

Requirement	Implementation Schedule	Remarks	Applicable Notices and Referenced Documents
406 MHz ELT JAR/EU-OPS	1 January 2005 Retrofit requirement for aeroplanes and helicopters	Development of a new generation of beacons transmitting at 406 MHz commenced at the beginning of the Cospas-Sarsat project. The 406 MHz units were designed specifically for satellite detection and Doppler location, and provide the following: <ul style="list-style-type: none"> - improved location accuracy and ambiguity resolution; - increased system capacity (i.e. capability to process a greater number of beacons transmitting simultaneously in field of view of satellite); - global coverage; and - unique identification of each beacon. 	JAR-OPS 1.820 JAR-OPS 3.820 ICAO Annex 10 Volume III ICAO SARPS Annex 6 Part 1, para 6.17
406 MHz ELT EASA OPS (PROPOSED)	EASA OPS (PROPOSED) a) Aeroplanes with MPSC>19 Pax, or b) Aeroplanes with MPSC<=19 Pax c) Any Helicopter d) Helicopter operating in Performance Class 1 or 2 used in offshore operation over water	As per proposed EASA OPS requirement, they must be equipped: With an ELT capable to transmit simultaneously on 121.5 MHz and 406 MHz. For a) <ul style="list-style-type: none"> • with two (2) ELTs one of which shall be automatic, in case first issued with an individual CofA after 1 July 2008, or • one automatic ELT or two of any type, in case first issued with an individual CofA before 1 July 2008. for b) <ul style="list-style-type: none"> • one automatic ELT in case first issued with an individual CofA after 1 July 2008, or • one ELT of any type, in case first issued with an individual CofA before 1 July 2008. for c) at least one automatic ELT for d) with an automatic deployable ELT (ELT AD)	EASA.IDE.A.280 EASA.IDE.H.280

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<p>8.33 kHz Spacing</p>	<p>From 15th March 2007</p> <p>above FL 195</p> <p>Provisional date: 2014 or later</p> <p>below FL 195</p>	<p>8.33 kHz below FL195 was debated during the ICAO EANPG48 meeting held 28-30 November 2006. The provisional implementation dates are mentioned in the column to the left.</p> <p>8.33 kHz expansion below FL195 and amendment of EC regulation are under preparation.</p>	<p>TSO C169a ETSO 2C169a ICAO EANPG 44 JAA TGL No. 7 Rev 1 EC 1265/2007 ICAO Doc 7030/4 Section 4 EUROCONTROL "8.33 User Guide"</p> <p>Albania AIC A1/06 Austria AIC A2/05 Belarus AIC 06/06 Belgium AIC 06/2005 Bosnia & Herzegovina AIC A03/01 Bulgaria ---- Croatia AIC A04/05 Czech Republic AIC 06/05 Denmark AIC A 06/05 Estonia AIC A2/05 Finland AIC A5/2005 France AIC A13/05 Germany AIC IFR 9 Greece AIC A5/06 Hungary AIC 3/05 Ireland AIC 07/06 Italy AIC A6/2005 Latvia AIC A07/05 Lithuania AIC A03/05 Luxembourg see Belgium Macedonia AIC A2/2005 Netherland ---- Norway AIC I 13/05 Poland AIC 04/06 Portugal ---- Romania AIC A02/05 Serbia & Montenegro AIC A14/05 Slovak Republic AIC A8/05 Slovenia AIC A09/2005 Spain ---- Sweden AIC A3/2006 Switzerland AIC A 013/05 UK AIC 110/2006</p> <p>www.eurocontrol.int/vhf833/</p>

