procedures enabling common operational performances agreed for the whole or parts of the EATMN".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
1.4	operated	Operation is only applicable at the system level.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 3.1.1.1 System, paragraph three. The user shall be informed and appropriate actions shall be defined, if the system performance is below specified minima.
1.5	information sharing	n/a	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 3.1.1.1 System, paragraph five, clause 3.2.2.1 Identification, clause 3.4.1.2 Position Registration Accuracy (PRA). DFP: EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.5.1.1 Surveillance. HMI: The system interface for the HMI shall be capable to exchange data with the data fusion processor.

2	**ER 2 Support for new concepts of operation**		
	Regulation (EC) 552/2004 requires that: "The EATMN, its systems and their constituents shall support, on a coordinated basis, new agreed and validated concepts of operation that improve the quality and effectiveness of air navigation services, in particular in terms of safety and capacity. The potential of new concepts, such as collaborative decision-making, increasing automation and alternative methods of delegation of separation responsibility, shall be examined taking due account of technological developments and of their safe implementation, following validation".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
2.1	Validated concepts of operation - safety	Operation is only applicable at the system level.	EUROCONTROL (07/01/09-01 V2.0, Edition Date: 11/2006, A-SMGCS Levels 1 and 2 Preliminary Safety Case [3].
2.2	Validated concepts of operation - capacity	Operation is only applicable at the system level.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 3.1.2 System capacity.
2.3	Validated concepts of operation - quality	Operation is only applicable at the system level.	EUROCONTROL (07/01/11-04 Edition 2.0, Edition date 12/12/2006): Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], clause 7.2.3 Requirement Op_Range-2-Capacity, Op_Range-1-Visibility conditions, Op_Range-3-Mobile types , Op_Range-4-Mobile types , Op_Range-5-Speeds and Orientation, Op_Range-6-Velocity, Op_Resp-1-Users, Op_Resp-2-Assignment, Op_Resp-3-A-SMGCS category EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 3.2.2.3 Accuracy, clause 3.2.2.5 Update Rate, clause 3.2.1 Coverage Volume, clause 3.2.2.1 Identification, clause 3.2.2.2 Classification, clause 3.3.2.2 Accuracy and Resolution.

3	**ER 3 Safety** Regulation (EC) 552/2004 requires that: "Systems and operations of the EATMN shall achieve agreed high levels of safety. Agreed safety management and reporting methodologies shall be established to achieve this. In respect of appropriate ground-based systems, or parts thereof, these high levels of safety shall be enhanced by safety nets which shall be subject to agreed common performance characteristics. A harmonized set of safety requirements for the design, implementation, maintenance and operation of systems and their constituents, both for normal and degraded modes of operation, shall be defined with a view to achieving the agreed safety levels, for all phases of flight and for the entire EATMN. Systems shall be designed, built, maintained and operated, using the appropriate and validated procedures, in such a way that the tasks assigned to the control staff are compatible with human capabilities, in both the normal and degraded modes of operation, and are consistent with required safety levels. Systems shall be designed, built, maintained and operated using the appropriate and validated procedures, in such a way as to be free from harmful interference in their normal operational environment".			
	Keywords	**Evidence on constituent level**	**Evidence on system level**	**Evidence at procedure level**
3.1	Design	n/a.	EUROCONTROL (07/01/11-04 Edition 2.0, Edition date 12/12/2006): Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], clause 7.2.3, Op_Ds-5-Self-checking system, Op_Ds-8-Self-restartable, Op_Env-4-Adverse effects. EUROCONTROL (07/01/09-01 V2.0, Edition Date: 11/2006, A-SMGCS Levels 1 and 2 Preliminary Safety Case [3].	The present document does not give presumption of conformity.
3.2	Implementation	n/a.	EUROCONTROL (07/01/09-01 V2.0, Edition Date: 11/2006, A-SMGCS Levels 1 & 2 Preliminary Safety Case [3].	The present document does not give presumption of conformity.
3.3	Maintenance	n/a.	The present document does not give presumption of conformity.	n/a.
3.4	Operation	n/a.	EUROCONTROL (07/01/09-01 V2.0, Edition Date: 11/2006, A-SMGCS Levels 1 & 2 Preliminary Safety Case [3]. The user shall be informed and appropriate actions shall be defined, if the system performance is below specified minima.	The present document does not give presumption of conformity.
3.5	Human capabilities	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.5.2 HMI.	The present document does not give presumption of conformity.
3.6	Harmful interference	n/a.	The present document does not give presumption of conformity.	n/a.

