



## Explanatory Note to Decision 2014/010/R

### Amendment 9 to CS-ETSO

RELATED NPA/CRD 2012-02 — RMT.0001 (20.002) — 26.02.2014

#### EXECUTIVE SUMMARY

This Decision addresses technological and operational issues related to the use of Airport Moving Map Displays (AMMD) on Electronic Flight Bags (EFB), including on portable EFB, during ground operations, as outlined in the Terms of Reference (ToR) RMT.0001 (20.002) of 4 December 2006.

The specific objectives of this task were to issue:

- a new AMC 20-25 on the airworthiness and operational criteria of Electronic Flight Bags (EFBs) used by Commercial Air Transport (CAT) operators; and
- a new version of ETSO-C165a on Airport Moving Map Display (AMMD).

Decision 2014/001/R of 29 January 2014 contains Amendment 12 to AMC-20, limited to introduction of AMC 20-25, covering both airworthiness and operational criteria for installed and portable EFB.

This Decision replaces ETSO-C165 by ETSO-C165a into CS-ETSO.

This amendment is harmonised with FAA TSO-C165a published on 30 September 2013; the ETSO, therefore, remains in Index 1 of CS-ETSO. New issue 'a' of ETSO-C165 replacing and modernising the first edition, is expected to increase situational awareness on the airport surface (and, hence, safety in respect e.g. of runway incursion or confusion) and operational flexibility at an affordable cost, since implementable also on (non-certified) portable EFB.

Applicability		Process map	
Affected regulations and decisions:	CS-ETSO	ToR	14.01.2007
Affected stakeholders:	Applicants for ETSO Authorisation	Concept Paper:	No
Driver/origin:	Technological development	Rulemaking group:	Yes
Reference:	FAA TSO-C165a of 30 September 2013	RIA type:	Light
		Technical consultation during NPA drafting:	No
		Publication date of the NPA:	12.03.2012
		Duration of NPA consultation:	3 months
		Review group:	Yes
		Focussed consultation:	Yes (Workshop 18.04.2013)
		Publication date of CRD:	31.07.2013

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## 1. Procedural information

### 1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed ED Decision 2014/001/R in line with Regulation (EC) No 216/2008<sup>1</sup> (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure<sup>2</sup>.

This rulemaking activity is included in the Agency's Rulemaking Programme for 2012-15 under RMT.0001 (20.002)<sup>3</sup>. The scope and timescale of the task were defined in the related Terms of Reference published on 14 January 2007.

The draft text of this Decision has been developed by the Agency, supported by a Rulemaking Drafting Group (to prepare the NPA). All interested parties were consulted through NPA 2012-02<sup>4</sup>. 913 comments were received from 45 interested parties, including world-wide industry, FAA, TCCA and EU National Aviation Authorities.

The Agency has reviewed the comments received on the NPA supported by a Review Group and through a 'focused consultation', in the form of a Workshop for members of the Regulatory Advisory Group (RAG) and of the Safety Standards Consultative Committee (SSCC) held on 18 April 2013. The comments received and the Agency's responses are presented in the Comment-Response Document (CRD) 2012-02<sup>5</sup>.

The final text of this Decision with Amendment 9 of CS-ETSO has been developed by the Agency, taking into account the 32 reactions received on the CRD.

The process map on the title page summarises the major milestones of this rulemaking activity.

### 1.2. Structure of the related documents

Chapter 1 contains the procedural information related to this task. Chapter 2 explains the core technical content. The updated ETSO-C165a is annexed to the ED Decision.

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<sup>1</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC. (OJ L 79, 19.03.2008, p. 1). Regulation as last amended by Commission Regulation (EU) No 6/2013 of 8 January 2013 (OJ L 4, 9.1.2013, p. 34).

<sup>2</sup> The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material (Rulemaking Procedure), EASA MB Decision No 01-2012 of 13 March 2012.

<sup>3</sup> <http://easa.europa.eu/rulemaking/docs/tor/20/EASA-ToR-20.002-00-14012007.pdf>

<sup>4</sup> In accordance with Article 52 of the Basic Regulation and Articles 5(3) and 6 of the Rulemaking Procedure.

<http://easa.europa.eu/rulemaking/docs/npa/2012/NPA%202012-02.pdf>

<sup>5</sup> <http://easa.europa.eu/rulemaking/docs/crd/2012/CRD%202012-02.pdf>

## 2. Explanatory Note

### 2.1. Overview of the issues to be addressed

Portable Electronic Devices (PED) like Personal Computers (PC) but also 'smartphone', 'iPhone', 'iPAD', 'tablet', 'GPS navigator' and similar have become more powerful and progressively lighter and smaller year after year. Since a couple of decades they are used in the cockpit under the expression 'Electronic Flight Bag' (EFB) to replace paper carried on board (e.g. charts, manuals, etc.), to support the crew to perform calculations (e.g. fuel to destination, mass and balance, landing distance and else) or even to present the aircraft position (obtained thanks to satellite navigation) on a moving map (e.g. at aerodromes) to increase situational awareness.