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ACARS	OPTIONAL	<p>The acceptable means of compliance AMC20-9 is intended for operators seeking approval to use Departure Clearance via data link over ACARS as described in document EUROCAE ED-85A.</p> <p>The use of ACARS for data link purposes is a transitional step to data link applications that will use VDL Mode 2 and the Aeronautical Telecommunications Network (ATN), compliant with ICAO SARPS, as proposed in the EUROCONTROL LINK2000+ programme.</p> <p>The acceptable means of compliance AMC20-10 is intended for operators intending to use Digital ATIS over ACARS as described in document EUROCAE ED-89A.</p> <p>As per proposed EASA OPS CAT.IDE.H/A.195, Aircraft with individual CofA on or after 8 April 2014, must record Data link communication on the CVR.</p>	<p>EASA AMC20-9 ACARS EASA AMC20-10 D-ATIS EUROCAE ED-78/-85A AMC25-11 EUROCAE ED 89A/-92A/-112 FAA AC20-140 FAA AC120-70 EASA CAT.IDE.H.195 EASA CAT.IDE.A.195</p>
ACAS II (Change 7) Airborne Collision Avoidance System	For turbine powered aeroplanes with 5700kg<MCTOM or 19<MPSC	<p>Mandatory for defined civil fixed wing turbine engine aircraft when flying in ECAC airspace.</p> <p>Aeroplanes must be equipped with an airborne collision avoidance system with a minimum performance level of at least ACAS II.</p> <p>Exemptions for delivery or maintenance flights as well as for the latest Mode S requirements meeting the ICAO SARPS for ACAS II may be granted in accordance with the Eurocontrol exemption policy until 31st March 2006.</p> <p>A national deviation from the ACAS II exemption policy will be in place in Italy after the 30th September 2005.</p> <p>Change 6.04A units are not acceptable in Europe.</p>	<p>ICAO Annex 2, Annex 6 PANS-OPS Doc 8168 PANS-ATM Doc4444 JAR-OPS 1.668 and 1.398 EASA AMC20-15 (replaced JAA TGL8 Rev 2) JAA TGL No. 11 – Training JAA TGL No. 26 – MMEL FAA AC20-151 Change 7 ICAO Doc 7030/4 Section 20.1 ICAO Annex 10, Vol. IV, Chapter 4 Ireland AN O21, AN O37, AIC 35/99, AIC 20/03. UK AIC 85/2003. Austria A2/03</p> <p>www.eurocontrol.int/acas</p>

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<p>ACAS II with optional Hybrid Surveillance (Change 7.1)</p> <p>Airborne Collision Avoidance System</p>	<p>PROPOSED RETROFIT: 1 DEC 2015 NEW A/C: 1 MAR 2012</p> <p>for turbine powered aeroplanes with MCTOM>5700kg or having PAX>19 or any other aeroplane equipped with ACAS II</p>	<p>A new TCAS II (ACAS) version is available. It includes an improvement of the reversal Resolution Advisory (RA) logic and a modification of the RA list. The new software version is called "Version 7.1."</p> <p>ACAS is ETSO-C119c certified. Installation guidance is provided in AMC20-15.</p>	<p>ETSO C119c EUROCAE ED-143 RTCA DO-300 Ch.1 EASA CAT.IDE.A.155 EASA AMC20-15 (replaced JAA TGL8 Rev. 2) www.eurocontrol.int</p>
<p>ADS-B</p> <p>Automatic Dependent Surveillance – Broadcast</p> <p>(Part of the CASCADE programme)</p>	<p>Applicable to Aircraft with 5700 kg MCTOM or more or a max. Cruise TAS greater than 250 kt:</p> <p>ADS-B OUT:</p> <p>New Aircraft: 8. January 2015</p> <p>Retroactive: 7. December 2017</p> <p>ADS-B IN: No Mandate yet</p>	<p>FAA and Eurocontrol are cooperating for a common approach to implementation and timescales. AMC 20-24 provide guidance for certification for 1090 MHz extended squitter ADS-B application in Non-Radar Areas (NRA). The referenced EC regulation provides details on the ADS-B implementation schedule.</p> <p>ADS-B Out: Transmitting of position, velocity and other aircraft or vehicle information.</p> <p>ADS-B In: Receive and process ADS-B Out messages from other aircraft. Includes ADS-B Out. No installation requirements yet. May be connected with EFB for situational awareness.</p> <p>ADS-B will include:</p> <ul style="list-style-type: none"> • TIS-B Traffic Information Service – Broadcast (includes existing SSR network on 1090 MHz), • FIS-B Flight Information Service – Broadcast • Implement ground-based surveillance of continental airspace and airports by ADS-B. • Future packages of applications to be implemented at later stages will offer increased flight deck capability and delegation of separation responsibilities. 	<p>ICAO Annex 10 Volume IV EASA AMC20-24 EC 1207/2011 EASA AMC20-24 ETSO 2C112b ETSO C166b EUROCAE ED-102A/RTCA DO-260/A</p>
<p>ADS-C</p> <p>Automated Dependent Surveillance - Contract</p>	<p>Local Implementation</p>	<p>See CPDLC</p>	