4	**ER 4 Civil-military coordination**		
	Regulation (EC) 552/2004 requires that: "The EATMN, its systems and their constituents shall support the progressive implementation of civil/military coordination, to the extent necessary for effective airspace and air traffic flow management, and the safe and efficient use of airspace by all users, through the application of the concept of the flexible use of airspace. To achieve these objectives, the EATMN, its systems and their constituents shall support the timely sharing of correct and consistent information covering all phases of flight, between civil and military parties. Account should be taken of national security requirements".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
4.1	Flexible use of airspace	The present document does not give presumption of conformity	The present document does not give presumption of conformity
4.2	Timely sharing	n/a	The present document does not give presumption of conformity.
4.3	National security requirements	n/a.	The present document does not give presumption of conformity.

5	**ER 5 Environmental constraints**			
	Regulation (EC) 552/2004 requires that: "Systems and operations of the EATMN shall take into account the need to minimize environmental impact in accordance with Community legislation".			
	Keywords	**Evidence on constituent level**	**Evidence on system level**	**Evidence at procedure level**
5.1	Minimize environmental impact - ATS	n/a.	The present document does not give presumption of conformity.	The present document does not give presumption of conformity.
5.2	Minimize environmental impact - materials	The present document does not give presumption of conformity.	The present document does not give presumption of conformity.	n/a.

6	**ER 6 Principles governing the logical architecture of systems**		
	Regulation (EC) 552/2004 requires that: "Systems shall be designed and progressively integrated with the objective of achieving a coherent and increasingly harmonized, evolutionary and validated logical architecture within the EATMN".		
	Keywords	**Evidence on constituent level**	Evidence on system level
6.1	Designed and progressively integrated.	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.3.

7	**ER 7 Principles governing the construction of systems**		
	Regulation (EC) 552/2004 requires that: "Systems shall be designed, built and maintained on the grounds of sound engineering principles, in particular those relating to modularity, enabling interchangeability of constituents, high availability, and redundancy and fault tolerance of critical constituents".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
7.1	Modularity, interchangeability.	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 1.8.2 Modularity, clause 3.1.1.1 System Integrity. EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2, clause 4.6 Surveillance Element Tests.
7.2	High availability, Redundancy and fault tolerance.	n/a.	EUROCONTROL Operational Concept and Requirements for A-SMGCS Implementation Level 1 [2], clause 2.1 Objectives, clause 7.3.2 Quality of Service Requirements Op_Perf-10-Availability and Op_Perf-12-Continuity of Service, clause 7.2.3 Requirement Op_Ds-5-Self-checking system, Op_Ds-8-Self-restartable, Op_Env-4-Adverse effects. EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2, clause 3.1.1.2 System Availability and Continuity of Service, clause 3.1.1.1 System Integrity. EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2, clause 4.5 General Tests.

A.2 Interoperability Regulation Annex II Essential Requirements Part B: Specific requirements

A.2.1 Systems and procedures for airspace management

1.1	**ER 1.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Information relating to pre-tactical and tactical aspects of airspace availability shall be provided to all interested parties in a correct and timely way so as to ensure an efficient allocation and use of airspace by all airspace users. This should take into account national security requirements".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
1.1.1	Modularity, interchangeability	n/a.	Not covered by EN 303 213 multi-part deliverable.
1.1.2	High availability	n/a.	Not covered by EN 303 213 multi-part deliverable.
1.1.3	Redundancy and fault tolerance	n/a.	Not covered by EN 303 213 multi-part deliverable.