The software for 'Airport Moving Map Display' (AMMD), when used on the aerodrome surface, is considered by AMC 20-25 a type B application and therefore implementable also on (non-certified) portable EFB.

The Federal Aviation Administration (FAA), in September 2013, having acknowledged the advancement of the state of the art, published the TSO-C165a on AMMD, fully harmonised with Agency's ETSO-C165a. Both are based on RTCA document DO-257A, 'Minimum Operational Performance Standards for the Depiction of Navigational Information on Electronic Maps', dated June, 25, 2003 as amended by Appendix 1 to ETSO-C165a.

The NPA, which had proposed to diverge from FAA TSO-C165 and therefore include Agency's ETSO-2C165a into Index 2 of CS-ETSO, triggered a considerable number of comments (921). Several stakeholders requested to remain harmonised with the FAA, which was also developing amendments its TSO, and therefore leave ETSO-C165a in Index 1.

The first meeting of the Review Group (August 2012) shared the need to remain harmonised with the FAA. This approach was endorsed by the Workshop on 18 April 2013.

Hence, the Agency hereby updates ETSO-C165 to C165a to align EU regulatory provisions with the latest industry developments in the field of EFB, while remaining technically harmonised with the FAA.

### 2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in paragraph 2.1.

The specific objective of this Decision is, therefore, to harmonise guidance on AMMD for EU competent authorities, aircraft and equipment manufacturers with the current state of the art and with the corresponding FAA TSO.

### 2.3. Outcome of the consultation

913 comments were received from 45 commentators on NPA 2012-02 and the individual responses to each of them were published in CRD 2012-02.

The majority of the received comments have been accepted or partially accepted:

	Accepted	Partially accepted	Noted	Not accepted	Total
Sums	227	337	170	179	913
%	25%	37%	19%	19%	100.0%

Based on these comments and the individual responses to each of them, the Agency, supported by the Review Group and by the Workshop in April 2013, concluded that:

- stakeholders agreed with the earliest possible publication of AMC 20-25 (achieved on 29 January 2014);
- stakeholders also asked to refrain from amending the AIR-OPS implementing rules for EFB, until ICAO standards on the operational approval would not be available (i.e. do not publish any Opinion on his aspect);
- in respect of ETSO-C165a:
  - to remain harmonised with the FAA;
  - to consider it 'type B' application, so making its implementation possible also on portable EFB.

The focussed consultation, in the form of a workshop at the level of Regulatory Advisory Group (RAG) and Safety Standards Consultative Committee (SSCC) held on 18 April 2013, endorsed the above conclusions.

### 2.4. Summary of the Regulatory Impact Assessment (RIA)

The following four options were considered in the RIA:

0. **Do nothing** which means that the Agency will approve the EFB aspects linked to airworthiness and OSD, while the competent authorities at national level will continue to use JAA TGL 36 for operational approval of EFB. No change to ETSO-C165.
1. **Transpose JAA TGL 36 into AMC 20-25** without changing its technical content. Still no change in ETSO-C165
2. **Enhance and amend the material existing in JAA TGL 36** to align it with current state of the art and in parallel propose to add a new rule to 'EASA-OPS' as well as updating ETSO-C165 to C165a.
3. Issue AMC 20-25 containing the airworthiness requirements for EFB and a **separate set of AMCs to the 'EASA-OPS'** for the operational approval and still update ETSO-C165 to edition 'a'.

The four options were comparatively assessed using the Multi-Criteria Analysis (MCA) methodology. Option 0 ('do nothing') and Option 1 ('no changes to ETSO-C165a = 'obsolete rules') proved to be clearly the least appropriate, showing a significantly negative score, including in terms of safety.

The remaining two options exhibited a positive total (weighted) score and were equivalent and positive also in terms of safety. Among them, however, Option 2 had the highest total score and, in particular, it was the most favourable in terms of regulatory harmonisation (i.e. progressive alignment with the structure of Agency's rules for the 'total system').

**Therefore, Option 2 was the preferred one.**

No stakeholder objected that Option 2 (i.e. enhance and amend the material existing in JAA TGL 36 and ETSO-C165 to align it with the current state-of-the-art and propose as soon as appropriate a new rule to 'EASA-OPS'<sup>6</sup>) was the most appropriate.

## **2.5. Reactions to the CRD**

The Agency received 32 reactions to CRD 2012-02 from seven stakeholders, covering in total 54 items. Seven items concerned general aspects. Only three of them were relevant. All these three reactions (Airbus, DGAC-France and UK CAA) expressed full support with the resulting text of the proposed rules, while proposing no changes to the text.

The other 47 items extracted from the reactions can be grouped into two categories:

- 30 items addressing AMC 20-25; and
- The remaining 17 addressing ETSO-C165a.

The former items were highlighted in the Explanatory Note accompanying ED Decision 2014/001/R of 29 January 2014.

