



TECHNICAL GUIDANCE MATERIAL

for

Experimental Certificate of Airworthiness

SUBJECT: TECHNICAL GUIDANCE MATERIAL for EXPERIMENTAL CERTIFICATE OF AIRWORTHINESS

EFFECTIVE DATE: 28 September 2021

APPLICABILITY

This TGM applies to:

1. persons who are authorised to issue experimental certificates of airworthiness
2. aircraft owners and pilots
3. aircraft designers and constructors
4. aircraft maintainers

PURPOSE

The purpose of this Guidance Material (GM) is to provide guidance and information to applicants of experimental certificate of airworthiness.

REQUIREMENTS

The aim of the experimental certificate of airworthiness is to permit applicants who want special airworthiness certificate approval for operations of aircraft that do not meet the requirements for a standard certificate of airworthiness because of certain modifications that do not conform to their type certificates but are capable of safe operations under defined operating conditions and limitations.

1. REFERENCED DOCUMENTS:

- i. Part 21 Subpart 1 of the South African Civil Aviation Regulations (CAR's), General;
- ii. Part 21 Subpart 2 of the CAR's, Type Certificates;
- iii. Part 21 Subpart 3 of the CAR's, Changes to Type Certificates;
- iv. SA-CATS 21, South African Civil Aviation Technical Standards, Airworthiness Requirements;
- v. Part 187 of the CAR's, Fees;
- vi. Part 147 of the CAR's, Design Organisations for Products, Parts and Appliances;
- vii. SA-CATS 147, South African Civil Aviation Technical Standards, Design Organisations
- viii. TGM on Part 147 approval of Design Organisation;
- ix. TGM on Part 148 approval, Manufacturing Organisation;

- x. FEDERAL AVIATION ADMINISTRATION ORDER 8130.2J dated 07/21/2017
- xi. Australian Government Civil Aviation Safety Authority ADVISORY CIRCULAR AC 21-10v4.2

2. TERMS AND ABBREVIATIONS

TERM	DEFINITION
Flight Test	The process of developing and gathering data during operation and flight of an aircraft and then analysing that data to evaluate the flight characteristics of the aircraft.
Certification Flight Testing	Those flight tests conducted for the purpose of demonstrating, or verifying, compliance with the applicable airworthiness standard.
Experimental/Developmental Flight Testing	Those flight tests which are planned and conducted for the purpose of evaluating and reporting qualitative and quantitative test data to evaluate performance and flying characteristics of the aircraft.
Production Flight Testing	Flight tests conducted for the purpose of ensuring each individual aircraft conforms with its Type Design and is in a condition for safe operation.
Flight Test Programme	A document that defines the purpose and processes for the development and preparation for flight testing. The programme includes some of the following aspects: - <ul style="list-style-type: none"> • Sequence and planning of flights (with phases if needed) • Reference to the applicable requirements (certification flights) • Method of test flight • Safety provisions (analysis) • Design Limitations • Ground and flight crew • Test aircraft configuration etc.

ABBREVIATION	DESCRIPTION
AED	Airworthiness Engineering Department
TGM	Technical Guidance Material
CoA	Certificate of Airworthiness
ECOA	Experimental Certificate of Airworthiness
R&D	Research and Design
SACAA	South African Civil Aviation Authority
CAR	Civil Aviation Regulation
STC	Supplemental Type Certificate
SACAR	South African Civil Aviation Register
Vne	Never Exceed Speed
cg	Center of Gravity
OEI	One Engine Inoperative

3. GENERAL

3.1 BACKGROUND

- 3.1.1 In recognition of the lack of compliance with some of the airworthiness standards, an aircraft with an experimental certificate of airworthiness is normally permitted to be operated under more restrictive operating conditions than in the case of a comparable aircraft operating on a standard CoA. While processing an application for the issue of an experimental certificate, the SACAA may rely on the relevant information provided by, and the engineering judgment of the applicant.
- 3.1.2 The owner/operator of an experimental aircraft is responsible for taking care to minimise safety risks and to be satisfied that the aircraft is reasonably capable to carry out flights without damage or injury to the aircraft and its occupants or to other property or persons whether in the air or on the ground or water.
- 3.1.3 If an aircraft is operating on an experimental certificate of airworthiness and the flight involves operations in the airspace of foreign countries, the operator of the aircraft must obtain special flight approvals from the appropriate authorities of each of those countries prior to undertaking the flight in their airspace.

