AIRCRAFT INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

A list of the applicable rules can be consulted in section GEN 1.6. In the sections below, a descriptive summary is offered to help airspace users, although if there is any discrepancy, the Rule will prevail over the content of the AIP. The content of this AIP section does not fulfil the quality requirements.

In addition to instruments and equipment specified in the airworthiness standards, aircraft operating in Spain, or in airspace assigned to Spain, must comply with what it is prescribed in the Seventh Book, chapter 1 of the Reglamento de Circulación Aérea which complies with ICAO standards and recommendations of Annex 6; except the military aircraft which must comply with what it is prescribed in the Second Book, Chapter 5, of the Reglamento de Circulación Aérea Operativa.

In general, in every flight, aircraft will be equipped with instruments so that the crew can verify the aircraft flight path, carry out any regulatory required manoeuvre and observe the aircraft use limitations for the forecasted utilization conditions.

1. PERFORMANCE BASED NAVIGATION (PBN)

Note: the present section is an excerpt of section 3.2.7 of the Reglamento de Circulación Aérea (RCA). Complete information can be consulted on the Real Decreto 57/2002, of 18 January, and its subsequent amendments, by which the Reglamento de Circulación Aérea was approved.

– Aircraft, other than State aircraft operating on RNAV routes (all ATS routes under IFR above FL150 and those routes in lower airspace specifically classified as RNAV) within FIR/UIR BARCELONA, CANARIAS and MADRID shall be equipped, as a minimum, with RNAV equipment (B-RNAV) approved in accordance with the requirements set out in ICAO Doc. 7030 "Regional Supplementary Procedures" (EUR RAC).

Note 1: The expression "performance-based procedures" is equivalent to that used in Annex 11 to the Convention on International Civil Aviation (ICAO) and other documents of this international organisation which employ the English term "performance", and therefore refer to "performance-based navigation (PBN)".

Note 2: Annex III, attachment C, sections 2.6 and 2.10. to the Real Decreto 1180/2018, of 21 September, incorporates the content of items 10 and 18 of the flight plan establishing the indication of RNAV and RNP capabilities.

Note 3: For State aircraft not equipped with RNAV, the provisions of section 3.2.7.6 of the RCA shall be applicable.

Note 4: In particular, the concepts B-RNAV and P-RNAV correspond to European RNAV applications employed in airspace of the ECAC area, in accordance with ICAO Document 7030 on Regional Supplementary Procedures.

1.1 TMA Operations

1.1.1 To fly in airspace designated B-RNAV or using B-RNAV standard instrument departure (SID) and arrival (STAR) procedures, the appropriate approval must be held.

1.1.2 To fly in airspace designated P-RNAV or using P-RNAV SID and STAR procedures, the appropriate approval must be held.

Note: In this context, "RNAV terminal area procedures" exclude final approach and missed approach segments.

1.1.3 To fly in airspace designated RNAV 1 or using RNAV 1 SID and STAR procedures, the appropriate approval must be held.

Note 1: In this context, RNAV 1 procedures exclude the final approach segment and the initial climbing phase of the missed approach, the latter being the segment of the missed approach manoeuvre between the point where the climb starts (SOC) and the point at which it reaches an obstacle clearance margin of 50 m (40 m for Cat H).

Note 2: Annex III, attachment C, to the Real Decreto 1180/2018, of 21 September, section 2.1.8, sets out the differences in relation to the certification of aircraft approved for P-RNAV or RNAV 1.