A.2.2 Systems and procedures for air traffic flow management

2.1	**ER 2.1 Seamless operation**			
	Regulation (EC) 552/2004 requires that: "Systems and procedures for air traffic flow management shall support the sharing of correct, coherent and relevant strategic, pre-tactical and tactical, as applicable, flight information covering all phases of flight and offer dialogue capabilities with a view to achieving optimized use of airspace".			
	Keywords	**Evidence on constituent level**	**Evidence on system level**	**Evidence at procedure level**
2.1.1	Strategic	n/a.	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
2.1.2	Pre-tactical	n/a.	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
2.1.3	Tactical	n/a.	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.

A.2.3 Systems and procedures for air traffic services

A.2.3.1 Flight data processing systems

3.1.1	**ER 3.1.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Flight data processing systems shall be interoperable in terms of the timely sharing of correct and consistent information, and a common operational understanding of that information, in order to ensure a coherent and consistent planning process and resource-efficient tactical coordination throughout the EATMN during all phases of flight. In order to ensure safe, smooth and expeditious processing throughout the EATMN, flight data processing performances shall be equivalent and appropriate for a given environment (surface, terminal manoeuvring area (TMA), en-route), with known traffic characteristics and exploited under an agreed and validated operational concept, in particular in terms of accuracy and error tolerance of processing results".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
3.1.1.1	Timely sharing	n/a.	Not covered by EN 303 213 multi-part deliverable.
3.1.1.2	Performance appropriate for environment	n/a.	Not covered by EN 303 213 multi-part deliverable.
3.1.1.3	Accuracy and error tolerance	n/a.	Not covered by EN 303 213 multi-part deliverable.

3.1.2	**ER 3.1.2. Support for new concepts of operation**		
	Regulation (EC) 552/2004 requires that: "Flight data processing systems shall accommodate the progressive implementation of advanced, agreed and validated concepts of operation for all phases of flight. The characteristics of automation-intensive tools must be such as to enable coherent and efficient pre-tactical and tactical processing of flight information in parts of the EATMN. Airborne and ground systems and their constituents supporting new, agreed and validated concepts of operation shall be designed, built, maintained and operated, using appropriate and validated procedures, in such a way as to be interoperable in terms of timely sharing of correct and consistent information and a common understanding of the current and predicted operational situation".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
3.1.2.1	Airborne systems - design	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.2	Airborne systems - built	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.3	Airborne systems - maintained	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.4	Airborne systems - operated	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.5	Ground systems - design	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.6	Ground systems - built	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.7	Ground systems - maintained	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.
3.1.2.8	Ground systems - operated	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable.

A.2.3.2 Surveillance data processing systems

3.2.1	**ER 3.2.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Surveillance data processing systems shall be designed, built, maintained and operated using the appropriate and validated procedures, in such a way as to provide the required performance and quality of service within a given environment (surface, TMA, en-route) with known traffic characteristics, in particular in terms of accuracy and reliability of computed results, correctness, integrity, availability, continuity and timeliness of information at the control position. Surveillance data processing systems shall accommodate the timely sharing of relevant, accurate, consistent and coherent information between them to ensure optimized operations through different parts of the EATMN".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
3.2.1.1	Designed	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 1.8.2 Modularity, clause 2.5.1.1 Surveillance. clause 3.1.1.1 System, paragraph two and five, clause 3.1.1.2 System Availability and Continuity of Service, clause 3.3.2.2 Accuracy and Resolution.
3.2.1.2	Built	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2, clause 4.5 General Tests.
3.2.1.3	Maintained	n/a.	The present document does not give presumption of conformity.
3.2.1.4	Operated	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 3.1.1.1 System, paragraph two and five, clause 3.1.1.2 System Availability and Continuity of Service, paragraph four. The user shall be informed and appropriate actions shall be defined, if the system performance is below specified minima.

