European Aviation Safety Agency

EXPLANATORY NOTE

CS-LSA INITIAL ISSUE

1. General

Background

On 27 September 2002 Regulation (EC) No 1592/2002 of 15 July 2002 (the 'Basic Regulation') entered into force. On 8 April 2008 it was replaced by Regulation (EC) No 216/2008 of 20 February 2008[1]. In addition, the Commission has adopted the necessary rules (Commission Regulations) for the implementation of the Basic Regulation for the certification and continuing airworthiness of products, parts and appliances[2].

Pursuant to Article 18 of the Basic Regulation the European Aviation Safety Agency (the 'Agency') shall, where appropriate, issue Certification Specifications and Acceptable Means of Compliance, as well as Guidance Material for the application of the Basic Regulation and its Implementing Rules.

Agency measures

Certification Specifications (CSs) are used to demonstrate compliance with the Basic Regulation and its Implementing Rules.

AMC illustrate a means, but not the only one, by which a specification contained in the Certification Specifications or a requirement of an Implementing Rule, can be met. Satisfactory demonstration of compliance using a published AMC shall provide for presumption of compliance with the related specification or requirement; it is a way to facilitate certification tasks for the applicant and the competent authority.

Guidance Material (GM) is issued by the Agency to assist in the understanding of the Basic Regulation, its Implementing Rules and CSs.

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[1] 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, 19.3.2008, p. 1). Regulation as last amended by Regulation (EC) No 1108/2009 of 21 October 2009 (OJ L 309, 24.11.2009, p. 51).

[2] Commission Regulation (EC) No 1702/2003 of 24 September 2003 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 (OJ L 243, 27.9.2003, p. 6) and Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 315, 28.11.2003, p. 1).

General structure and format

This CS consists of two 'Books'. Book 1 is referred to as 'Certification Specifications' and contains the Agency's technical interpretation of the essential requirements. Book 2 contains the means acceptable to the Agency for the applicant to show compliance with the Certification Specifications. Each Book is divided into 'subparts'.

CS-LSA — Structure and format

The structure and format of the CS-LSA is different from other Certification Specifications that are issued by the Agency. The reason for this is that the CS-LSA is based on a specific revision of the existing industry standards issued by the ASTM International, formerly known as the American Society for Testing and Materials (ASTM). The Agency has applied the rulemaking process to review the relevant ASTM standards at the referred specific revision for acceptance. For that reason, the CS-LSA consists of a reference to the ASTM standards followed by a deviation list showing modifications, additions and deletions of the requirements in the ASTM standards that the Agency finds appropriate for the scope of the CS-LSA. Future revisions of the referenced ASTM standards will be subject to the rulemaking process for adoption in amendments of CS-LSA.

Publication

The full text of the Certification Specifications and Acceptable Means of Compliance as well as of the Guidance Material is available on the website of the European Aviation Safety Agency.
The referenced ASTM standards are available from:
ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA
http://www.astm.org
For more information please contact the Agency at: RPS@easa.europa.eu.

2. Consultation on draft proposals

CS-LSA for Light Sport Aeroplanes is developed by the Agency following a structured process as required by Article 52(1) of the Basic Regulation. Such a process has been adopted by the Agency's Management Board and is referred to as 'The Rulemaking Procedure'[3].
The Executive Director Decision 2011/005/R adopts the initial issue of CS-LSA: Certification Specifications and Acceptable Means of Compliance for Light Sport Aeroplanes that is the output from the following Agency's rulemaking task:

Rulemaking Task No	Title	NPA No
MDM.032	Regulation of aircraft other than complex motor-powered aircraft, used in non-commercial activities	2008-07

The Notice of Proposed Amendment (NPA) has been subject to consultation in accordance with Article 52 of the Basic Regulation and Article 15 of the Rulemaking Procedure established by the Management Board. For detailed

[3] 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 08-2007, 13.6.2007.

information on the proposed changes and their justification please consult the above NPA 2008-07[4] which is available on the Agency's website.

The Agency has addressed and responded to the comments received on the NPA. The responses are contained in a Comment Response Document (CRD) which has been produced for this NPA (CRD 2008-07 Part II[5]) and which is also available on the Agency's website.

