DGAC OPS approval
EFB – Tablets computers

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Plan

- EFB OPS approval process within French CAA
- Tablets computers
- 2 examples of approved Tablets applications

Application process within French CAA

A French technical Guide has been developed to introduce

- The EFB definition
- The way an application has to be managed
- The evolutions of the AMC 20-25 draft

  (new EFB classification, introduction of viewable stowage,…)

Approval process within French CAA

In accordance with the functions carried out by the EFB, a team of experts is set up to cover :

- HW assessment , EFB's administration, ORA,
- Flight crew training, Operational evaluation,
- Performance and Mass & Balance applications,
- Aircraft technical log.

Tablet computers

IPAD, Samsung Galaxy,...

A large interest from all the operators (helicopters, business aviation, and airlines

- Adequate size, light, good connectivity, quick access to documentations,….

Tablet computers
operators needs

Helicopter (VFR)

- Mass & Balance applications
- OPS manual

Business aviation

- Charts
- OPS manual (FCOM, MEL)

Airline

- Charts
- OPS manual (FCOM, MEL)
- Performance calculation
- “Pilot pad” (crew personal computer)

Tablet computers
application

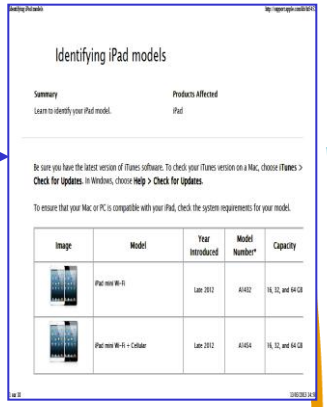
DGAC makes no difference between laptops and tablets regarding the EFB approval process

- Basic principles (detailed in AMC) are applicable.
- Operator has to identify his needs and impacts on the OPS rule. The NPA 2002-12 is used as an acceptable means of compliance to handle the application.

Tablets computer
item of concerns

Identification of the tablet (HW characteristics)

Per Model ? Per serial number ?


Identifying iPad models

Summary

Learn to identify your iPad model.

Products Affected

iPad

Be sure you have the latest version of iTunes software. To check your iTunes version on a Mac, choose iTunes > Check for Updates. In Windows, choose Help > Check for Updates.

To ensure that your Mac or PC is compatible with your iPad, check the system requirements for your model.

Image	Model	Year Introduced	Model Number*	Capacity
	iPad mini Wi-Fi	Late 2012	A1432	16, 32, and 64 GB
	iPad mini Wi-Fi + Cellular	Late 2012	A1454	16, 32, and 64 GB

Up to now, DGAC manages tablets acceptability per <u>model number</u>

1. If the EFB is not used during the flight (Flight preparation)
   - No requirements
2. If the EFB is used only during the cruise
   - DGAC requires “attestations” that some “qualification tests have been done” (ED 14 / DO 160 – EMI, rapid decompression tests)
3. If the EFB is used during the critical stage of flight (landing and take off)
   - DGAC requires also an EMI test in flight (done by maintenance organization specialized in radio equipment and system – part 145)
   - per aircraft type / avionics architecture
   - Use a technical note introducing the EMI test – DGAC technical guide n° 11

Tablets computer
item of concerns

Battery

Concerns with Battery identification

- IPAD are fitted with either “Simplo Technology” or “Dynapack International” whatever the model of IPAD.
- The Model of battery is not clearly identified

Compliance with UL1642 / 2054 and UN ST/SG/AC.10/11/Rev.5-2009
=> not easy to get evidence of compliance

Can we consider generic statement of compliance per model of battery ?

Tablets computer
item of concerns

Installation concerns (suction cup, Knee board)

Knee board :

- Makes the eye scan more complex (Head down)
- DGAC position : This solution can be considered if there is no other alternative (no place in the cockpit to install the EFB).
- Ops Evaluation with an expert pilot from DGAC is required

Suction cup :

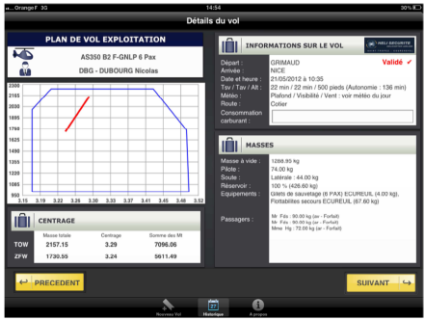
- Better solution from a Human Factor point of view
- However the holding capability may “degrade sensibly with ageing or due to various environmental factors “ and jam flight controls or injure flight crew members.
- What kind of suction cup is acceptable?
  - Should we require « suction » indicators ?
  - What kind of qualification tests / justification should we require ?
  - Need more detailed criteria for acceptability

Tablets computer

Example 1 of granted approval – HELI-SECURITE

Operator : HELI-SECURITE Helicopter airline

Fleet : AS350, AS355, EC130 B4, EC120, EC155



SW application:

Mass and Balance application - 3.135(b)

- To establish mass and balance documentation prior to each flight specifying the load and its distribution
- To ease Last Minute Changes to the load
- To send the documentation to the airline operations per WIFI or 3G before the flight.