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<p>CPDLC</p> <p>Controller Pilot Data Link Communication</p> <p>FANS 1/A</p>	<p>Optional or Local implementation</p>	<p>Uses an early version of CPDLC (AFN protocol) and has been used for almost 15 years as a version of oceanic surveillance and communication by airliners.</p> <p>Encompasses two main parts:</p> <ul style="list-style-type: none"> • Automatic Dependant Surveillance –Contract (ADS-C) • Controller Pilot Data Link Communication (CPDLC) 	
<p>CPDLC (PM CPDLC)</p> <p>Protected Mode - Controller Pilot Data Link Communication</p> <p>ATN / Link 2000+</p>	<p>FOR FLIGHTS ABOVE FL285:</p> <p>1 January 2011 for aircraft manufactured on or after 1 January 2011</p> <p>1 January 2014 exemption ends for FANS 1/A aircraft</p> <p>5 February 2015 for all aircraft manufactured before 1 January 2011</p> <p>1 January 2017 If not equipped aircraft must be retired</p>	<p>PM CPDLC</p> <ul style="list-style-type: none"> • PM CPDLC is a higher speed data link service using Protected Mode (PM) CPDLC under the ATN protocol and is being tested and implemented in Europe today (Link 2000+/trials). Also referred to as FANS 2 and is a super-set of FANS 1/A and PM CPDLC. • Data Link will not completely replace voice – CPDLC is supplementary and is for non-critical communication. <p><u>Active Service in Airspace:</u> 2013: PT, ES, FR, GB, IE, BE, NL, LU, DE, CH, IT, AT. 2015: DK, SE, NO, FI, LV, LT, EE, PL, CZ, SK, SI, HU, BG, RO, GR, MT</p> <p>TCL (Departure Clearance), D-ATIS and OCM (Oceanic Clearance Message), available today over ACARS, operational or on a trial basis.</p>	<p>EC 29/2009 EASA AMC 20-11 Data Link EASA AMC 20-24 ADS-B JAA TGL 15 S1 JAA TGL 16 S1 UK AIC 6/2002 France AIC A 22/00 AIP France ENR 1.5-13 (AMDT 13/00) JAA NPA20-13 ARINC 622 (FANS-ATC Data Link) ARINC 623-1 (ATC Data Link)</p> <p>www.eurocontrol.int/link2000</p>
<p>CVR</p> <p>Cockpit Voice Recorder EASA OPS (PROPOSED)</p> <p>AEROPLANE</p>	<p>EASA OPS (PROPOSED)</p> <p>a1) MCTOM>5700 kg, and</p> <p>a2) multi-engine turbine powered with MCTOM<5700 kg, with MPSC>9 PAX with individual CofA on or after 1 January 1990</p>	<p>Proposed EASA OPS CAT.IDE.A.185 will require:</p> <p>For a1) a 120 min recorder if individual CofA is issued on or after 1 April 1998, or for a1) a 30 min recorder when first issued with an individual CofA before 1 April 1998, or for a2) a 30 min recorder.</p> <p>In lieu a single combination recorder may be installed if:</p> <ul style="list-style-type: none"> • in case the aeroplane is required to be equipped with a CVR or an FDR; • one combination recorder in case of MCTOM<5700kg; • two combination recorders in case of MCTOM>5700kg. 	<p>EASA CAT.IDE.A.185 EASA CAT.IDE.A.200</p>