[4] See Rulemaking Archives page: http://easa.europa.eu/rulemaking/r-archives.php

[5] See Rulemaking Archives page: http://easa.europa.eu/rulemaking/r-archives.php

In response to the CRD 2008-07 Part II, the Agency received the following substantive reactions, which are reproduced below together with the Agency's responses. As indicated in the publication of the CRD 2008-07 Part II, a revision to the ASTM standards F2245 was issued after the publication of that CRD. The changes of that revision F2245-10c are also reflected in the table below including the disposition by the Agency. Some of the reflected changes from the ASTM F2245-10c revision do not result in a change in the CS-LSA but are listed to highlight that there is a change compared to the previous revision.

Reaction from	**Reaction to CRD 2008-07 Part II**	**EASA response**
General		
UK CAA	It is agreed that it is inappropriate to include non-Day/VMC flight for what should be a "simple" aircraft but flight in IMC is surely beyond "simple" and is outside the scope of the VLA code.	Noted These issues will be discussed in a separate task for CS-VLA. In that task it will also be determined if this should be applicable to CS-LSA.
UK CAA	**Comment**: It is not clear that EASA will retain control over the specific certification standard (i.e. the ASTM Standard). **Justification**: There would be a loss of Agency control over the certification standards. It is believed that legal constraints would prevent the adoption of a standard not under EASA control.	Noted EASA will retain full control over technical standards because each revision of a standard will be reviewed via the current NPA process and only adopted by EASA when they have been found to be acceptable.
CRD 2008-07 Reactions to comments		
UK CAA	**Page 81, Paragraph No:** UK CAA Comment 549 **Comment:** EASA has not totally answered the original comments. The answer given to the first two questions is that there is no reason to limit operations from the technical point of view but the response to question 3 states **"**This TC will use a process that is proportionate to the aircraft covered by ELA." CAA believes that the depth of the technical investigation depends heavily on the intended use of the aircraft. An	The Part-21 certification process does not contain a concept where the depth of the technical investigation can be dependant on the intended use of the aircraft. The differences in safety levels between e.g. CAT and leisure aircraft is reflected in the applicable certification basis. When balancing the airworthiness risks against the operational risks, the HAWK study (reference EASA.2009.C.53 on the EASA website) shows that very few of the fatal accidents can be contributed to failures of initial airworthiness. The risks for these aeroplanes are

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
	amateur built one-off aircraft used for non-commercial purposes is not expected to achieve an exhaustive compliance check list against each design requirement of a code. However, even a microlight used for training is required by some NAAs to show fully documented compliance, when considered commercial operation. A surveyor or PCM carrying out the design assessment/approval will not necessarily require a detailed assessment if he/she is assured that the aircraft is not to be used for commercial purposes. This is regulation proportionate to the risk. **Justification**: Clarification.	predominantly operational.
UK CAA	**Page 101, Paragraph No:** UK CAA Comment 551 **Comment:** The underlying concern behind the comment is that the depth of design investigation (materials sources etc., parts release or provenance), appropriate to an aircraft which may be operated commercially, has to be more rigorous than that which may be allowed more "subjectively" for non-commercial operation. The latter is what CAA believes is being sought for ELA. For clarification of part of the original comment (not understood by EASA), a split fleet is one where aircraft of the same Type Design are certificated to differing standards or processes. **Justification:** Clarification.	The comment mixes up design and production when material sources and release of parts is mentioned as design investigation examples. It is suggested in the comment that design investigation levels should be adapted to the type of operation. This is not contained in the Part-21 certification process. AMC that provide acceptable design investigation means do not differentiate between types of operations. The details of the certification process other than these AMC are not prescribed.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
UK CAA	**Page 102-103, Paragraph No:** UK CAA Comment 555 **Comment:** EASA's response to comment 1): Merely classifying an aircraft as "simple" does not render it simple enough that any applicant will find it easy to achieve certification. As an example, some may seek to avoid demonstration of acceptable stall handling behaviour by merely demonstrating that the aircraft behaves down to the 35 mph maximum stall speed allowed by the code. There would then be no assurance that stall characteristics are acceptable. Another example would be the publication of unrealistic landing distances. Properly qualified experienced people need to be used to assess designs - it is not enough to rely on the design code. In addition, F2245 is an over simplified code. It is believed, from experience, that EASA has misjudged the time, effort and standardisation issues that will arise from more direct NAA or QE involvement. EASA's response to comment 2): CAA would welcome the proposed simplified AMC; this sort of approach is very helpful to designers who genuinely want to justify their product properly. EASA response to comment 8): EASA has noted that "Such meetings *may* be held with the TC holder *if* necessary". CAA believes that such meetings will always be necessary to ensure that	When a certification programme is used for type certification of an ELA1 aircraft, this programme will contain the certification basis and means of showing compliance to the requirements. It is true that the means of showing compliance to ASTM codes is currently not available. This indeed will require considerable effort and bring new standardisation challenges between EASA teams. Further development of AMC to CS-LSA is therefore proposed and at the same time considered by ASTM. This is an important standardisation issue, especially when QE would start to take part in the certification process keeping in mind that QE will be under the EASA control. With regards to the design code F2245; recent research on different regulatory systems show that the safety record of aeroplanes builds to e.g. F2245, is comparable to the safety level of aeroplanes certified to CS-VLA. Even though some caution should be exercised because of inconsistencies and incompleteness of this data; it is believed that for scope of these aeroplanes (MTOM up to 600/650kg) it is adequate. The response to comment 8 from EASA is intended to say that meetings between the TC holder and EASA would remain applicable. This is irrespective of the fact of the TC holder has a DOA or not.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
	the continued airworthiness of the product will continue to be maintained to a satisfactory standard. **Justification:** Clarification.	
UK CAA	**Page 119, Paragraph No:** UK CAA Comment 559 **Comment:** Although it is agreed that the level of safety for ELA2 type balloons is currently satisfactory, this has been achieved with an existing regime of regulatory oversight that is appropriate to the number of passengers being carried. The proposed changes introduced by NPA 2008-07 ELA 2 would significantly alter the regulatory regime from current practice and is likely to result in a significant change in safety levels for a class of aircraft that can carry 30 passengers plus 1 or 2 crew. **Justification:** EASA's response to the original comment does not seem to recognise or respond to the significance of this proposed change.	The proposed changes for ELA2 certification are not different to the current rules, and AP-DOA remains the minimum for design capabilities. Also the certification code has not changed. EASA therefore does not agree that there is a significant change from the current regulatory oversight.
UK CAA	**Page 159, Paragraph No:** UK CAA Comment 554 **Comment:** Whilst it is agreed that NPA 2008-07 introduces a different regime for the certification of ELA aircraft, it is not clear how such a system will identify when such aircraft are no longer supported by a TC Holder and become an "ELA Orphan" aircraft. **Justification:** Clarification.	If a certification programme is used for the type certification of an ELA1 aircraft, there will be a (R)TC holder but no DOA. Only when there is no TC holder it would be an orphan aircraft. This is not different from other aircraft TC.
UK CAA	**Page 169, Paragraph No:** UK CAA Comment 562	The paragraph (b)(7) in CRD 2008-07 Part I explains that there is no limitation to the

