MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA

FIRST PERSON VIEW (FPV) POLICY

MOP066

PPROVED: MAAA PRESIDENT Date: 14/08/2015

Amendments made to MOP066
Shading of text identifies changes to the previous version

Paragraph	Brief description of change	Change incorporated by
6	POLICY: For model aircraft over 2kg and operating above 100Ft AGL	MAAA Secretary Aug 2015
7	POLICY: For model aircraft under 2kg and operating below 100Ft AGL	
8	FPV Racing	

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FIRST PERSON VIEW (FPV) POLICY

1. INTRODUCTION

1.1 First Person View (FPV) flying makes use of video piloting equipment. It is a system whereby a radio control model aircraft is piloted, not through direct line of sight, but by using a live video downlink from an on-board camera allowing the pilot to experience a 'cockpit view' and to control the aircraft from the visual perspective of the on-board camera.

The latest generation of lightweight camera equipment combined with developments in data transmission have enabled this type of flying to be carried out cost effectively and with small lightweight airframes.

Equipment is now commercially available which allows the on-board camera to be gimbal mounted and driven by servo motors which are in turn linked to a gyro sensing headset worn by the operator. This allows the pilot to point the camera mounted on the aircraft in almost any direction with a head movement.

2. PURPOSE

2.1 The purpose of this publication is to document the MAAA policy with respect to First Person View (FPV) flying.

3. DEFINITIONS

ACMA …… Australian Communications and Media Authority

Affiliate Member …… A person properly affiliated with a Club that is properly affiliated to an MAAA Ordinary Member

CASR……..Civil Aviation Safety Regulations

CASA …… Civil Aviation Safety Authority

Club …….. A Club properly affiliated with a State Association

Club Member ……..…… A financial member of a Club

FPV…… First Person View

First Person View …… A system whereby a radio control model aircraft is piloted, not through direct line of sight, but by using a live video downlink from an on-board camera allowing the pilot to experience a 'cockpit view' and to control the aircraft from the visual perspective of an on-board camera.

Pilot in Command …… The sole pilot of the aircraft, or the pilot authorised on a Permit to Fly, or the supervising pilot if a pilot does not comply with the Bronze Wings requirement, or the supervising pilot if one is required under any MAAA

MOP. In all cases the Pilot in Command shall be a current Affiliate Member of the MAAA.

Recreational Aviation Administration Organisation (RAAO)…… CASA recognises the MAAA as a Recreational Aviation Administration Organisation to administer and regulate the operation of Model Aircraft under CASR (1998) Part 101.

MAAA …….. Model Aeronautical Association of Australia Inc.

MAAA Ordinary Member…. A State Association properly affiliated with the MAAA Inc.

Model Aircraft …… Any machine less than 150kg flown for sport and recreation only

MOP …… MAAA Manual of Procedures

Ordinary Member ……. See MAAA Ordinary Member

Return to Home (RTH)……. The capability to select a flight mode whereby the aircraft will automatically fly back safely to a predetermined location.

SGMA ……..... Self Guided Model Aircraft.

Self Guided Model Aircraft ...A model aircraft that has the capability of flying without the direct inputs of a human pilot including both general flight and the capability to Return to Home as a specific implementation.

State Association …… See MAAA Ordinary Member

Visual Control Range ……The maximum range at which the Pilot in Command can clearly determine the orientation and also manually control the Model Aircraft in sustained flight, without the aid of vision enhancing devices such as binoculars. CASR (1998) Part 101 (101.385) states that 'a person may operate a model aircraft only if the visibility at the time is good enough for the person operating the model to be able to see it continuously'.

4. GENERAL

As well as complying with this MOP, all operators of Model Aircraft using FPV techniques shall comply with all other relevant MAAA MOPs, as well as CASA and ACMA requirements. To comply with CASA's regulations, the person operating a model aircraft has to be able to see it continuously. Pilots flying FPV model aircraft, except in the manner outlined in the policy, cannot do this as they are virtually inside it.

The following MAAA documents are of relevance to FPV operations:
MOP008: Close Fields Operation Policy and Procedure, MOP014: General Rules and Guidelines for the Operation of Model Aircraft (which provides all Affiliate Members a

ready reference to their obligations and to regulations as required under Commonwealth Law and MAAA Rules and Procedures, for the operation of Model Aircraft), MOP044: Internal Navigation and Stabilisation Policy, MOP056: Safe Flying Code, MOP057: Insurance Conditions, and CASR (1998) Part 101 subsections A,B,C and G and the ACMA Class Licence for the frequency band being used for the video down link.

In the event that the definition of FPV in this MOP is not adequate to determine whether an aircraft is considered to be FPV equipped, the MAAA Secretary should be contacted to make a ruling

5. SAFETY CONCERNS

5.1 The FPV equipment described potentially presents the pilot with the opportunity to fly the aircraft out of normal unaided visual range by utilising the 'cockpit view'.

5.2 Where an aircraft is being flown either using a headset or a monitor screen there is cause for concern in any emergency situation, either due to pilot error (disorientation, or unsure of position) or systems failure (loss of data link), as the pilot may not be able to re-acquire the aircraft visually with sufficient speed to prevent a crash.