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CVR Cockpit Voice Recorder EASA OPS (PROPOSED) HELICOPTER	EASA OPS (PROPOSED) a1) MCTOM>7000 kg a2) MCTOM>3175 kg and individual CofA on or after 1 January 1987	Proposed EASA OPS CAT.IDE.H.185 will require: For a1) and A2) a 120 min recorder if individual CofA is issued on or after 1 January 2016, or for a1) a 60 min recorder if individual CofA is issued on or after 1 August 1999 and before 1 January 2016, or for a1) a 30 min recorder when first issued with an individual CofA before 1 August 1999, or For a2) a 30 min recorder when first issued with an individual CofA before 1 January 2016. In lieu of separate CVR and FDR a single combination recorder may be installed.	EASA CAT.IDE.H.185 EASA CAT.IDE.H.200
CVR-1 Cockpit Voice Recorders-1 EU-OPS AEROPLANE	EU-OPS or national OPS requirement for multiengine turbine powered aeroplanes having PAX>9 or MCTOM>5700kg first issued with an individual Certificate of Airworthiness on or after 1 April 1998	Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 1 or national CVR-1 equivalent requirement. 120 min recorder necessary except for aircrafts with MCTOM<5700kg may be 30 min. All recorders must have a device to assist in locating it in water (ULB).	JAR-OPS 1.700 ACJ OPS 1.700 EUROCAE ED56A Amdt.1
CVR-1 Cockpit Voice Recorders-1 JAR-OPS 3 HELICOPTER	JAR-OPS 3 or national OPS requirement for helicopter with a MCTOM>3175kg first issued with an individual Certificate of Airworthiness on or after 1 August 1999	Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 3 or national CVR-1 equivalent requirement. 60 min recorder necessary except for helicopters with MCTOM<7000kg may be 30 min. All recorders must have a device to assist in locating it in water (ULB).	JAR-OPS 3.700 ACJ OPS 3.700 EUROCAE ED56A Amdt.1

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<p>CVR-2 Cockpit Voice Recorders-2 JAR-OPS 3</p> <p>HELICOPTER</p>	<p>JAR-OPS 3</p> <p>for helicopter with a MCTOM>7000kg issued with an individual Certificate of Airworthiness up to and including 31. July 1999</p> <p>OR</p> <p>for helicopter with 3175kg<MCTOM<7000kg issued with an individual Certificate of Airworthiness on or after 1. January 1987</p> <p>OR</p> <p>national OPS requirement</p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 3 or national CVR-2 equivalent requirement. Nearly identical to CVR-1 except for recording time. A 30 min recorder is necessary. All recorders must have a device to assist in locating it in water (ULB).</p> <p>Exemptions for Helicopters operated for the purpose of HEMS are in place.</p>	<p>JAR-OPS 3.705 ACJ OPS 3.705 EUROCAE ED56A Amdt.1</p>
<p>CVR-2 Cockpit Voice Recorders-2 EU-OPS</p> <p>AEROPLANE</p>	<p>EU-OPS or national OPS requirement</p> <p>for multiengine turbine powered aeroplanes having PAX>9 and MCTOM<5700kg first issued with an individual Certificate of Airworthiness on or after 1. January 1990 up to and including 31 March 1998</p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 1 or national CVR-2 equivalent requirement. Nearly identical to CVR-1 except for recording time. A 30 min recorder is necessary. All recorders must have a device to assist in locating it in water (ULB).</p>	<p>JAR-OPS 1.705 ACJ OPS 1.705/1.710 EUROCAE ED56A Amdt.1</p>