1.1.4 Aircraft equipped with RNAV equipment having a lateral track-keeping accuracy of ±5 NM (twice the standard deviation) with an ability to determine its horizontal position to an accuracy sufficient to support the track-keeping requirement and having appropriate functionality and the appropriate operational approval, designated as Basic Area Navigation (B-RNAV), may use RNAV arrival and departure segments or routes whenever they meet the following criteria:

a. The B-RNAV portion of the route must be:
   1. Above the appropriate minimum flight altitude, among others, minimum sector altitude, minimum radar vectoring altitude, etc.; and
   2. It must be in accordance with the criteria established in the Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS, Doc. 8168) of ICAO for en-route operations; and
   3. It must comply with B-RNAV en-route design principles (see minimum flight altitudes, item 3.2.21 of RCA).
b. The departure procedures must be conventional (non- RNAV) up to a conventional fix (or a minimum altitude). Beyond that fix (or minimum altitude) a B-RNAV procedure can be provided in accordance with the criteria in a) above; and
c. The B-RNAV portion of an arrival route must terminate at a conventional fix in accordance with the criteria given on a) and b) above. Beyond that fix, the arrival shall be completed by a conventional (non RNAV) procedure, or by means of radar vectors; and
d. Due regard must be taken of those operating procedures of some users that may affect system performance (as, for instance, the initial position fixing on runway, minimum automatic flight control system engagement altitudes); and
e. Arrival and departure procedures, which can be flown by B-RNAV aircraft, shall be identified explicitly as approved for B-RNAV application.

Note: Letters b) and c) are only applicable to B-RNAV Terminal Area procedures.

1.1.5 To fly in airspace designated RNP 1 or to fly SID and STAR RNP 1 procedures, RNP 1 approach procedures or parts of the same, the appropriate operational approval shall be required.

Note: In this context, "RNP 1 procedures" exclude the final approach section and the initial climb phase of the missed approach, this latter being the segment of the missed approach manoeuvre between the point of the start of climb (SOC) and the point at which it reaches an obstacle clearance margin of 50 m (40 m for Cat H).

1.1.6 To fly RNP APCH approach procedures or parts of the same, the appropriate operational approval must be held.

1.1.7 To fly RNP AR APCH approach procedures or parts of the same, the appropriate approval must be held.

1.2 En-route Operations

1.2.1 To fly in airspace designated B-RNAV, the appropriate approval must be held.

1.2.2 As long as VHF omnidirectional radio range (VOR) facilities are available, the aircraft having a single RNAV system not meeting an average continuity of service of 99.99% of flight time, may be approved for B-RNAV operations as long as the aircraft is also carrying VOR and DME equipment.

Note: The competent authority may designate domestic routes within their lower airspace to be available for aircraft not fitted with RNAV equipment but having a navigation accuracy meeting RNP 5.

1.3 Use of SBAS on RNP APCH procedures

The use of SBAS is required for operations on RNP APCH procedures promulgated in AIP Spain containing LPV and/or LP minima.

SBAS guidance can also be used for operations on RNP APCH procedures promulgated in AIP Spain that contain only a LNAV minimum.

The use of SBAS for providing vertical guidance to aircraft flying RNP APCH procedures down to LNAV/VNAV minima

promulgated in AIP Spain is not authorized. This, due to the specificities of the ARINC 424 navigation database coding standard, also implies that the use of SBAS for providing horizontal guidance in any RNP APCH procedure containing LNAV/VNAV minima is not authorized.

Therefore, all the RNP APCH procedures containing LNAV/VNAV minima and published in AIP Spain must be encoded into the on-board navigation databases, in such a way that the procedures down to LNAV/VNAV minima may only be flown with GPS with ABAS augmentation plus a certified Baro-VNAV function.

Moreover, the "GNSS/FMS Indicator" parameter of the onboard navigation database shall always be coded as "B" in the case of RNP APCH procedures containing LNAV/VNAV minima.

For more information about this type of manoeuvres consult AIC "IMPLEMENTATION OF RNP APCH MANOEUVRES PUBLISHED UNDER THE TITLE RNP".

2. RVSM OPERATION

Except for designated airspace where RVSM transition tasks are carried out, only RVSM approved aircraft and non-RVSM approved State aircraft shall be permitted to operate within the EUR RVSM airspace.

RVSM approved aircraft are those for which the operator has obtained the RVSM approval, either from the State in which the operator is based, or from the State in which the aircraft is registered.