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
	Comment: Although reference is made to CRD 2008-07 Part I Paragraphs (b) (7) a number of the points raised in the original comment have not been addressed. These include life limited parts and the commercial use of aircraft that may have parts, including critical parts, produced by an individual or organisation not having a POA. **Justification:** Clarification.	type of operation resulting from the fact that parts without an EASA Form are fitted. Acceptance of parts without an EASA Form-1 is not possible for life limited parts and appliances, parts of the primary structure and parts of the flight controls.
LAA of CZ Rep.	We are very sorry that our proposals (see our comment 151,152) are not taken seriously in account, even we present them for long time. EASA answer to these comments is not acceptable for us.	The proposal was taken seriously and therefore task BR.010 is proposed by EASA.
UK CAA	**Page No 244, Paragraph No:** UK CAA Comment 547 **Comment:** Whilst NPA 2008-07 refers to "preservation of the safety level" no quantitative demonstration has been provided to support this statement. The UK CAA's previous comment, supported by the EASA Hawk report, details a safety record that has been achieved to date for the UK but also includes figures for other NAAs. It is not clear how the capability and standardisation of NAAs and QEs will be managed so that the current safety record being enjoyed by individual countries will be preserved. **Justification:** Clarification.	Comment 547 from the UK CAA refers to statistical analysis for the UK GA fleet providing a comparison between the fatal accident rate of full-regulation, devolved regulation and Self-regulation. A further, more detailed quantitative demonstration of design approval process related fatal accidents could not be derived from that data. The HAWK study similarly shows that very few of the fatal accidents can be contributed to failures of initial airworthiness. Similar to the above, a quantitative demonstration for the preservation of the current safety level related to the changes within the current regulated system can not be provided by EASA, as stated in the response to the comment. It should be noted that the proposal for the changes to Part-21 are not perceived by EASA as a devolved regulation. If NAA