3.2 GENERAL GUIDELINES

The following general guidelines establish the working basis for the regulatory oversight of experimental certificates:

- (a) An experimental aircraft is not required to have a type certificate or to meet the requirements of a type certificate.
- (b) The term 'Experimental' is a designation and not an airworthiness category. An experimental certificate does not attest to the airworthiness of the aircraft.
- (c) The specific conditions and limitations relating to the operations of the aircraft will be contained in the certificate.
- (d) If an experimental certificate is issued for an aircraft already having a standard CoA, then the previously issued standard CoA is suspended for the duration of the experimental CoA.
- (e) Passengers or cargo cannot be carried for compensation or hire during operations of the aircraft with experimental CoA.

3.3 PURPOSE FOR EXPERIMENTAL CERTIFICATE

The applicant must describe the purpose in sufficient detail to outline the aircraft configuration and programme objectives, in a manner that will enable the SACAA to prescribe adequate limitations and conditions necessary to ensure safe operation. An experimental certificate for an aircraft may be issued on one or more of the following prescribed purposes as per CAR 21.08.6: -

PURPOSE	DESCRIPTION
Showing Compliance with Regulations (Certification or Production Flight Testing)	<p>This purpose provides for test flying undertaken by the applicant with the CAA as part of a type certification program. All test proposals should be as a result of certification requirements, as laid down in draft form in the Compliance Summary. Examples of this purpose are conducting flight tests and other operations to show compliance with the airworthiness regulations, including flights to:</p> <ul style="list-style-type: none">• show compliance for issue of type certificates on certification or production flight tests and in the case of STCs.• substantiate major design changes.• verify compliance with the function and reliability requirements of the
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PURPOSE	DESCRIPTION
	<p>regulations.</p> <p>An experimental certificate for this purpose is valid only for the period specified on the certificate, but not exceeding one year, and for the number of flights necessary to accomplish the purpose.</p>
<p>Research and Development (R&D) (Experimental/Developmental Flight Testing)</p>	<p>This purpose is primarily intended for R&D operations that lead to the subsequent issue of a type certificate, including proof-of-concept flying; or for operations which may be purely R&D in nature, such as determining whether an idea warrants further investigation. Examples of this activity includes: -</p> <ul style="list-style-type: none"> • testing new aircraft design concepts • new aircraft equipment and installations • new aircraft operating techniques, or • new uses for aircraft. <p>The operations are limited to genuine R&D activities. An experimental certificate for this purpose is valid only for the period specified on the certificate, but not exceeding one year, and for the number of flights necessary to complete the R&D programme. The R&D purpose is essentially a transitory one, and operation under this purpose for an indefinite period is not permitted.</p>

4. FLIGHT TEST PROGRAMME

The applicant for an experimental certificate of airworthiness should provide a flight test programme document which contains all the information pertaining to the experiment. The complexity of a flight test programme will essentially be a function of the nature of the purpose of the tests to be conducted. The following are some of the elements which should be composed in the flight test programme document: -

4.1 FLIGHT TEST AREA

4.1.1 In addition to the address of the base operation, the applicant must provide sufficient details of the areas over which the flights are to be conducted. The SACAA will establish boundaries of the flight test area and will ensure that hazards to persons on the ground or water are minimised in densely populated areas or congested airways.

The determination of the flight test area will be approved in consideration of the following: -

4.1.2 The desired flight test area should be requested by the applicant, and it will be approved and specified in the operating limitations. It will usually encompass an area within a specified radius from the aircraft's base of operation or in a designated test area established by the SACAA.

4.1.3 The area selected by the applicant for approval should not be over built-up areas of a city or town or in congested airways, so that the flight testing would not likely pose any hazard to other aircraft in the airways or persons on the ground or water.

4.1.4 The initial confined area of operation should be prioritised to show that the aircraft is controllable throughout its normal speed range and all manoeuvres to be executed and has not displayed any hazardous operating characteristics or design features.

4.1.5 In the case of the first flight of an aircraft from an aerodrome surrounded by a densely populated area, but with at least one acceptable approach/departure corridor, the SACAA will ensure that a flight corridor is selected where

no persons may be subjected to possible hazards. In addition, upon leaving such an aerodrome, the aircraft should be required to operate from an outlying aerodrome until its controllability, airworthiness, and safety are established, after which the aircraft may return to its base and use the established corridor for subsequent operations. The description of the area selected, as well as details defining any established approach/departure corridor(s) shall be made a part of the operating limitations.