Guidance material on the airworthiness, continued airworthiness and the operational practices and procedures for the EUR RVSM airspace is provided in the Joint Aviation Authorities (JAA) Temporary Guidance Leaflet (TGL) and the ICAO EUR Regional Supplementary Procedures (Doc 7030/4-EUR).

Except for State aircraft, RVSM approval is required for aircraft to operate in the RVSM airspace within FIR/UIR BARCELONA, CANARIAS and MADRID.

Note: The provisions applicable to non-RVSM approved civil operations in EUR RVSM airspace where RVSM transition tasks are carried out as specified in the ICAO EUR Regional Supplementary Procedures (Doc 7030/4 EUR).

3. PROTECTION OF ILS/VOR RECEIVERS AGAINST FM EMISSIONS

It is mandatory to carry on board ILS/VOR receivers protected against FM emissions, except for State Aircraft. Compliance date will be January 1st 2005. Those aircraft equipped with receivers that do not satisfy the technical immunity requirements established in items 3.1.4 and 3.3.8 of ICAO Annex 10 "Aeronautical telecommunications", Volume 1, could receive false ILS and VOR indications during some flight phases. When this fact is detected, relevant information will be published.

4. RADIO EQUIPMENT REQUIREMENTS

4.1 Flights operating under IFR

The carriage and operation of VHF 8.33 kHz channel spacing aircraft radio equipment suitable to maintain continuous twoway radiotelephony communication with the appropriate ATC units is mandatory for IFR flights within the FIR BARCELONA and MADRID (not applicable in FIR CANARIAS).

VHF aircraft radio equipment suitable to maintain continuous two-way radiotelephony communication with the appropriate ATC units is mandatory for IFR flights.

From 1 January 2018, the Integrated Flight Plan System (IFPS) managed by Eurocontrol will automatically reject any IFR flight plan operated as general air traffic (GAT) submitted for aircraft, except for State aircraft, not fitted with radio equipment capable of transmitting with reduced separation of 8.33 kHz.

Exemptions from mandatory carriage of VHF 8.33 kHz aircraft radio equipment are described in section ENR 1.8.

4.2 General Aviation operating under VFR

The carriage and operation of VHF 8.33 kHz channel spacing aircraft radio equipment suitable to maintain continuous twoway radiotelephony communication with the appropriate ATC units is mandatory for VFR flights within the BARCELONA and MADRID FIR (not applicable in CANARIAS FIR).

VHF aircraft radio equipment suitable to maintain continuous two-way radiotelephony communication with the appropriate ATC units is mandatory for VFR flights.

Exemptions from mandatory carriage of VHF 8.33/25 kHz aircraft radio equipment and the provisions for State aircraft are described in ENR 1.8.

4.3 Operations in RMZ

See requirements in ENR 1.4.

5. DATA LINK SERVICES (DLS) REQUIREMENTS

5.1 ATN B1 DLS

In order to access ATN CPDLC services, aircraft operators shall include the following information in the ICAO flight plan (see ENR 1.10):

- Item 10a: J1 for CPDLC ATN VDL Mode 2.
- Item 18: CODE/ descriptor followed by the aircraft 24-bit address expressed as an alphanumerical code of six hexadecimal characters.

In case of integrated FANS1/A and ATN B1 equipment, aircraft operators shall include in item 18 the COM/ descriptor followed by INTEGRATED.

Aircraft previous registration for ATN CPDLC services access is not necessary.

5.2 FANS DLS

In order to access FANS ADS-C and /or CPDLC services, aircraft operators shall include the following information in the ICAO flight plan (see ENR 1.10):

- Item 10a: J2 to J7 for CPDLC FANS1/A.
- Item 10b: D1 for ADS-C FANS1/A.
- Item 18: REG/ descriptor followed by the aircraft registration mark.

Aircraft previous registration for FANS ADS-C and/or CPDLC services access is not necessary.

6. TRANSPONDER EQUIPMENT REQUIREMENTS

See requirements in ENR 1.4 item Transponder Mandatory Zone (TMZ).