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
		and QE would become involved in the certification process, the process in itself would not change only the involved entities.
UK CAA	**Page 247, Paragraph No:** UK CAA Comment 550 **Comment:** Whilst the response to comments indicates a revision to the requirements for those parts that do not require a Form 1, it is not clear what the changes are. **Justification:** Clarification.	Parts without an EASA Form 1 have been restricted for ELA1 to the same scope as proposed for ELA2.
UK CAA	**Page 251, Paragraph No:** UK CAA Comment 563 **Comment:** EASA's response does not appear to address the issue of equity and fairness with the existing system of Parts M and 145 approval raised in the comment. **Justification:** Clarification	The changes to Part-21 do not provide privileges for the release of maintenance, repair or modifications. They only introduce another process for obtaining data that can be used for maintenance. The only issue with possible impact on equity and fairness was the maintenance privilege introduced for the combined DOA/POA approval. This is however not retained.
UK CAA	**Page 332, Paragraph No:** UK CAA Comment 567 **Comment:** EASA's response states that "concept of organisational reviews is not retained" and refers to "CRD Part I paragraph 4". CRD Part 1 (b) 4 states that "… the requirement for a quality system would be replaced by a requirement for organisational reviews….". It is not clear if organisational reviews are to be a substitute for a Quality Assurance system. **Justification:** Clarification.	The text referred to in this reaction is the original NPA proposal that was not retained. There is therefore no change to the current Part-21 Subpart G.

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM revision	EASA response
CS-LSA - General		
EASA	ASTM standard F2245-09 has been updated to F2245-10c.	The new revision of F2245-10c is incorporated in this CS-LSA initial revision. This is reflected in the referenced standards and in the subsequent Subpart B.
European Sailplane Manufacturers Association	We want to point out that we expect from EASA a clear separation between the "aeroplane CS codes" (including CS-23, a new CS-23light, CS-VLA and CS-LSA) and the "sailplane CS code" CS-22. In the ultralight scene today several designs have emerged which are by design self-launching powered sailplanes but which are certified through national ultralight airworthiness codes. This has lead to the situation that certain safety standards established in the JAR-/CS-22 evolution like crashworthiness of cockpits or energy absorbing landing gears have become lost in these designs. This not only distorts competition in some market segments but even worse decreases the safety level in gliding. EASA has to make sure that this will not also be happening in the part of aviation controlled by the basic regulation. It is understood that within the ASTM system a separate code (ASTM F2564) has been issued for gliders which of course is not part of the proposed CS-LSA. Nevertheless it is not apparent how EASA will	As far as CS-LSA, this is not applicable to sailplane but to aeroplanes which are by definition engine-driven fixed wing aircraft. This is reflected in the Applicability of the CS-LSA. The ASTM standard for gliders (F2564) provides both a standard and a definition that can be used to verify the appropriateness of the applied standard. F2564 states that a glider is defined as a heavier than air aircraft that remains airborne through the dynamic reaction of the air with a fixed wing and in which the ability to remain aloft in free flight does not depend on the propulsion from a power plant. A powered glider is defined for the purposes of this specification as a glider equipped with a power plant in which the flight characteristics are those of a glider when the power plant is not in operation. In order to put emphasis on the fact that powered sailplanes are not within the applicability of this CS-LSA, additional AMC is added.

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM revision	EASA response
	react upon an application according to CS-LSA for an aircraft which is essentially a powered sailplane for one or two occupants.	
European Sailplane Manufacturers Association	Regarding the technical content and the format of the proposed CS-LSA the European sailplane manufacturers have the following general comments: The proposed code relies on the ASTM specifications (most important the F2245 and several more). This is indeed a good and wanted approach giving the LSA manufacturers the possibility to seek EASA certification under CS-LSA when fulfilling already the US-american regulations. As the ASTM specifications become amended very often it may happen that the versions used for this CS-LSA become fast outdated and then it will be difficult to obtain these old documents. EASA should make shure that these versions remain available through ASTM or directly by EASA. The format of taking a base document (e.g. the F2245-09) and then adding the amendment for each affected paragraph makes it difficult to work with such an airworthiness code. A consolidated version would surely make life easier for the applicant and for the responsible Agency. Ideally EASA and ASTM could come to an	When ASTM standard are amended, these will be reviewed by EASA, just like the FAA. Where the FAA publishes a list of accepted standards, EASA will publish an NPA containing the proposal to amend the CS-LSA as a result of the change to the ASTM standard. EASA and the FAA both do not publish the ASTM standards that are the property of ASTM. All versions of the ASTM standard are available on the ASTM website. (A printed copy of F2245-10c costs $55) EASA will discuss options with ASTM to create a consolidated ASTM/EASA CS-LSA document.