- 4.1.6 In the case of an aircraft located at any aerodrome surrounded by built-up areas of a city or town and lacking any acceptable approach/departure corridor, the SACAA will not normally issue the experimental certificate. The applicant will be advised to relocate the aircraft by other means to a suitable aerodrome.
- 4.1.7 The SACAA may amend the operating limitations to permit flight outside the assigned flight test area when satisfied that the applicant has conducted sufficient test flights to determine that the aircraft is controllable throughout all its range of speeds and throughout all the manoeuvres to be executed and has no hazardous operating characteristics. A certification to that effect must be made in the aircraft's records.
- 4.1.8 The SACAA may choose to observe flights, inspect the aircraft or carry out a review of the aircraft's maintenance records for the flight test period if deemed necessary, prior to amending the operating conditions.

It should be noted that there are no specific time recommendations for operation of an experimental aircraft within an assigned test area. Each case should be judged on the individual conditions, such as the type and complexity of the aircraft. For example, flight testing in connection with a modification may require only one hour in an assigned flight test area, whilst the initial operation of a prototype aircraft may require significantly more hours before the safety certification can be made.

If any major changes are made to an aircraft after it has been certificated for operation outside of a previously assigned flight test area, the SACAA must be notified, and the response received in writing prior to flying the aircraft.

4.2 FLIGHT TEST PARAMETERS

- 4.2.1 Manoeuvres may be permitted whilst the aircraft is in the assigned flight test area if, in the judgment of the SACAA, the aircraft has the capability of such flight. However, these manoeuvres should not be attempted until sufficient flight experience has been gained to establish that the aircraft is satisfactorily controllable.
- 4.2.2 Manoeuvres which have been demonstrated in the assigned flight test area should be documented in the aircraft records. Only those manoeuvres which have been successfully accomplished should be permitted after leaving the assigned flight test area. Appropriate limitations, which identify the manoeuvres and conditions under which they may be performed, should be prescribed in the limitation on the certificate.
- 4.2.3 Those aircraft owners/operators wishing to include new manoeuvres will need to make a request for a new flight test area and follow the same conditions as noted immediately above.
- 4.2.4 The applicant should provide detailed information on the configuration of the aircraft, required and actual weather conditions, weight and balance etc.

Aircraft which have satisfied the requirements outlined in this section may be operated outside of an assigned flight test area. Operation of the aircraft outside an assigned flight test area will require the issue of a new experimental certificate with the new amended operating limitations. A new application will be required to be submitted whenever amended operating limitations are requested, since the date of the old limitations shown on the corresponding certificate would not be in accordance with the date of the new limitations, and alteration of the certificate to change the date is not permitted.

4.3 PILOT QUALIFICATIONS

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- 4.3.1 To carry out flight testing on an experimental aircraft the pilot must have at least a private pilot licence (PPL) with the appropriate class and rating.
- 4.3.2 A suitably qualified pilot may fly an aircraft without the appropriate endorsement for the purpose of testing the aeroplane or carrying out an experiment in relation to the aeroplane, only if the SACAA has given the holder permission to fly the aeroplane in those circumstances.
- 4.3.3 Similar provisions exist for flight testing experimental rotorcraft. The pilot must hold a helicopter or gyroplane licence at the PPL level or higher. When experimental gliders, balloons and unconventional aircraft are involved, the SACAA will advise the applicant on minimum pilot qualifications as appropriate.
- 4.3.4 It is highly recommended that for an initial experimental aircraft, the test pilot must have relevant qualifications and knowledge for test flying as, it would be most unwise for the initial flight tests to be carried out by other than a pilot with such knowledge, especially in the case of a totally unproven design. Stability and control problems might only become apparent after first flight lift-off, and the appropriate technical knowledge and experience may be essential to avert a catastrophic event.
- 4.3.5 Notwithstanding all the above, the SACAA may impose the requirements for further experience and qualifications in the case of high-performance or complex aircraft.
- 4.3.6 All the above relates to initial test flying of experimental aircraft. When test flying of an experimental aircraft involves the preparation, flight testing, and approval of flight test data relating to aircraft certification (showing compliance with the regulations), the involvement of a professional test pilot and /or flight test engineer should ensure the results meet the required standards.
- 4.3.7 It is recommended and distinctly advantages in the involvement of professional flight test personnel at the early stages of an aircraft type certification program.