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CVR-3 Cockpit Voice Recorders-3 AEROPLANE	EU-OPS or national OPS requirement for aeroplanes having a MCTOM>5700kg first issued with an individual Certificate of Airworthiness before 1. April 1998	Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 1 or national CVR-3 equivalent requirement. Slightly reduced requirement to CVR-2 A 30 min recorder is necessary. All recorders must have a device to assist in locating it in water (ULB).	JAR-OPS 1.710 ACJ OPS 1.705/1.710 EUROCAE ED56A Amdt.1
D-ATIS Digital Automatic Terminal Information Services	N/A	See ACARS	
EGNOS European Geostationary Navigation Overlay Service	OPEN SERVICE: Since 2009 SAFETY OF LIFE: Since March 2011	EGNOS is the European Satellite-Based Augmentation System (SBAS) that enhances the GPS signals similar to WAAS in the US. Correction data to improve the accuracy to about 2m. EGNOS provides three high performance navigation and positioning services: <ul style="list-style-type: none"> • Open Service • Safety-Of-Life • EGNOS Data Access Server - EDAS (as of 2011) See also SBAS	
EHS SSR Mode S Enhanced Surveillance	From 31 March 2005 with transition period until 31 March 2007 for aircraft with MCTOM>5700 kg or max cruising speed > 250kt	IFR/GAT traffic in high-density airspace, enhanced surveillance (EHS) functionality with downlinked aircraft derived data. Germany and UK have announced that they will implement EHS in a coordinated manner from 2005, France in 2007. A transition period of 2 years will be applied until 30 March 2007, during which a coordinated exemption policy will be applied through the EUROCONTROL Mode S Exemption Coordination Cell.	EASA AMC20-13 EUROCAE ED-73B/-82A/-101/-115 UK AIC 27/2007 France AIC A08/05; A26/02 Germany AIC IFR 03/05; 06/03 Ireland AIC 17/01 Switzerland AIC A03/05 The Netherlands AIC B02/05 Belgium AIC 05/2005, 17/2003 www.eurocontrol.int

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<p>ELS</p> <p>SSR Mode S Elementary Surveillance</p>	<p>a) IFR Flights: 31 March 2003 with completion of retrofits by 31 March 2007 and new production aircraft fitted by 31 March 2007.</p> <p>b) VFR Flights 31 March 2005 with completion of retrofits by 31 March 2008 and new production aircraft fitted by latest 31 March 2008. Some countries extended the ELS compliance for VFR flights to 1 January 2010</p>	<p>Mandatory carriage of ICAO Level 2 transponder in airspace designated by the appropriate ATS authority with <i>Basic Functionality</i> to support Elementary Surveillance.</p> <p>a) For IFR flights as General Air Traffic (i.e. Flights conducted in accordance with the rules and provisions of ICAO).</p> <p>b) For VFR flights. The implementation dates show the agreed transition programme of Sept. 2002.</p> <p>Exemption Policy may be found on the EUROCONTROL website.</p>	<p>JAA TGL No 13 Rev 1 (Proposed EASA AMC20-18) JAA Position Paper 37 Rev. 2 ICAO Doc 7030/4 Section 8 Germany AIC IFR 06/03 Norway AIC I 04/05 Belgium AIC 17/2003 France AIC A26/02 Switzerland AIC A 013/07 Netherland AIC B 10/03 UK AIC 105/2004 www.eurocontrol.int</p>
<p>FANS</p> <p>Future Air Navigation System</p>	<p>N/A</p>	<p>See CPDLC and PM CPDLC</p>	
<p>FDR</p> <p>Flight Data Recorder EASA OPS (PROPOSED)</p> <p>HELICOPTER</p>	<p>EASA OPS (PROPOSED)</p> <p>a1) MCTOM>3175 kg and individual CofA on or after 1 January 1999</p> <p>a2) MCTOM>7000 kg or a MPSC>9 Pax and individual CofA on or after 1 January 1989 but before 1 August 1999</p>	<p>Proposed EASA OPS CAT.IDE.H.190 will require:</p> <p>For a1) a recording time of 10 hours if individual CofA is issued on or after 1 January 2016, or for a1) a recording time of 8 hours if individual CofA is issued before 1 January 2016, or for a2) a recording of 5 hours.</p> <p>In lieu of separate CVR and FDR a single combination recorder may be installed.</p>	<p>EASA CAT.IDE.H.190 EASA CAT.IDE.H.200</p>