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM revision	EASA response
	agreement that such a consolidated version will be published free of charge on the EASA web page as the other CS. This would certainly spur development of many more designs and help all manufacturers of small aircraft to co-develop their respective airworthiness codes. (side comment: and if the numbering system could be re-converted to the FAR-23-like system used in all other CS this would be a great time saver and making things much better structured)	

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
Subpart B - Standard Specification for Design and Performance of a Light Sport Airplane		
Rev F2245-10c	2.1 Specification for Pilot's Operating Handbook F2746 added.	Accepted. No change to CS-LSA
Rev F2245-10c	2.2 and 2.3 References to regulatory documents amended.	Accepted. No change to CS-LSA
Rev F2245-10c	2.4 Other GAMA standard added for the Pilot's Operating Handbook.	Accepted. No change to CS-LSA
Rev F2245-10c	3.1.2 and 3.1.3 editorial corrections	Accepted. No change to CS-LSA
LAA UK	3.1.4 and 3.1.4.1 This definition conflicts with the definition proposed in Part-OPS. We suggest deleting these paragraphs from CS-LSA.	Accepted. It is indeed not appropriate to define the operational term 'night' in this technical standard.
LAA UK	3.2 This definition is not required for CS-LSA and should be deleted.	Not accepted. 3.2 is the header for this paragraph.
Rev F2245-10c	3.2.1 editorial corrections	Accepted. No change to CS-LSA
LAA UK Rev F2245-10c	3.2.23 As presented, the equation for 'q' is misleading and would be	Partially accepted. The ASTM standard has been amended in a slightly different

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
	better presented as "= $0.5\rho V^2$"	manner in revision 10c, therefore 'partially accepted'.
Rev F2245-10c	3.2.30 ($V_{DF} \leq V_D$) is removed	Accepted. No change to CS-LSA
Rev F2245-10c	3.2.34 ($V_H \leq V_{NE} \leq 0.9V_{DF}$) is removed	Accepted. The proposed change to 3.2.34 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c
Rev F2245-10c	3.2.36 V_{S1} Stalling speed or minimum steady flight speed at which the aircraft is controllable ~~with the flaps~~ in a specific configuration.	Accepted. No change to CS-LSA
Rev F2245-10c	3.2.37 V_{S0} Stalling speed or minimum steady flight speed at which the aircraft ~~airplane~~ is controllable in the landing configuration (flaps fully deployed).	Accepted. No change to CS-LSA
LAA Rev F2245-10c	"Modify 4.1.1.2" The text of the whole paragraph must be included for clarity.	Comment not accepted. The proposed change to 4.1.1.2 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
Rev F2245-10c	4.1.2 editorial corrections	Accepted. No change to CS-LSA
LAA	"Add 4.1.3" It would add clarity to specify which paragraph numbers (or range of numbers) need to be considered.	It is not supported to add the specific internal references in 4.1.3. because this would over complicate the standard and make it prone to errors in future amendments.
LAA	"Add 4.2.1.3" This paragraph should read "The maximum empty weight W_E (N) as defined in **3.1.2 and 4.2.1** shall be determined. W_E shall be provided as **an** operational limitation for the aircraft."	Accepted.

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
Rev F2245-10c	4.5.4.2 Changed to 1.1 V_{S1}	Accepted. The proposed change to 4.5.4.2 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
Rev F2245-10c	4.5.5.2 Changed to 1.2 V_{S1}	Accepted. The proposed change to 4.5.5.2 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
LAA Rev F2245-10c	"Modify 4.5.6" The text of the whole paragraph must be included for clarity.	Comment not accepted. The proposed change to 4.5.6 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
EASA	4.6 Remove the proposed change.	The proposed change to 4.6 will be removed from the CS-LSA table of differences because this paragraph was not changed as anticipated in ASTM standard F2245-10c.
European Sailplane Manufacturers Association	page 433 - CS-LSA 4.6.1 ff In the new ground vibration test paragraph: it becomes not really clear how the requirements listed under 4.6.2.2.2 ff fit into the wording V-tai instead of V-tail in 4.6.2.2.2 ...compliance with all of the following....what is this all?	Accepted. Propose to read: 4.6.2 This ground vibration test and analysis may be omitted when there is clear reason to assume freedom of flutter due to compliance with all of the following: (a) Reasonable analysis following the Airframe and Equipment Engineering Report No. 45 (as corrected) 'Simplified Flutter Prevention Criteria' (published by the Federal Aviation Administration) shows the aircraft to be free from flutter risk (b) The airplane does not have T-tail, V-