4.4 FLIGHT TEST SAFETY

All flight testing involves some degree of risk. In many cases risk levels will be low and possibly no more than encountered during the normal operations of certificated aircraft. In other instances, significant hazards may be lurking – for example, during the initial flying for a newly designed aircraft or a substantially modified one. Also, some phases of many test programmes, like evaluating stall handling, spinning or flutter characteristics, should always be approached with an extra measure of caution. Some basic flight test safety aspects worth considering during any flight test programme are as follows:

4.4.1 Aircrew

Flight test aircrew should be trained, current and practised in the type of aircraft or operation under test. Pilot experience and qualifications, in themselves, do not necessarily make for a fully prepared test pilot.

4.4.2 Work-Up

Testing may be preceded by a training and work-up programme during which specific flight test techniques and sortie profiles are rehearsed. This is particularly relevant to any testing that involves elevated risk profiles. Planning and risk management processes should be applied to work-up training programmes in the same manner as they are applied to the actual testing.

4.4.3 Test Planning

All flight testing should be subject to a thorough planning process. Plan to test 'from-inside-out', i.e., from the centre of the envelope to the edges, from low-risk areas to those of higher risk. Have an idea where the limits will be and approach them with caution. Then 'plan the flight, fly the plan' – only planned test points should be addressed during any sortie. Contingency test points may be carried into a sortie however ad-hoc testing should not occur.

4.4.4 Hazard Analysis and Risk Management

The applicant is strongly urged to conduct a detailed Hazard Analysis and Risk Management exercise as part of the test planning and the ongoing flight-testing processes. Risk management is the process by which:

- a) hazards are identified where an assessment is made of the risks involved to the test pilot, other space users and person on the ground or water.
- b) mitigating procedures are established to reduce or eliminate the risks and a conscious decision is made, at the appropriate level of authority, to accept residual risk should be analysed and associated risk identified and classified. Risk should be mitigated by appropriate limitation (altitude, safety equipment, chase aircraft etc.). No flight should be performed if the risk after mitigation is classified as catastrophic.

4.4.5 Test Conduct

There are many general safety issues for consideration during conduct of the actual test programme. Some are as follows:

- a) Crew Resource Management: All essential crew must be identified and must be the only crew forming the test programme.
- b) Knock-it-Off (KIO): KIO criteria are worth defining especially for any testing entailing elevated risk levels. Any team member should have the authority to make a KIO call; and
- c) Crew Duty / Fatigue / Perceived Pressure: Team members should be aware of the propensity for personal fatigue to create a flight safety hazard. The job needs to be completed but not at the expense of the aircraft. An extra day or two is probably the least costly option.

4.4.6 Risk Assessment – Regulatory Requirement

- a) The operation of experimental aircraft, especially those flown during the test phases of developmental or modification projects, can involve elevated levels of risk. It is highly recommended that an operator of such experimental aircraft carries out the formal hazard analysis as stated in 4.4.4 and in addition a risk assessment using guidance provided in Table 1 and 2 in the Appendix.
- b) The risk factor sheet provided in Table 1 offers a list of organisational, testing and safety elements, with associated evaluation information, that should normally be considered with respect to a flight test programme. Aggregation of the individual Table 1 assessments gives an idea of the overall programme risk level which can then be used in conjunction with the risk assessment summation in Table 2. The SACAA will evaluate the applicant's assessment and use it in deciding what operating conditions and limitations to impose. These tables are intended as a general guide and are not exhaustive in what should be considered.
- c) CAR Part 21.08.6 (3)(h) requires that the applicant for an experimental certificate provides any other information that the Director may require in the interest of aviation safety. This implies that the CAA may require more information such as the fundamental hazard analysis and risk management process considering the safety of other persons and air space users from the applicant.

4.5 OPERATING CONDITIONS AND LIMITATIONS

4.5.1 Conditions, limitations and directions for operation of an aircraft on experimental CoA are entered in the certificate. They should be designed to fit the specific purpose(s) and situations that apply to the aircraft.