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<p>FDR</p> <p>Flight Data Recorder EASA OPS (PROPOSED)</p> <p>AEROPLANE</p>	<p>EASA OPS (PROPOSED)</p> <p>a1) MCTOM>5700 kg, with an individual CofA on or after 1 June 1990</p> <p>a2) turbine-engine powered with MCTOM>5700 kg, with individual CofA before 1 June 1990</p> <p>a3) turbine-engine powered with MCTOM<5700 kg, with MPSC>9 PAX, and an individual CofA on or after 1 April 1998</p>	<p>Proposed EASA OPS CAT.IDE.A.190 will require:</p> <p>For a2) with MCTOM<27000kg a 25 hrs recorder (similar to CVR-3), or for a1) with MCTOM<27000kg a 25 hrs recorder when first issued with an individual CofA before 1 January 2016, or for a1 and a2) with MCTOM>27000kg and first issued with individual CofA before 1 January 2016 a 25 hrs recorder, or for a3) a 10 hrs recorder when first issued with an individual CofA before January 2016, or for a1 and a3) a 25 hrs recorder when first issued with an individual CofA on or after 1 January 2016.</p> <p>In lieu a single combination recorder may be installed if:</p> <ul style="list-style-type: none"> • in case the aeroplane is required to be equipped with a CVR or an FDR; • one combination recorder in case of MCTOM<5700kg; • two combination recorders in case of MCTOM>5700kg. 	<p>EASA CAT.IDE.A.190 EASA CAT.IDE.A.200</p>

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<p>FDR-1 Flight Data Recorders-1 EU-OPS AEROPLANES</p>	<p>JAR-OPS 1 or national OPS requirement</p> <p>for aeroplanes having PAX>9 or MCTOM>5700kg first issued with an individual Certificate of Airworthiness on or after 1. April 1998 (<i>up to and including 31 December 2004*</i>)</p> <p><i>*) As per NPA OPS 39B</i></p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 1 or national FDR-1 equivalent requirement. Digital recording of 25hrs is required except for aircrafts below 5700kg only 10hrs is sufficient. All recorders must have a device to assist in locating it in water (ULB).</p> <p>A few exemptions are referenced in the requirement.</p> <p>Parameters to be recorded: MCTOM<27000kg: Table A1 or A2 of Appendix 1 to JAR-OPS 1.715 must be recorded. MCTOM>27000kg: additionally parameters listed in Table B must be fulfilled.</p> <p>Aeroplanes equipped with Electronic display systems: additionally the parameters listed in Table C.</p> <p>Combination recorders as per JAR-OPS 1.727 may be installed if</p> <ul style="list-style-type: none"> ➔ the aeroplane has to be equipped with a CVR or FDR only ➔ for aeroplanes with a MCTOM<5700kg ➔ two combination recorders if MCTOM>5700kg and the aeroplane has to be equipped with a CVR and a FDR 	<p>JAR-OPS 1.715 ACJ OPS 1.715 App. 1 to JAR-OPS 1.715 EUROCAE ED55 Amdt.1</p> <p>JAR-OPS 1.727</p>
<p>FDR-1 Flight Data Recorders-1 JAR-OPS 3 HELICOPTER</p>	<p>JAR-OPS 3 or national OPS requirement</p> <p>for helicopters with a MCTOM>3175kg first issued with an individual Certificate of Airworthiness on or after 1. August 1999</p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 3 or national FDR-1 equivalent requirement. Digital recording of 8hrs is required. All recorders must have a device to assist in locating it in water (ULB).</p> <p>Parameters to be recorded: 3175kg<MCTOM<7000kg: Table A of Appendix 1 to JAR-OPS 3.715/3.720 must be recorded. MCTOM>7000kg: additionally parameters listed in Table B must be fulfilled.</p> <p>Helicopters equipped with Electronic display systems: additionally the parameters listed in Table C.</p> <p>Novel or unique design: all dedicated parameters related.</p> <p>Combination recorders may be installed.</p>	<p>JAR-OPS 3.715 ACJ OPS 3.715/3.720 App. 1 to JAR-OPS 3.715/3.720 EUROCAE ED55 Amdt.1</p> <p>JAR-OPS 3.700(e)</p>

