

Certification Memorandum

Real-time remote participation for witnessing of tests and carrying out of inspections

EASA Proposed CM No.: **CM-21.A-B-001 Issue 1** issued **01 July 2020**

Regulatory requirement(s): 21.A.33, 21.A.239, 21.A.245, 21.A.257, 21.A.615 and 21.B.100 of Annex I to Regulation (EU) 748/2012

In accordance with the EASA Certification Memorandum procedural guideline, the European Union Aviation Safety Agency proposes to issue an EASA Certification Memorandum (CM) on the subject identified above. All interested persons may send their comments, referencing the EASA Proposed CM Number above, to the e-mail address specified in the “Remarks” paragraph, prior to the indicated closing date for consultation.

EASA Certification Memoranda clarify the European Union Aviation Safety Agency’s general course of action on specific certification items. They are intended to provide guidance on a particular subject and, as non-binding material, may provide complementary information and guidance for compliance demonstration with current standards. Certification Memoranda are provided for information purposes only and must not be misconstrued as formally adopted Acceptable Means of Compliance (AMC) or as Guidance Material (GM). Certification Memoranda are not intended to introduce new certification requirements or to modify existing certification requirements and do not constitute any legal obligation.

EASA Certification Memoranda are living documents into which either additional criteria or additional issues can be incorporated as soon as a need is identified by EASA.



Log of issues

Issue	Issue date	Change description
1	08.04.2020	First issue – for consultation
1	01.07.2020	First issue

Table of Content

Log of issues.....	2
Table of Content	2
1. Introduction.....	3
1.1. Purpose and scope	3
1.2. References	3
1.3. Definitions	3
1.4. Abbreviations.....	4
2. Background.....	4
3. Considerations when to apply real-time remote participation.....	4
4. Remote participation for witnessing of tests and carrying out of inspections by EASA – guidelines	5
4.1. Information to be provided	5
4.2. Evaluation and acceptance of the proposed technology and schedule.....	6
4.3. Timeline records	6
4.4. Limitations to the use of remote participation	6
4.5. Update of APDOA procedures or DOA handbook	7
5. Remote participation for witnessing of tests and carrying out of inspections by applicants – guidelines	7
6. Validation projects.....	8
7. Cybersecurity aspects.....	8
8. Remarks	8



1. Introduction

1.1. Purpose and scope

The purpose of this Certification Memorandum is to provide guidance to be considered by applicants for TCs, changes to TC, STCs, repairs or ETSOAs intending to apply real-time remote participation for witnessing of tests and carrying out of inspections addressed in point 21.A.33 Inspections and tests of Annex I to Regulation (EU) 748/2012.

In particular, it addresses the cases where EASA remotely, in real-time, witnesses tests and carries out inspections as part of its involvement determined in accordance with point 21.B.100 Level of involvement. The guidelines for these cases are defined in paragraph 4.

Some considerations are provided in paragraph 5 for cases where applicants remotely, in real-time, witness tests and carry out inspections, which take place in a facility where it is a too huge burden, not necessary or not possible to physically attend. As an example, this scenario can occur in the framework of the activities defined in point 21.A.239 (b) Design assurance system for the verification of compliance with requirements of the certification basis of a product by compliance verification engineers.

The following activities are excluded from the scope of this certification memorandum:

- EASA certification flight test activities;
- EASA human factors certification activities carried out within the scope of CS 25.1302 compliance finding - or similar human factors' requirements related to other CSs;
- "T tests" activities performed for the approval of the operational suitability data for flight crew and conducted in line with the processes described in the certification specifications for operational suitability data flight crew data CS-FCD; and
- EASA auditing activities.

NOTE: this certification memorandum does not apply to the process of generation of videos, audio recordings or any other data needed to support the evaluation of the outcome of the tests that are difficult to observe (e.g. dynamic tests on seats, impact tests, ballistic tests on flight deck boundaries, high-intensity radiated field tests, in-flight icing tests, or water ingestion tests).