5.3 The pilot using FPV has a view looking forward and to an extent to the right and left with head tracking, but is unable to see the big picture of what is going on around the model such as the location of other model aircraft and persons.

6. POLICY: For model aircraft over 2kg and operating above 100Ft AGL

6.1 An FPV equipped Model Aircraft shall be flown by two Affiliate Members utilising a buddy-box system, or equivalent. The Pilot in Command shall not use the FPV down link.

6.2 As an alternative to a buddy-box, it is acceptable that a Return to Home system is fitted and functional, and the model then controlled by a single transmitter. The Return to Home system shall conform to the requirements of MOP067. All other requirements of the policy in this MOP shall apply.

6.3 The Pilot in Command shall have flown the model prior to FPV operations and be of Gold Wings standard.

6.4 The Pilot in Command shall maintain the model within Visual Control Range and shall be able to immediately assume control of the model in the event of a problem without any action from the other party.

6.5 The operational range and flight path of the model shall be limited to the Pilot in Command’s Visual Control Range.

6.6 The Pilot in Command shall be solely responsible for the safety of the flight.

6.7 FPV equipment shall only be used in aircraft that do not require either a Large Model or Gas Turbine Permit to Fly.

6.8 Reliable operation of the buddy-box, or Return to Home in accordance with the requirements of MOP067, and a clear handover protocol shall be established prior to every flight.

6.9 A successful radio equipment ground range check with camera equipment turned both on and off shall be completed before the first flight of the day. This shall ensure that the range of the model control system is not significantly degraded by the operation of the FPV equipment.

6.10 Before a Video Transmitter is powered up, the pilot must make certain the channel set on the Video Transmitter is not already in use at the flying facility.

7. POLICY: For model aircraft under 2kg and operating below 100Ft AGL

7.1 An FPV equipped Model Aircraft shall be flown by two Affiliate Members: the Pilot in Command using the FPV down link and an observer.

7.2 The observer shall have flown the model prior to FPV operations and be familiar with all its various functions.

7.3 The observer shall maintain the model within Visual Control Range and shall be able to immediately assume control of the model in the event of a problem via a handover of the radio.

7.4 The operational range and flight path of the model shall be limited to the observers Visual Control Range.

7.5 The observer shall be solely responsible for the safety of the flight. The first response in case of any trouble should be to ground the aircraft immediately.

7.6 A clear handover protocol shall be established prior to every flight

7.7 A successful radio equipment ground range check with camera equipment turned both on and off shall be completed before the first flight of the day. This shall ensure that the range of the model control system is not significantly degraded by the operation of the FPV equipment.

7.8 In the event that an aircraft is operating as an SGMA aircraft and at the same time as an FPV then the conditions of both this MOP and MOP067 shall be complied with. In the event of differing requirements between the two MOP's then the most restrictive shall apply.

7.9 FPV equipment shall only be used in aircraft that do not require either a Large Model or Gas Turbine Permit to Fly.

7.10 Before a Video Transmitter is powered up, the pilot must make certain the channel set on the Video Transmitter is not already in use at the flying facility.

8. FPV RACING

SAFETY

8.1 The Event Director, the Flight Director and other assistants must always take safety into consideration and ensure that participants, helpers and officials involved at the flying site comply with the safety rules defined by the organiser.

It is recommended that a number of race officials are deployed around the course. These officials should be equipped with either walkie-talkies or alarms (whistle, horn). In the case of intrusion or a problem on the course, they can immediately stop the race. Any intervention by an official is followed by a full stop of the race. All pilots must land their machines. A pilot who does not land his machine should be disqualified.

PARTICIPANTS AND HELPERS

8.2 Each participant must comply with the national regulations such as (but not limited to): authorisation to fly FPV, pilot qualification, insurance, radio equipment. Unless specific agreement is obtained from authorities, the radio frequencies must comply with the regulations of the Australian Communication and Media Authority (ACMA).

VIDEO TRANSMITTER FREQUENCY ALLOCATION

8.3 Each competitor must take care that his video transmitter is not powered when he is not racing in order to avoid interference with competitors who are flying.

Powering a video transmitter on a channel being used by another competitor who is racing may cause the offender to be excluded from the event.

Before each race round, the competitors in that round need to ensure they are on a different video channel so as not to cause interference.

VIDEO TRANSMITTER FREQUENCY CONTROL

8.4 Before a Video Transmitter is powered up, the pilot must power his Video Ground Station and make certain the channel set on the Video Transmitter is not already in use. Failure to do so may cause the pilot to be excluded from the event.

At large events a Video Transmitter channel board may be used to help regulate channel allocations.
At major events the competitors will only be allowed to power a Video Transmitter once on the starting line and only on a channel allocated for that heat.

MULTI – ROTOR EQUIPMENT

8.5 The multi-rotor must be equipped with a failsafe system that immediately cuts the motors as soon as radio signal is lost.

RTH is not allowed.

9. GUIDANCE

7.1 There is the potential for interference between the technology used in FPV systems and the basic radio system controlling the model, particularly if this uses 2.4 GHz. Precautions to be considered are included within MOP058 2.4 GHz Policy.