The majority of the reactions concerning ETSO-C165a, coming from a single equipment manufacturer, contained editorial or technical suggestions to improve the text and to better align with the FAA corresponding TSO, published after CRD 2012-02. The majority of these suggestions have been accepted or partially accepted.

Furthermore, one reaction to the CRD asked to wait for the next edition 'B' of RTCA DO-257, for which edition 'A' had been published in 2003. The Agency observes that updating DO-257A was discussed in the 17<sup>th</sup> joint EUROCAE WG-44/RTCA SC-217 meeting. The group generally agreed that DO-257A needs some improvement. This group could contribute to the updating of DO-257A, but there are parts of the document that would require other expertise and necessitate effort from other groups as well. There is no EUROCAE version of DO-257A.

The subject was further discussed in the plenary session of the December 2013 meeting of WG 44, but the Agency estimates that the overall timeline of the planned update of DO-257A would take few years.

Therefore, the Agency decides not to further postpone the update of ETSO-C165 needed in parallel to the recently published AMC 20-25. In addition, harmonisation with ETSO-C195a has been achieved by harmonising the final version of ETSO-C165a with the corresponding TSO-C165a which has been published recently.

In the future, an update of the ETSO following possible edition B of RTCA DO-257 would be considered. Meanwhile, the ETSO and its Appendix contains complements or changes to the mentioned DO to align with developments of the state of the art in the last ten years.

## **2.6. Overview of ETSO-C165a**

ETSO-C165a contains the requirements that any Electronic Map System for the Graphical Depiction of Aircraft Position (own-ship), manufactured on or after the date of this ETSO, must meet in order to be identified with the applicable ETSO marking.

This ETSO applies to equipment that is intended to provide graphical depiction of advisory information on a display (e.g. navigation, traffic, weather, obstacles, graphical taxi routing, etc.). The system is intended to improve flight crew positional awareness of the aircraft own-ship position relative to other items depicted on the display.

Applications to certify only software without certifying the hardware and/or the

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<sup>6</sup> Currently progressed through RMT.0601.

operating system will be accepted on the basis of Article 3(d) of the Basic Regulation (i.e. defining of 'parts and appliances' including also only software modules).

Nevertheless, the applicant seeking an ETSO Authorisation only for the AMMD software, has to specify requirements for the hardware and/or the operating system to be used, the tests to be performed once the software is integrated into the final system, and the environment which has been used to demonstrate the system functionality.

New models of Electronic Map Systems must meet the standards set forth for moving map equipment in Section 2 of RTCA document DO-257A, 'Minimum Operational Performance Standards for the Depiction of Navigational Information on Electronic Maps', dated June, 25, 2003, as amended by Appendix 1 to ETSO-C165a.

AMMD software is considered to be a 'type' B application by AMC 20-25 and, therefore, implementable on a portable EFB, but with use that is limited to ground operations on the airport surface.

However, an ETSO AMMD software module can also be implemented in the installed avionics and, therefore, not only be used on the ground.

In particular:

- Electronic Map Systems for use in flight must meet the Minimum Performance Specifications (MPS) in Sections 2.1 and 2.2 of RTCA/DO-257A as amended by mentioned Appendix 1 to the ETSO;
- Electronic Map Systems for use on the airport surface – AMMD applications - must meet the MPS in Sections 2.1, 2.2, and 2.3 of RTCA/DO-257A, still as amended by same Appendix 1; and
- Electronic Map Systems including Vertical Situation Displays (VSD) for use in facilitating pilot's awareness of the aircraft's vertical flight path must meet the MPS in Sections 2.1, 2.2, and 2.4 of RTCA/DO-257A also amended by Appendix 1 to the ETSO.

Table 1 summarises the functional description and applicable MPS requirements for Electronic Map Systems.

Electronic Map System functional description	Applicable Requirements Sections in RTCA/DO-257A (as amended by Appendix 1 to this ETSO)			
	2.1	2.2	2.3	2.4
In flight	X	X		
Airport surface (AMMD)	X	X	X	
Vertical Situation Display (VSD)	X	X		X

**Table 1**

### 3. References

#### 3.1. Related regulation

- a) Regulation (EC) No 216/2008<sup>7</sup>
- b) Commission Regulation (EU) No 748/2012<sup>8</sup>

#### 3.2. Affected decisions

ED Decision 2003/10/RM of 24 October 2003.

#### 3.3. Reference documents

- a) FAA TSO-C165a
- b) RTCA-DO 257A

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<sup>7</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC. (OJ L 79, 19.03.2008, p. 1). Regulation as last amended by Commission Regulation (EU) No 6/2013 of 8 January 2013 (OJ L 4, 9.1.2013, p. 34).

<sup>8</sup> Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations and repealing Commission Regulation (EC) No 1702/2003 (OJ L 243, 27.9.2003, p.6-79). Regulation as last amended by Commission Regulation (EU) 69/2014 of 27 January 2014 (OJ L 23, 28.1.2014, p. 12).