GEN 1.5 AIRCRAFT INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

1 RADIO EQUIPMENT

1.1 General

The carriage of VHF radio equipment suitable to maintain continuous two-way radiotelephony communication with the appropriate ATC units is mandatory for:

- IFR flights in airspace class A up to and including G.
- VFR flights in airspace class A up to and including D, and airspace class E up to and including G in case of an RMZ (see ENR 2.2).

For the operational requirements for the use of the VHF aircraft radio equipment see ENR 1.4.

1.2 Mandatory carriage of VHF 8.33/25 kHz radio equipment

In airspace where radio equipment is required, operators shall only use radio equipment capable of 8.33/25 kHz channel spacing.

For the North Sea area V (see ENR 6-3.1) it is strongly recommended to carry 8.33/25 kHz aircraft radio equipment.

Exemptions from mandatory carriage of VHF 8.33/25 kHz aircraft radio equipment are described in ENR 1.8.

2 NAVIGATION EQUIPMENT

2.1 RNAV equipment

Adherence to RNAV 1 requirements is actively enforced by CAA The Netherlands. Violation of RNAV 1 legislation will possibly lead to administrative and criminal penalties.

2.1.1 Amsterdam FIR

Aircraft (other than state aircraft) operating on ATS routes above FL 095 within the Amsterdam FIR (see ENR 3.3) and on the EHAM STARs shall, as a minimum, be equipped with RNAV equipment meeting RNAV 5. Additional requirements will be published in relevant AIP sections.

Aircraft (other than state aircraft) operating on certain SIDs and STARs within the Amsterdam FIR shall be equipped with RNAV equipment meeting RNAV 1. This requirement will be indicated on the charts in the relevant AD sections.

Notes:

- The term "ATS route" is used for airways, advisory routes, controlled or uncontrolled routes, arrival or departure routes, etc.
- Where GPS is the only input to the RNAV system, pilots shall inform ATC about in-flight GPS failures, including loss of RAIM.
- When a flight is not RNAV equipped or as a result of failure or degradation of the RNAV system, the phrase "UNABLE RNAV" shall be included by the pilot, immediately following the aircraft call sign whenever initial contact on an ATC frequency is established.

2.1.2 Schiphol TMAs

An RNAV 1 approval is required for all aircraft flying under IFR rules in the Schiphol TMAs inbound and outbound AMSTERDAM/Schiphol.

State aircraft are exempt from this RNAV 1 mandate.

The RNAV 1 mandate does not affect VFR operations and helicopter operations.

2.2 Radio navigation instruments

For IFR flights, an aircraft shall be provided with navigation equipment which will enable it to proceed:

- in accordance with its operational flight plan; and
- in accordance with the requirements of ATS routes and ATS procedures.

Pilots and operators are urged not to fly conventional procedures using only the stored procedures from the on board GNSS receiver's database, unless they can monitor the procedure using conventional basic displays i.e. conventional navigation equipment.

2.3 RNP approach equipment

To execute an RNP approach the use of GNSS equipment is mandatory. In case of an RNP approach to the LPV minimum, the equipment must additionally make use of the European SBAS EGNOS. These LPV approaches can be retrieved from the FMS database using the SBAS channel number as published on the relevant RNP approach chart.

In case of RNP approach, the pilot should check RAIM availability using GNSS RAIM NOTAM or other means. In case of RNP approach to LPV minimum, the pilot should check EGNOS availability using EGNOS NOTAM for the relevant airport.

The use of guidance relying on EGNOS signals is authorized for a RNP approach leading to LNAV/VNAV minima.

Barometric VNAV guidance during approach is not temperature compensated. A temperature limitation is reflected on the RNP approach chart. Operating at uncompensated altitudes will not provide expected obstacle clearance below published minimum temperatures.

3 RVSM

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 aircraft for which the operator has obtained an 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) No. 6, revision 1 and in the ICAO Doc 7030 European (EUR) Regional Supplementary Procedures.

Except for state aircraft, RVSM approval is required for aircraft to operate in the RVSM airspace within the Amsterdam FIR, as described in ENR 2.1.

Note: the provisions applicable to non-RVSM approved civil operations in EUR RVSM airspace where RVSM transition tasks are carried out are as specified in the ICAO Doc 7030 EUR chapter 6.10.

4 SSR TRANSPONDER

4.1 Elementary surveillance

Aircraft shall be equipped with a mode S transponder with elementary surveillance (ELS) functionality. The equipment must be in accordance with the technical specifications laid down in ICAO Annex 10, volume IV, amendment 77.

Activation of mode A/C transponders is prohibited in the Amsterdam FIR.

Exempted from the mandatory carriage of a mode S transponder are:

- motorised VFR flights in class G airspace below 1200 FT AMSL within UDP (excluding the North Sea area Amsterdam, see ENR 2.2).
- non-motorised aircraft (gliders, hanggliders, paragliders or balloons) and paramotors, outside the transponder mandatory zones (TMZ, see ENR 2.2).

Carriage of a mode S transponder is strongly recommended in the UK North Sea area V, this recommendation is published in the UK AIP and regulation.

For more information on ATS surveillance services and procedures, see ENR 1.6 paragraph 2.

4.2 Enhanced surveillance

Fixed wing aircraft flying as GAT in the Amsterdam FIR at or above FL 245 shall be equipped with a mode S transponder with enhanced surveillance (EHS) functionality when the aircraft has a maximum take-off mass greater than 5700 KG or a maximum cruising true airspeed in excess of 250 KT.

4.2.1 Mode S transponder

To meet EHS requirements compliant with EUROCAE Document ED-73B, as a minimum, an approved Level 2 mode S transponder (specified in the declaration of design and performance (DDP) of the transponder equipment) must be installed.

4.2.2 EHS capable aircraft

An aircraft is considered to be EHS capable if the full list of 8 downlink aircraft parameters (DAP), see below, can be supplied. Where the parameter 'track angle rate' cannot be supplied, it should be substituted by the 'true airspeed'.

If the DAP conditions cannot be met, the aircraft will be considered EHS non-capable and apply for an exemption, see below.

Comm-B data selector (BDS) register	Basic DAP set	Alternative DAP Set
BDS 4.0	• Selected altitude	• Selected altitude
BDS 5.0	• Roll angle • Track angle rate • True track angle • Ground speed	• Roll angle • - • True track angle • Ground speed
BDS 6.0	• Magnetic heading • Indicated airspeed/Mach number • Vertical rate (barometric rate of climb/descent or baro-inertial)	• Magnetic heading • Indicated airspeed/Mach number • Vertical rate (barometric rate of climb/descent or baro-inertial) • True airspeed (if track angle rate is not available)
Note: 1. Indicated airspeed and Mach number are considered as a single DAP. If an aircraft can provide both, it must do so. 2. Details are in JAA NPA 20-12a, ACJ 20X11 (or latest issue), which can be accessed via the website: https://www.eurocontrol.int.		

4.2.3 EHS non-capable aircraft

Exemption from the EHS requirements may be granted to non-mode S EHS capable aircraft and non-mode S EHS compliant delivery and maintenance flights with a first certificate of airworthiness issued prior to 31 March 2005 that conduct IFR/GAT flights in notified mode S airspace in the Amsterdam FIR. In these instances the aircraft must, as a minimum, be mode S elementary surveillance (ELS) compliant.

Exemption requests should be sent to the email address: ilt-loket-dm@ilent.nl.