4.5.2 The SACAA may impose any additional conditions, limitations or directions as deemed necessary in the interests of safety of other airspace users, and persons on the ground or water. The risk assessment called for in section

4.4.6 should be considered when imposing conditions or limitations. The SACAA should review each operating condition, limitation or direction imposed, with the applicant, to ensure that they are fully understood.

5. APPLICATION

5.1 Application and Establishment of The Purpose of The Experimental CoA

5.1.1 Pre-Application Meeting and Concept Briefing

The purpose of the pre-application meeting is for the CAA to be familiarized with various aspects of the proposed purposes of the experiments. The CAA will further be providing guidance to the potential applicant to relevant regulatory and procedural guidance material.

Depending on the intended purpose of the experiments to be conducted, the pre-application meeting is highly recommended. This begins with the potential applicant submitting an inquiry to the CAA engineering manager requesting guidance pertaining to the formal process of obtaining experimental CoA. The potential applicant will be invited to a pre-application meeting with the CAA. During the meeting the applicant provides the CAA with a concept briefing for the intended purpose of the experimental CoA for the project.

The Concept Briefing is the first formal discussion and high-level presentations of how the potential applicant intends to conduct the experimental activities leading to the issuance of the CoA. Attendees of the briefing would normally include the applicant technical team and the CAA project team members. The agenda may include the following general topics:

- a) Overview of the product concerned.
- b) High level project overview, Flight test programme.
- c) Applicant capabilities, and resources etc.

Minutes taken during the concept meeting will be considered as important as any other documents submitted by the client. All issues discussed and addressed during concept briefing must be closed. The concept briefing minutes will be included in the project file.

5.1.2 Application and supporting data

Any registered operator, or owner of an aircraft, manufacturer or aircraft modifiers may apply for the issue of an experimental CoA. An application for an experimental certificate can be made to the SACAA for the purpose of regulation CAR 21.08.6. The application form CA 21-49 is available from the SACAA website. The completed application form, CA 21-49 may be submitted to the Airworthiness Engineering Department (AED) through the email address eng@caa.co.za.

Depending on the purpose of the experimental CoA, the SACAA will allocate a team consisting of structural/mechanical, electrical/avionics and manufacturing representatives dedicated to review the experimental CoA application.

The applicant for an experimental certificate must provide a completed CA 21-49 application form along with the following information: -

- a) A statement, setting forth the purpose for which the aircraft is to be used
- b) Flight test programme
- c) Enough data (such as photographs and three-view drawings) to identify the aircraft, and describe the external configuration
- d) Any other relevant information reasonably needed by the SACAA as per CAR 21.08.6 to enable the imposition of any conditions or operational limitations necessary in the interests of the safety of other airspace users, and persons on

the ground or water.

5.1.3 Payment of Fees

An hourly rate charge will be invoiced in accordance with Part 187 of the Civil Aviation Regulations. SACAR 187.01.2 which stipulates the relevant hourly rate charge for an Experimental CoA.

6. REVIEW OF APPLICATION AND SUPPORTING DATA

The allocated team will review the application to verify that it meets CAR 21.08.6. The review will focus on the below aspects:

(a) Purpose.

Verify the application clearly describes the purpose for which the aircraft will be used, and the purpose of the experiment.

(b) Time.

Verify the application contains the estimated number of flights or flight hours, and the period of calendar time required for the experiment. The application form must include the estimated time (days), number of flight hours and number of flights required to accomplish the program. The SACAA will evaluate the request in comparison to the overall programme to establish an approximate time duration for the experimental certificate to be in force.

(c) Fly Test Area

Verify the application defines the specific area over which the aircraft will be operated, including routes to and from specified airports. A written description or annotated map is acceptable.

(d) Drawings or Photographs

Unless converted from a previously type-certificated aircraft without significant change in the external configuration, verify that the application includes three-view drawings or three-view dimensioned photographs of the aircraft.

(e) Eligibility.

Verify the application supports the requested experimental purpose and that purpose is one listed by CAR 21.08.6 and as elaborated in section 3.3 of this TGM.

(f) Information for Operating Limitations.

Verify the level of detail in the application and flight test programme is sufficient to enable the SACAA to prescribe operating limitations.

7. ISSUANCE OF CERTIFICATE

7.1 Before an experimental certificate is issued and depending on the purpose of the experiments, the CAA may require an inspection of the aircraft to verify that there are no unsafe features and to obtain any pertinent information from the applicant as necessary to safeguard the general public. The applicant should facilitate this and understand that such an inspection would only be required to resolve issues associated with the imposition of conditions or operational limitations necessary in the interests of safety.