3.2.2	**ER 3.2.2. Support for new concepts of operation**		
	Regulation (EC) 552/2004 requires that: "Surveillance data processing systems shall accommodate the progressive availability of new sources of surveillance information in such a way as to improve the overall quality of service".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
3.2.2.1	Availability of new sources	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 1.8.3 Evolution.

A.2.3.3 HMI systems

3.3.1	**ER 3.3.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "HMIs of ground air traffic management systems shall be designed, built, maintained and operated using the appropriate and validated procedures, in such a way as to offer to all control staff a progressively harmonized working environment, including functions and ergonomics, meeting the required performance for a given environment (surface, TMA, en-route), with known traffic characteristics".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
3.3.1.1	Designed	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.5.2 HMI,
3.3.1.2	Built	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 4.8 HMI Tests.
3.3.1.3	Maintained	n/a.	The present document does not give presumption of conformity.
3.3.1.4	Operated	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 3.1.1.1 System, paragraph three.

3.3.2	**ER 3.3.2. Support for new concepts of operation**		
	Regulation (EC) 552/2004 requires that: "HMI systems shall accommodate the progressive introduction of new, agreed and validated concepts of operation and increased automation, in such a way as to ensure that the tasks assigned to the control staff remain compatible with human capabilities, in both the normal and degraded modes of operation".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
3.3.2.1	Human capabilities	n/a.	EUROCAE ED-87B (ED-87B published 01/2008): MASPS for A-SMGCS Level 1 & 2 [1], clause 2.5.2 HMI.

A.2.4 Communications systems and procedures for ground-to-ground, air-to-ground and air-to-air communications

4.1	**ER 4.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Communication systems shall be designed, built, maintained and operated using the appropriate and validated procedures, in such a way as to achieve the required performances within a given volume of airspace or for a specific application, in particular in terms of communication processing time, integrity, availability and continuity of function. The communications network within the EATMN shall be such as to meet the requirements of quality of service, coverage and redundancy".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
4.1.1	Designed	n/a.	Not covered by EN 303 213 multi-part deliverable
4.1.2	Built	n/a.	Not covered by EN 303 213 multi-part deliverable
4.1.3	Maintained	n/a.	Not covered by EN 303 213 multi-part deliverable
4.1.4	Operated	n/a.	Not covered by EN 303 213 multi-part deliverable
4.1.5	Quality of service, coverage, redundancy	n/a.	Not covered by EN 303 213 multi-part deliverable

4.2	**ER 4.2 Support for new concepts of operation**		
	Regulation (EC) 552/2004 requires that: "Communication systems shall support the implementation of advanced, agreed and validated concepts of operation for all phases of flight".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
4.2.1	Support the implementation	n/a.	Not covered by EN 303 213 multi-part deliverable

A.2.5 Navigation systems and procedures

5.1	**ER 5.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Navigation systems shall be designed, built, maintained and operated using appropriate and validated procedures in such a way as to achieve the required horizontal and vertical navigation performance, in particular in terms of accuracy and functional capability, for a given environment (surface, TMA, en-route), with known traffic characteristics and exploited under an agreed and validated operational concept".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
5.1.1	Designed	n/a.	Not covered by EN 303 213 multi-part deliverable
5.1.2	Built	n/a.	Not covered by EN 303 213 multi-part deliverable
5.1.3	Maintained	n/a.	Not covered by EN 303 213 multi-part deliverable
5.1.4	Operated	n/a.	Not covered by EN 303 213 multi-part deliverable

A.2.6 Surveillance systems and procedures

6.1	**ER 6.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Surveillance systems shall be designed, built, maintained and operated using appropriate and validated procedures in such a way as to provide the required performance applicable in a given environment (surface, TMA, en-route) with known traffic characteristics and exploited under an agreed and validated operational concept, in particular in terms of accuracy, coverage, range and quality of service. The surveillance network within the EATMN shall be such as to meet the requirements of accuracy, timeliness, coverage and redundancy. The surveillance network shall enable surveillance data to be shared in order to enhance operations throughout the EATMN".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
6.1.1	Designed	n/a.	Not covered by EN 303 213 multi-part deliverable
6.1.2	Built	n/a.	Not covered by EN 303 213 multi-part deliverable
6.1.3	Maintained	n/a.	Not covered by EN 303 213 multi-part deliverable
6.1.4	Operated	n/a.	Not covered by EN 303 213 multi-part deliverable