1.2. References

Reference	Title	Code	Issue	Date
1	Use of Remote Technology during the Performance of Inspections and Tests by Federal Aviation Administration	PS-AIR-21-1901	First issue	31.03.2020

1.3. Definitions

Remote participation for witnessing of tests and carrying out of inspections	Remote participation is intended as any real-time video and audio communication means, which aims at replacing the physical presence (being EASA or the applicant) during the witnessing of a test or a carrying out of an inspection.
Real-time	Information that is delivered as it happens.



1.4. Abbreviations

APDOA	Alternative Procedure to DOA
APU	Auxiliary Power Unit
CS	Certification Specification
DOA	Design Organisation Approval
DOA TL	DOA Team Leader
EMC	Electromagnetic Compatibility
ETSOA	European Technical Standard Order Authorisations
EWIS	Electrical Wiring Interconnection System
HD	High Definition
HIRF	High-Intensity Radiated Field
STC	Supplemental Type Certificate
TC	Type Certificate

2. Background

EASA acknowledges that the use of real-time remote participation to allow witnessing of tests and carrying out of inspections in order to perform their duties without physical attendance can reduce certification costs and improve certification timelines, while allowing for a more efficient use of the human resources. This certification memorandum provides guidance on real-time remote participation for witnessing of tests and carrying out of inspections as defined in Regulation (EU) 748/2012 point 21.A.33 Inspections and tests.

Real-time remote participation may have limitations that could render it unsuitable for some applications. Accordingly, careful consideration and risk management should be applied when making a determination when to use it. The factors listed in paragraph 3 should be considered in determining when remote participation could be used. These factors are however not exhaustive and should not be treated as a checklist.

3. Considerations when to apply real-time remote participation

General considerations.

The following should be considered when an applicant intends to use real-time remote participation for witnessing of tests and carrying out of inspections:

- Whether the nature of the inspection or test allows the use of real-time remote participation;
- Performances of the technologies for real-time remote participation should be taken into account and properly complemented by thorough preparation, adapted test setup, efficient and transparent test execution and/or availability of results from previously conducted engineering tests to confirm real-time participation equipment setup, as necessary;



- Level of competence and experience of the personnel in the use of the specific procedures and equipment that will be used to conduct the inspection or test;
- Previous experience of the facility conducting or supporting the inspection or test and similarity with already performed inspections or tests;
- Appropriateness of the inspection and test instruments and/or equipment, especially if used to evaluate qualitative aspects of a product, specimen or system;
- Unless otherwise already foreseen by the APDOA procedures or DOA handbook, the use of remote participation is to be agreed on a case by case basis with EASA; and
- To support compliance demonstration activities, images and recorded videos may already be provided by applicants and referenced in associated compliance documents. However, the mere review of recorded videos of inspections and tests is not considered as real-time remote participation in compliance demonstration activities retained by EASA in accordance with point 21.B.100 Level of involvement or as real-time verification by the independent checking function of a Design Organisation Approval Holder in accordance with point 21.A.239 (b) Design assurance system.

Equipment and setup considerations.

The following should also be considered when determining whether real-time remote participation could be used to witness a test or carry out an inspection:

- Suitability of video resolution, fidelity, and field of view for the inspection or test being conducted;
- Need for multiple cameras, imaging systems, or microphones and whether the person performing or witnessing the test or carrying out the inspection can switch between them, or direct them to be switched;
- Controllability of viewing position, direction, zoom, and lighting;
- Appropriateness of audio fidelity for the evaluation being conducted;
- Uninterrupted communication (audio and video) between the person(s) authorised to remotely witness the activity and the personnel conducting the inspection or test exists at the location where the product, specimen or system is located;
- Need for specific testing devices or equipment (e.g., fast-frame cameras, special lighting conditions, or sensitive listening devices, mobile phones with cameras for HD video calls);
- Whether personnel have been sufficiently familiarised with the use of the real time communication technologies to be able to discharge their responsibilities;
- Interaction aspects between the personnel performing the inspection or test and personnel that need to witness the test or carry out the inspection, such as possibility to stop the test, ask a question, move equipment etc.;
- Need for the retention of the audio, video, or other information. EASA may request that the person conducting the inspection or test record and save video, audio, or other information for a specified time to enable post-test evaluation; and
- Suitability of data acquisition system according to the nature of the test.