7.2 Subsequent to any inspection and after considering all the available facts, the SACAA will decide on the relevant operating conditions, limitations and directions. These conditions and limitations relating to the operation of the aircraft will be reflected in the certificate (CA 21-C-05).

8. VALIDITY

An experimental certificate remains valid for the specified period, or until it is cancelled, whichever occurs first. An experimental certificate for an aircraft is valid only for flights within the borders of the Republic and over international waters.

9. CANCELLATION/SUSPENSION

- 9.1 The SACAA may suspend or cancel an experimental certificate if maintenance on the aircraft is not carried out in accordance with the applicable requirements, or if the SACAA considers cancellation/suspension action is warranted in the interests of safety of other airspace users and persons on the ground or water.
- 9.2 A suspension on a certificate is lifted on a date prescribed by the SACAA. If the certificate has been cancelled, either through action as described above, or after an aircraft cease to be on the SACAR, then the applicant will have to apply for a new certificate.

10. APPENDIX



Table 1: Risk Factor Sheet

FACTOR	RISK RATING			Mitigating or Amplifying Comments (If required)	Assessment
	LOW	MEDIUM	ELEVATED or HIGH		
Applicant	Established aeronautical engineering organisation employing experienced design office and flight test staff involved in modifications requiring flight test within the last 12 months.	Established engineering and/or aviation organisation but with limited flight test experience/recency Flight analyst capability but only every few years.	Organisation or individual with no flight test experience or no involvement for many years.		
Flight Test Program	Conventional modification or developmental program. Predictable outcomes are expected.	Developmental program with some unconventional challenges. Particular and Unusual or untried features may affect outcomes.	Development of completely new or substantially modified aircraft or major subsystem. Novel or untested experimental features or concepts may be involved.		
	No commercial or external imperatives. Delays are acceptable.	Some commercial or external imperatives. Delays create pressure.	Significant commercial or external imperatives. Delays create substantial pressure.		
	Testing involves simple performance and handling assessment, usually comparative.	Testing involves manoeuvres and operations at the limit of the normal flight envelope, e.g., stalls, flight up to Vne, etc. or developing new	Testing involves manoeuvres and operations outside the flight envelope, e.g., flight above Vne, spinning, flight outside weight and c.g. limits,		

FACTOR	RISK RATING			Mitigating or Amplifying Comments (If required)	Assessment
	LOW	MEDIUM	ELEVATED or HIGH		
		flight manual normal procedures.	etc., or involving emergency operations, e.g., OEI, engine out glide, inflight restart.		
Aircraft	Certificated type involving minor modifications or modifications not expected to affect flight performance or handling.	Certificated type involving major systems modifications or modifications expected to affect flight performance or handling.	Non-certificated developmental or experimental aircraft.		
	Normal (or transport) category aircraft of conventional configuration.	Normal (or transport) category aircraft with some 'non-conventional' configuration features (e.g., tailwheel, float or ski landing gear; unmatched powerplant, etc).	Acrobatic (or limited) category aircraft with novel or 'non-conventional' configuration features.		
Flight Crew	Test Pilot and Flight Test Engineer. - qualified and experienced.	Some crew qualified and experienced in flight testing, e.g., pilot with solid general experience under the direction of a qualified Flight Test Engineer.	No crew experienced in flight test operations.		
	Pilot/s current and experienced on type.	Pilot/s current and experienced on similar types.	Pilot/s not current or experienced on type or similar types.		
	Flight crew practised at specific test techniques and sortie profiles.	Flight crew practised at general test techniques but not at specific sortie profiles.	Flight crew unpractised at test techniques and unexposed to sortie profiles.		
Safety Equipment	Relevant, complete and tested suite of safety equipment provided (e.g., anti-spin chute or recovery and escape features,	Incomplete suite of relevant safety equipment provided or some items untested.	No relevant safety equipment provided.		