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
		tail or boom-tail or other unconventional tail configurations (c) is equipped with fixed fin tail surfaces (d) does not have significant amount of sweep (e) does not have unusual mass concentrations along the wing span (such as floats or fuel tanks in the outer wing panels)
Rev F2245-10c	4.7 Formatting change to TABLE 1 Pilot Force	Accepted. No change to CS-LSA.
LAA UK	5.1.2 This paragraph does not reference composite factors that specifically cater for variation in environmental effects. LAA recommend that a reference is made to AMC VLA 619, or other means of accommodating these variations (such as LBA document: I4-FVK/91 "Standards for structural substantiation of sailplane and powered sailplane components consisting of glass or carbon fibre reinforced plastics", July 1991).	Not accepted. Although we agree that factors are needed to cater for the variations, EASA prefers to include such information only after public consultation. It will therefore be suggested to the ASTM committee to introduce guidance on the use of composite materials. Reference to such guidance can be included in a future revision of the CS-LSA. Until such a change is implemented, details will be established during the certification process. Composite factors for variation in environmental effects or material variations which influence might vary depending on the chosen materials and manufacturing methods will be determined using the mentioned references.
LAA Rev F2245-10c	"Modify 5.1.3.1" The text of the whole paragraph must be included for clarity.	Comment not accepted. The proposed change to 5.1.3.1 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
Rev F2245-10c	5.2.4 Formatting change.	Accepted. No change to CS-

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
		LSA.
Rev F2245-10c	5.2.4.3 Formatting change.	Accepted. No change to CS-LSA.
Rev F2245-10c	5.3.7 Formatting change.	Accepted. No change to CS-LSA.
Rev F2245-10c	5.8.1.7 Changes to FIG. 6	Accepted. The proposed change to FIG. 6 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
LAA UK	6.8 The LAA doesn't believe that flight testing is a satisfactory method of structural testing, and it would in any case only test the limit load condition. LAA proposes that the last sentence of 6.8 be deleted.	Not accepted to delete the last sentence. LAA is suggested to raise the issue for clarification with ASTM. Our interpretation is that Flight testing is not replacing the structural requirements for showing of compliance (e.g. 5.1.3.2.) but could support assumptions chosen for load and strength analysis.
LAA EASA	"Modify 6.10.1" The text of the whole paragraph must be included for clarity.	Comment not accepted. The proposed change to 6.10.1 will be removed from the CS-LSA table of differences because this paragraph was not changed as anticipated in ASTM standard F2245-10c.
LAA	"Add 6.11.4" This paragraph needs to read as follows "If a retractable landing gear is used, there must be a means to inform the pilot that the gear is secured in the extended **and retracted** positions".	Partially accepted. The text is amended to show that position information must be provided for both the retracted and extended position.
LAA Rev F2245-10c	"Modify 7.2" The text of the whole paragraph must be included for clarity.	Comment not accepted. The proposed change to 7.2 will be removed from the CS-LSA table of differences because it is now consistent with revised ASTM standard F2245-10c.
EASA	7.6.1 Remove the proposed change.	The proposed change to 7.6.1 will be removed from the CS-LSA table of differences because this paragraph was not changed as anticipated in

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
		ASTM standard F2245-10c.
EMF/BMAA LAMA LAA of CZ Rep.	This comment is related to the section 7.Powerplant Some companies already experienced problem with the proof of conformity of the non-certified engines. The idea that the aircraft manufacturer is responsible for initial and continuing airworthiness if there is no TC for the engine/propeller is problematic, because the airframe manufacturer could have problems to get drawings and specifications of the engine from the engine manufacturer in order to show the compliance with the certification specification. This is a huge effort for a company producing aircraft and not the engines without involvement of the engine supplier. We think that EASA must try to find the solution to avoid this problem. EASA must clearly describe what is required. LAMA EUROPE is ready to help to find such solution.	Noted. Further details will be developed as AMC in rulemaking task MDM.032(d)
EMF/BMAA LAMA Europe LAA of CZ Rep.	This comment is related to the Section 8.5. 8.5.1.requires that only ATC equipment must be approved. For the success of the LSA it is necessary that the remaining avionic and instruments need not be type certificated.	Noted. This is consistent with the requirements contained in CS-LSA. Because of the scope of aeroplanes in CS-LSA (Simple, single engine propeller, day VFR) it is considered appropriate not to require approval of the other instruments.
LAA UK	"Add 8.5" This paragraph number, and sub-paragraph numbers, need to start with 8.6 as there is already a paragraph 8.5.	Accepted.
LAA UK	"Add 8.5.2.5" Should read	Accepted.