4. Remote participation for witnessing of tests and carrying out of inspections by EASA – guidelines

4.1. Information to be provided

An applicant intending to use real-time remote participation to enable EASA to witness tests or carry out inspections should document this approach in the project certification programme.

Furthermore, the certification test plan and the compliance inspection plan, should address at least the following items in addition to the information they normally include:

- A description of how the product, specimen, system or equipment will be inspected or tested, including:



- Preparation activities performed before the start of the remote witnessing such as conformity of the test specimen and test setup;
- Detailed description of the test setup;
- Detailed description of how the witnessing activity is intended to be developed;
- Pass/fail criteria; and
- Personnel in charge of conducting the activity and their level of competence, intended as:
 - Level of competence in inspection/test execution and experience in the use of the particular procedures and equipment that will be used to conduct the inspection or test; and
 - Previous experience of the facility conducting or supporting the inspection or test and similarity with already performed inspections or tests.
- Identified limitations of the use of remote participation compared to an equivalent 'in person' EASA witnessing scenario;
- The proposed date and location of each inspection and test, including all relevant logistical aspects (time difference, start and end time of each live streaming session, etc.); and
- Any other relevant information.

4.2. Evaluation and acceptance of the proposed technology and schedule

EASA will determine whether the proposed technology can be used to witness the test and carry out the inspection.

The applicant will arrange preliminary trials in order to enable EASA to make its determination and confirm that the proposed technology for remote participation ensures that EASA can properly perform its duties.

Any deviation from the schedule of the live streaming sessions will have to be agreed by EASA.

The test or inspection will be considered valid only if it has given full satisfaction as per the initially agreed expectations (e.g. no interruption of live streaming, sufficiently high resolution, etc.). Otherwise the test shall be repeated.

4.3. Timeline records

When using real-time remote participation to allow EASA to witness a test or carry out an inspection, the applicant should, as appropriate, provide a chronological description of the test or inspection and any adjustments to the real-time remote participation equipment (cameras, microphones, etc.) made over the course of the inspection or test and the reasons for the adjustments.

4.4. Limitations to the use of remote participation

Examples of tests and inspections that are hardly subject to an adequate evaluation through real-time remote participation include but are not limited to:

- Cabin attendant direct view;
- Assessment of outside viewing capabilities;
- Legibility of markings and placards;
- Tests involving the generation of smoke (smoke detection, propagation, penetration and evacuation);
- Testing involving the use of naïve subjects;
- Effectiveness of life vest container security seals;
- Evaluation of sharp edges;
- Evaluation of the manual override function of electrically driven seat;
- Usability of escape slides;
- EWIS inspection;



- HIRF, EMC, and lightning related testing;
- Evaluation of malfunctioning during door closing sequences;
- Evaluation of clearance between fixed and moving part; and
- Engine, APU, nacelle snow testing.

4.5. Update of APDOA procedures or DOA handbook

Despite the fact that the use of real-time remote participation can be proposed at project level to allow EASA to witness tests or carry out inspections, repeated regular use of real-time remote participation proposed to EASA by APDOA or DOA holders, should have associated provisions documented in their procedures or handbook in accordance with Part 21.A.14 Demonstration of capability or Part 21.A.243 Data respectively (see paragraph 5 for the information to be included).

An APDOA/DOA holder seeking to use regularly real-time remote participation by EASA should contact their assigned DOA TL and evaluate the significance of the changes introduced to their procedures or handbook. Type of test/inspection, communication technology proposed for the real-time remote participation and current status of procedures in use by the APDOA/DOA holders will be taken into consideration to evaluate the significance of the change.