FACTOR	RISK RATING				Mitigating or Amplifying Comments (If required)	Assessment
	LOW	MEDIUM	ELEVATED or HIGH			
	personal protective equipment for test crewmembers).					
Airfield / Airspace / Altitude	Certified, Registered, or equivalent, airfield with appropriate runways, facilities and operating environment.	Airfield with appropriate runways but with limited facilities or obstructed operating environment.	Remote or poorly maintained airfield/ALA with inappropriate operating environment.			
	Minimal or no air-traffic problems. Few or no other airspace users.	Some air-traffic problems or other airspace users.	Significant air-traffic problems or busy airspace environment.			
	No built-up or significantly populated areas near airfield or under designated flight test area.	Some built-up or populated areas near airfield or under designated flight test area.	Substantially built-up or populated areas near airfield or under intended flight test area.			
	Clear approach and departure lanes between airfield and flight test area.	Limited approach and departure lanes or approach and departure lanes require complicated navigational procedures to negotiate.	No clear approach and departure lanes between airfield and flight test area.			
	Requires flight testing at high altitude only. Normal category aeroplane /Rotorcraft >5,000ft AGL Transport category aeroplane >10,000ft AGL	Requires flight testing at medium altitudes. Normal category aeroplane /Rotorcraft 2,000-5,000ft AGL Transport category aeroplane 5,000-10,000ft AGL	Requires some or all flight testing at low altitude. Normal category aeroplane /Rotorcraft <2,000ft AGL Transport category aeroplane <5,000ft AGL			
Ground Support	Flight test support facilities (e.g., telemetry) and flight following in place.	Some flight test support or flight following available.	No flight test support or flight following available.			
	Emergency, crash recovery, firefighting and medical services	Some or limited emergency, crash recovery, firefighting and	No emergency, crash recovery, firefighting and			

FACTOR	RISK RATING			Mitigating or Amplifying Comments (If required)	Assessment
	LOW	MEDIUM	ELEVATED or HIGH		
	available and on stand-by.	medical services available.	medical services available.		
Any Other Aspects					
				OVERALL RISK ASSESSMENT (i.e., LOW/MEDIUM/HIGH)	







Table 2: RISK ASSESSMENT SUMMATION

RESULT	ASSESSMENT	RECOMMENDATION
Low Risk	Overall risk level, to both the aircraft and flight test crew themselves, and to people on the ground or water other airspace users, is low and / or manageable.	<ol style="list-style-type: none"> 1. The Applicant can be advised to go ahead with the flight testing using extant planning and risk management procedures. 2. Experimental Certificate can be issued with standard or minimal operating conditions, limitations and directions as per CAR 21.08.6.
Medium Risk	Overall risk level, to both the aircraft and flight test crews themselves, and to people on the ground or water and other airspace users, is elevated and / or deserving of further mitigation.	<ol style="list-style-type: none"> 1. The Applicant should be advised to consider further risk reduction procedures before going ahead with the flight testing. 2. Experimental Certificate can be issued however restrictive operating conditions, limitations and directions should be imposed in the interests of the safety of people on the ground or water and other airspace users.
High Risk	Overall risk level, to either the aircraft or flight test crews themselves, OR to people on the ground or water and other airspace users, is high and / or difficult to manage.	<ol style="list-style-type: none"> 1. The Applicant should be advised that the flight testing is assessed as involving a high level of risk to both the aircraft and flight test crews themselves, and / or to people on the ground or water and other airspace users. The applicant should be strongly urged to consider further risk reduction procedures or to reconsider the intent or scope of the proposed experimental flight test operation. 2. Experimental Certificate should still be issued however stringent operating conditions, limitations and directions must be imposed in order to ensure the safety of people on the ground or water and

RESULT	ASSESSMENT	RECOMMENDATION
		other airspace users. Only if the safety of other parties cannot be guaranteed by the imposition of operating limitations will the Experimental Certificate not be issued.

11. DOCUMENT AUTHORISATION

DEVELOPED BY:		
	SIBUSISO NKOSI	28 SEPTEMBER 2021
SIGNATURE OF ENGINEER	NAME IN BLOCK LETTERS	DATE
REVIEWED BY:		
	JABULILE H. SIBEKO	28 SEPTEMBER 2021
SIGNATURE OF M: AED	NAME IN BLOCK LETTERS	DATE
VALIDATED BY:		
	LOBANG THABANTSO	28 SEPTEMBER 2021
SIGNATURE OF SM: AW	NAME IN BLOCK LETTERS	DATE
APPROVED BY:		
	SIMON SEGWABE	28 SEPTEMBER 2021
SIGNATURE OF E: ASO	NAME IN BLOCK LETTERS	DATE