ORA :

- In case of system loss, the previous method is still applicable (paper or Excel)
- Integrity : Consistency checks have been developed in the SW (mass comparison). Refer also to the ops trials
- …

Tablets computer
Example 1 – HELI-SECURITE

Operational validation process:

Several meetings, evaluation of the application, formalization of the comments

Operational Trials

- a first trial – the results given by the EFB application were systematically compared with the result given by the previous method (EXCEL calculation) before each flight.
- a second trial period with check of the results per sampling on 5% of the flights (After the flight).
- After each trial period, a control was done by DGAC to check that the trial was correctly done and to check several samples of mass and balance documentation and that the documentation was correctly received by the operations office.

Tablets computer
Example 1 – HELI-SECURITE

HW operational assessment:

IPAD used during the flight preparation

IPAD switched off during the flight

No particular HW performance tests (EMI…) were required

Tablets computer
Example 1 – HELI-SECURITE

Administration:

The applicant administrator is in charge of:

- The IPAD content (Each month, all the operator's IPAD are checked)
- Development and Diffusion of the SW application

Nota : HELI-SECURITE bought an APPLE's SW developer license for the use, modification and downloading of their application

Tablets computer

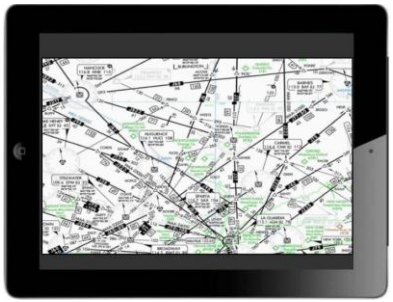
Example 2 of granted approval – Vol Direct

Operator : VOL-DIRECT

Fleet : TBM 850

SW application:

- IPAD used for the en route and terminal charts
- Use of the application JEPPFD
- GPS position deactivated in order to not interfere with navigation information.



ORA :

- 2 IPAD on board to cover the loss of one IPAD
- Battery power : 95% before the first flight of the day
- Check that the charts are current before the flight
- ….

Tablets computer
Example 2 – Vol Direct

HW operational assessment:

IPAD used during all the flight phases

Management of HW assessments per IPAD model

- IPAD 3 VERIZON (Wifi + 3G) – **A1430**

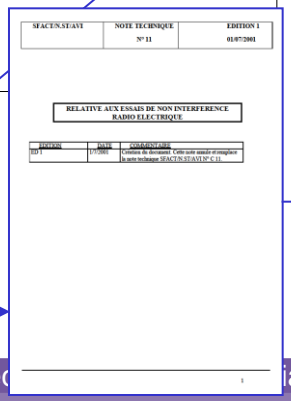
Certificate of compliance covering

1. Rapid decompression test
2. UL 1642 or 2054 compliance for the battery
   - Model Simplo **A1315**
3. EMI characteristics

➢ Is recorded for other applications with the same IPAD model


CERTIFICATE OF COMPLIANCE


DINAN AVIATION
SIBA AVIONIQUE


RELATIVE AUX ESSAIS DE NON INTERFERENCE RADIO ELECTRIQUE

As the application is used during the critical phase of flight :

- EMI flight test done by a maintenance organization according to technical note n°11)

Tablets computer
Example 2 – Vol Direct

1. IPAD attached to the pilot with a Kneeboard
    - Operational evaluation done by an expert pilot from DGAC
2. No electrical supply from the A/C
    - Management of the battery power
3. No radio transmission during the flight (3G and WIFI deactivated)
    - IPAD on ‘aircraft mode’
4. Temperature Limitations (-20°c, +45°c for the stowage)
    - The IPAD must not be left in the plane after the flight to avoid overheat

Tablets computer
Example 2 – Vol Direct

Administration:

- 1 iPAD per pilot;
- 1 iPAD per aircraft,
- 1 iPAD as a back up in the aircraft hangar

The administrator's role
- check each month that the IPAD are updated
- check that the new IOS version does not impact the Jeppesen application before authorizing all the IPAD update.

Airline policy (pilot's commitment) :
- Jail break is forbidden
- Functions which are not authorized by the administrator have to be deactivated before each flight.

Tablets computer
Suggestions for EASA

Need to get a list of :

1. « accepted » tablets model (EMI tests or/and rapid depressurization test from DO 160 and ED14)
2. batteries compliant with standards listed in AMC 20-25 (UL 1642 /UL 2054 and UN ST/SG/AC.10/11/Rev.5-2009)
3. “accepted” suction device

It would ease the ops approval process and avoid useless costs for operators.

Garmin 1000 avionics suite and Tablets computer

- Lots of request to use the Garmin 1000 Jeppesen charts view application and IPAD as a back-up solution
- Depending on the aircraft where the G1000 is fitted, AFM is not written in the same manner regarding the Jeppesen application.
- Need Harmonization and OEB for the use of G1000 Jeppesen application

QUESTIONS ?