If the change is considered significant for the compliance with point 21.A.14 Demonstration of capability for an APDOA or in accordance with 21.A.247 Changes in design assurance system for a DOA, the APDOA/DOA holder should apply to EASA for a significant change to its APDOA procedures or to its DOA Design assurance system with an EASA Form 81 or EASA Form 82 respectively.

5. Remote participation for witnessing of tests and carrying out of inspections by applicants – guidelines

This paragraph provides guidelines to applicants who want to witness tests or carry out inspections performed by third party organisations (laboratories, test facilities, etc.), or in the case of the activities defined by 21.A.239 (b) Design assurance system with the support of real-time remote participation.

The use of real-time communication technologies by APDOA or DOA holders to allow remote participation for witnessing of tests and carrying out of inspections to their own personnel – e.g. design, airworthiness and compliance verification engineers - shall be described in their procedures or handbook in accordance with point 21.A.14(b) Demonstration of capability and 21.A.243 Data.

The introduction of such technology may be a significant change to the procedures of an APDOA holder or of the design assurance system of a DOA holder. Organisations are invited to consult their respective DOA TL to evaluate the significance of the change. Type of test/inspection, communication technology proposed for the real-time remote participation and current status of procedures in use by the APDOA/DOA holders will be taken into consideration to evaluate the change.

It is here reminded that when the tests or inspections are to be performed by third party organisations other than the legal entity holding the APDOA or DOA, it is expected that those organisations are accepted as design subcontractors under the APDOA procedures, or under DOA design assurance system in accordance with points 21.A.239 Design assurance system and 21.A.245 Approval requirements.

If the change is considered to be impacting the showing of compliance with Part 21 for APDOA or to be significant as per Part 21.A.247 Changes in design assurance system and associated criteria in GM 21.A.247 Changes in design assurance system for DOA, an application for a significant change should be submitted to EASA via an EASA Form 81 or Form 82 respectively.



The following items constitute a necessary, non-exhaustive list to be included, as applicable, in the APDOA procedures, DOA handbook or project certification documents:

- Basic instructions for the review and acceptance of the technologies by the APDOA or DOA relevant personnel in line with the general considerations in paragraph 3 for the identified type of tests and inspections at identified facilities, including facilities of third-party organisation acting as subcontractors;
- Procedural requirement on how to document and record evidence of the review and acceptance of technology/facility, and to ensure supervision of all facilities able to provide real-time remote participation;
- Procedural requirements to request that project certification documents include items specified in subparagraph 4.1, unless suitable provisions are introduced in the relevant procedures; and
- Limitations to the use of remote participation as specified in subparagraph 4.4 which similarly apply for APDOA/DOA personnel due to witness tests or to carry out inspections.

6. Validation projects

In the framework of projects where EASA is not acting as primary certification authority, proposals to use remote participation for witnessing will be evaluated on a case by case basis.

The guidelines provided in paragraph 4 apply.

EASA involvement in such projects will be determined in accordance with the applicable bilateral agreements, working arrangements and applicable regulations in force. In these cases, EASA will reserve the right to retain the compliance activities affected by witnessing via real-time remote participation or delegate those activities to the primary certification authority.

7. Cybersecurity aspects

There are cases where testing/inspection facilities are subject to strict security limitations. When using real-time remote participation for witnessing tests and carrying out inspections, it is the responsibility of the applicant to provide an equivalent level of security. This can include digital security protection, and/or verification of witness personal data (e.g., ID, passport, etc.).

8. Remarks

1. Comments regarding this EASA proposed certification memorandum should be referred to the Certification Strategy and Programming Department, Certification Directorate, EASA. E-mail CM@easa.europa.eu and copying the reference person indicated on the EASA webpage where this document is made available.
2. For any question concerning the technical content of this EASA Proposed Certification Memorandum, please contact:

Name, First Name: Ambrosio, Michele

Function: Project Certification Manager

Phone: +49 (0)221 89990 4275

E-mail: michele.ambrosio@easa.europa.eu