A.2.7 Systems and procedures for aeronautical information services

7.1	**ER 7.1 Seamless operation**		
	Regulation (EC) 552/2004 requires that: "Accurate, timely and consistent aeronautical information shall be provided progressively in an electronic form, based on a commonly agreed and standardized data set. Accurate and consistent aeronautical information, in particular concerning airborne and ground-based constituents or systems, shall be made available in a timely manner".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
7.1.1	Accurate, timely and consistent	n/a.	Not covered by EN 303 213 multi-part deliverable
7.1.2	Standardized data set	n/a.	Not covered by EN 303 213 multi-part deliverable

7.2	**ER 7.2 Support for new concepts of operation**		
	Regulation (EC) 552/2004 requires that: "Increasingly accurate, complete and up-to-date aeronautical information shall be made available and used in a timely manner in order to support continuous improvement of the efficiency of airspace and airport use".		
	Keywords	**Evidence on constituent level**	**Evidence on system level**
7.2.1	Increasingly accurate, complete and up-to-date	n/a.	Not covered by EN 303 213 multi-part deliverable

A.2.8 Systems and procedures for the use of meteorological information

8.1	**ER 8.1 Seamless operation**			
	Regulation (EC) 552/2004 requires that: "Systems and procedures for the use of meteorological information shall improve the consistency and timeliness of its provision and the quality of its presentation, using an agreed data set".			
	Keywords	**Evidence on constituent level**	**Evidence on system level**	**Evidence at procedure level**
8.1.1	Consistency and timeliness	n/a.	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable

8.2	**ER 8.2 Support for new concepts of operation**			
	Regulation (EC) 552/2004 requires that: "Systems and procedures for the use of meteorological information shall improve the promptness of its availability and the speed with which it may be used, in order to support continuous improvement of the efficiency of airspace and airport use".			
	Keywords	**Evidence on constituent level**	**Evidence on system level**	**Evidence at procedure level**
8.2.1	Promptness, speed	n/a.	Not covered by EN 303 213 multi-part deliverable	Not covered by EN 303 213 multi-part deliverable

Annex B (informative): The EN title in the official languages

Language	EN title
Bulgarian	
Czech	
Danish	
Dutch	
English	Advanced Surface Movement Guidance and Control System (A-SMGCS); Part 1: Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 for A-SMGCS Level 1 including external interfaces
Estonian	
Finnish	
French	
German	
Greek	
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Norwegian	
Polish	
Portuguese	
Romanian	
Slovak	
Slovenian	
Spanish	
Swedish	

Annex C (informative): Bibliography

ICAO annex 14: "Aerodrome Design and Operations, volume 1".

ICAO annex 10: "Aeronautical communications".

ICAO Doc 9476: "Manual of Surface Movements and Guidance Control Systems (SMGCS)".

ICAO Doc 9830: "Manual of A-SMGCS".

ICAO EUR: "Manual on A-SMGCS".

Council Resolution of 7 May 1985 on a new approach to technical harmonization and standards, OJ C 136, 04.06.1985.

ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

ETSI TR 102 579: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Report providing guidance for the production of Community Specifications for application under the Single European Sky Interoperability Regulation EC 552/2004".

EUROCONTROL (07/01//11-06 Edition 2.0, Edition Date: 12/12/2006): "Functional Specification for A-SMGCS Implementation Level 1".

EUROCONTROL (06/11/27-18 V1.1, Edition Date: 27/11/2006): "Human Factor Case for A-SMGCS".

EUROCONTROL: "European Action Plan for the Prevention of Runway Incursions".

Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive) (OJ L 91, 07.04.1999).

History

Document history			
V1.1.1	December 2008	Public Enquiry	PE 20090405: 2008-12-06 to 2009-04-06
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