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
	"be described and **labelled appropriately** regarding limitations and operation"	
Flight design	CS-LSA defines that ATC equipment must be approved. For all other equipment approval is not required by CS-LSA. I want to clearly support this definition. Experience from several years of usage of aircraft equipped this way in US and several other countries has proven this to be absolutely suitable to this type of aircraft (remember - we talk of VFR day aircraft, as CS-LSA defines it in this CRD). As this is one of the main factors that are the basis for acceptable aircraft purchase cost and low aircraft operation cost, this is a key to the success of these aircraft also in Europe.	Noted. EASA thanks the commentator for his support and shared experience. EASA is of the same opinion that for this type of aeroplanes and their operation it is appropriate not to require approval of the other instruments.
Rev F2245-10c	9.1.1.4 Reference to 10.10 removed	Accepted. No change to CS-LSA.
Rev F2245-10c	New requirement 9.1.1.5 The language used in markings and placards may be adjusted to accommodate language and localization concerns. For example, the word "aeroplane" may be substituted for the word "airplane".	Accepted. 9.1.1.5 will be removed from the difference table in CS-LSA.
Rev F2245-10c	New requirement 9.1.3 A placard that specifies the kinds of operation to which the airplane is limited or from which it is prohibited and that the airplane is to be operated according to the limitations in the Pilot's Operating Handbook. The kinds of operation	Accepted. 9.1.3 will be removed from the difference table in CS-LSA.

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
	specified on the placard must be within the limits given in 9.2.	
LAMA Europe LAA of CZ Rep.	This comment is related to the Annex A1 ADDITIONAL REQUIREMENTS FOR LIGHT SPORT AIRPLANES USED TO TOW GLIDERS There is problem with new EASA proposed modification of paragraph A1.6.1.6 - original ASTM F2245 has there ... weak link shall not be less than 900N (202.3 lb). .... This was changed by EASA to 300daN. The result of this is, that according to the A1.6.1.4 the loads for testing of release forces are now about three times higher than before (because requirement for loads up to 180% of the nominal strenght of the week link)- this is non-realistic requirement. Proposal: We propose to : a) either initiate proces to modify the ASTM standards related to towing the gliders and make them similar to requirements of German LTF-UL or Czech UL-2 requirements for towing gliders by microlights.. b) replace Annex A1 by the corresponding section from German LTF-UL or Czech UL-2 regulation for towing gliders by microlights. These rules are already proved by the real operation of the microlights towing the gliders.	Partially accepted. Because of inconsistencies between CS-22 and ASTM Standard F2245, EASA has decided to delete the Annex A1 from CS-LSA. When aircraft need to be certified for glider towing; special conditions will be used. ASTM will be contacted to develop consistent requirement for towing.
LAA UK Rev F2245-10c	"Add 9.1.3.1" Should read " "No Intentional Spins", if	The proposed new 9.1.3.1 in the CRD is removed because

Reaction from/ ASTM revision	Reaction to CRD 2008-07 Part II and changes from ASTM F2245-10c revision	EASA response
	applicable" (missing quote marks).	it is now consistent with the revision F2245-10c. Refer to the paragraph 9.1.5.
Rev F2245-10c	New requirement added 9.1.4 "This aircraft was manufactured in accordance with Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements."	Not Accepted. 9.1.4 will de added to the difference table in CS-LSA as 'Delete'.
Rev F2245-10c	New requirement 9.2 Kinds of operation and sub-chapters added.	Not Accepted. The content of the new 9.2 and subsequent sub-chapters will de added to the difference table in CS-LSA as 'Delete' 9.2 incl. sub-chapters. Only airworthiness standards are included in CS-LSA.
LAA UK Rev F2245-10c	"Modify 10.1" The word 'airplane'' is used here, but generally in the document 'aeroplane' or 'aircraft' is used.	Not accepted. The wording 'airplane' is used for consistency with the ASTM standard. 'Aeroplane' will be replaced by 'airplane'. The difference to the rev F2245-10c is kept for consistency with Subpart G1.
Rev F2245-10c	CS-LSA deletes 10.2 – 10.11 incl. sub-chapters. This is no longer required since these are removed in F2245-10c	Accepted. The deletion of 10.2 – 10.11 will be removed from the differences table.
LAA UK	"Modify A1.6.1.6" A weak link minimum strength of 300 daN is used. CS-22.581b)2) uses 500 daN: there should be consistency between the codes. Also, the ASTM standards use units of Newtons rather than daN: Newtons should be used for consistency.	Not accepted. Because of inconsistencies between CS-22 and the ASTM Standard, EASA has decided to delete the Annex A1 from CS-LSA.
Rev F2245-10c	Format change to A2.7.3.5	Accepted. No change to CS-LSA.
Rev F2245-10c	Format changes and editorial correction in the Appendixes to F2245-10c	Accepted. No change to CS-LSA.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
Subpart G1 - Operating Limitations and Information		
LAA UK	3.2 This definition is not required for CS-LSA and should be deleted.	Accepted.
LAA UK	4.6 The references to F2295 and F2279 are not consistent with the EASA approach and this paragraph should refer to Part-21 procedures.	Partially accepted This paragraph will be deleted instead of modified because it is as stated covered by Part-21.
LAA UK	6.4.1 Should be modified to read "A list of the standards used for the design, construction, continued airworthiness, and reference compliance with this standard".	Accepted.
LAA UK	a) The word 'airplane'' is used here, but generally in the document 'aeroplane' or 'aircraft' is used.	Accepted.
LAA UK	b)1) Should read "Each part of the **Flight Manual** containing information required by the following chapters or paragraphs of a Pilot's **O**perating Handbook according **to** F2746-09".	Accepted.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
Subpart G2 – Maintenance Limitation and Information		
LAA UK	"Delete 3.1.7" Sections 3.1.7.1 and 3.1.8 should also be deleted.	Accepted to also delete Sections 3.1.7.1 and 3.1.8 from ASTM F2483-05.
EASA	Section 5.3.1 to 5.3.6 should be deleted as they are replaced by the modified 5.3	Accepted.
LAA UK	Section 9 of ASTM F2483-05 needs to be replaced with references to Part-21, Part-66 and Part-M.	Partially accepted. See also the reaction below.
EASA	Section 8, Section 9, Section 10 and Section 11 should be deleted because these are covered by EU Regulation 1702/2003 and 2042/2003. As a consequence deletion of contents regarding "ELSA" is no longer separately required.	Accepted.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
Subpart H – Engine		
LAA UK	"Applicable specifications" Should read "Installed engines shall conform to ASTM F2339**-09**, ASTM F2538**-07a**, 14 CFR Part 33, CS-E or CS-22 Subpart H standards."	Partially accepted. The revision of F2339 is 06 instead of 09.
LAA UK	The table shown is correct for F2339, but another table needs to be added for F2538 which deletes paragraphs 1.2, 3 and 9.	Accepted. The equivalent Sections not applicable in F2538-07a are Section 1.2, 3, 5, 8 and 9. See also the reaction below.
EASA	Section 4 and 7 should be deleted in ASTM F2339-09 and Section 8 and 9 in ASTM F2538-07a because these are covered by EU Regulation 1702/2003.	Accepted.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
Subpart J – Propeller		
LAA UK	"Applicable specifications" Should read "Installed propellers shall conform to ASTM F2506**-07**, **14 CFR** Part 35, CS-P or CS-22 Subpart J standards."	Accepted.
LAA UK	"Add 5.5" Presumably this paragraph, and its sub-paragraphs, need to be numbered 5.6 as there is already a paragraph 5.5.	Accepted. The added Section 5.5 needs to be corrected to 5.6 as indicated.
LAA UK	"Modify" Include the complete wording of the intended paragraph 6.5, also the reference to "(e) below" doesn't appear to make sense.	Accepted.
LAA UK	"Add 6.5" Similarly, this paragraph needs to be numbered 6.7, or a statement needs to be made that this paragraph is inserted after 6.4 and does not replace the existing 6.5.	Accepted.

Reaction from	Reaction to CRD 2008-07 Part II	EASA response
Subpart K - Airframe Emergency Parachute		
EASA	Section 12 should be deleted like in other standards.	Accepted.
LAA UK	Appendix X1 We understand that there is a Europe-wide initiative to standardise the placards relating to emergency parachute systems. CS-LSA should conform to that standard	Noted. In the absence of a European standardized placard the ASTM standard is kept for consistency.
LAA UK	"Modify Fig X1.1" Presumably should read "shows the placard explained under 11.3.3.**1**".	Accepted.
LAA UK	"Modify Fig X1.2" Presumably should read "shows the placard explained under 11.3.3.**2**".	Accepted.
LAA UK	"Modify The reference..." Needs to be deleted.	Accepted.