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<p>FDR-2</p> <p>Flight Data Recorders-2 EU-OPS</p> <p>AEROPLANES</p>	<p>JAR-OPS 1 or national OPS requirement</p> <p>for aeroplanes with a MCTOM>5700kg first issued with an individual Certificate of Airworthiness on or after 1. June 1990 up to and including 31 March 1998</p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 1 or national FDR-2 equivalent requirement. Digital recording of 25hrs is required. All recorders must have a device to assist in locating it in water (ULB).</p> <p>A few exemptions are referenced in the requirement.</p> <p>Parameters to be recorded: MCTOM<27000kg: Table A of Appendix 1 to JAR-OPS 1.720 must be recorded. MCTOM>27000kg: additionally parameters listed in Table B must be fulfilled.</p> <p>Combination recorders as per JAR-OPS 1.727 may be installed if</p> <ul style="list-style-type: none"> → the aeroplane has to be equipped with a CVR or FDR only → for aeroplanes with a MCTOM<5700kg → two combination recorders if MCTOM>5700kg and the aeroplane has to be equipped with a CVR and a FDR 	<p>JAR-OPS 1.720 ACJ OPS 1.720/1.725 App. 1 to JAR-OPS 1.720 EUROCAE ED55 Amdt.1</p> <p>JAR-OPS 1.727</p>
<p>FDR-2</p> <p>Flight Data Recorders-2 JAR-OPS 3</p> <p>HELICOPTERS</p>	<p>JAR-OPS 3 or national OPS requirement</p> <p>for helicopters with a MCTOM>7000kg or PAX>9 first issued with an individual Certificate of Airworthiness on or after 1. January 1989 up to and including 31 July 1999</p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 3 or national FDR-2 equivalent requirement. Digital recording of 5 hrs is required. All recorders must have a device to assist in locating it in water (ULB).</p> <p>Parameters to be recorded: MCTOM<7000kg and PAX>9: Table A of Appendix 1 to JAR-OPS 3.720 must be recorded. MCTOM>7000kg: additionally parameters listed in Table B must be fulfilled.</p> <p>Helicopters equipped with Electronic display systems: additionally the parameters listed in Table C.</p> <p>Novel or unique design: all dedicated parameters related.</p> <p>Combination recorders may be installed.</p>	<p>JAR-OPS 3.720 ACJ OPS 3.715/3.720 App. 1 to JAR-OPS 3.715/3.720 EUROCAE ED55 Amdt.1</p> <p>JAR-OPS 3.700(e)</p>

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<p>FDR-3</p> <p>Flight Data Recorders-3</p> <p>AEROPLANES</p>	<p style="text-align: center;">JAR-OPS 1 or national OPS requirement</p> <p style="text-align: center;">for aeroplanes having a MCTOM>5700kg first issued with an individual Certificate of Airworthiness before 1. June 1990</p>	<p>Retrofit requirement to be retrofitted if aircraft should comply to JAR-OPS 1 or national FDR-3 equivalent requirement.</p> <p>Digital recording of 25hrs is required. All recorders must have a device to assist in locating it in water (ULB).</p> <p>Various additional and a few exemptions are referenced in the requirement.</p> <p>Parameters to be recorded: MCTOM<27000kg: Table A of Appendix 1 to JAR-OPS 1.725 must be recorded. MCTOM>27000kg and first Type Certificated after 30. Sept. 1969: additionally parameters (6 to 15b) listed in Table B must be fulfilled. 5700kg<MCTOM<27000kg and first individual CofA on or after 1. Jan. 1987: additionally parameters (6 to 15b) listed in Table B must be fulfilled. MCTOM>27000kg and first Type Certificated on or after 1. Jan. 1987: the remaining parameters of Table B must be fulfilled.</p> <p>Combination recorders as per JAR-OPS 1.727 may be installed if</p> <ul style="list-style-type: none"> → the aeroplane has to be equipped with a CVR or FDR only → for aeroplanes with a MCTOM<5700kg → two combination recorders if MCTOM>5700kg and the aeroplane has to be equipped with a CVR and a FDR 	<p>JAR-OPS 1.725 ACJ OPS 1.720/1.725 App. 1 to JAR-OPS 1.720 EUROCAE ED55 Amdt.1</p> <p>JAR-OPS 1.727</p>
<p>Flight Data Monitoring</p> <p>EASA OPS (PROPOSED) EU-OPS</p>	<p style="text-align: center;">1 January 2005</p> <p style="text-align: center;">for aeroplanes with MCTOM>27000kg</p>	<p>Flight Data Monitoring (FDM) is the pro-active and non-punitive use of digital flight data from routine operations to improve aviation safety.</p>	<p>JAR-OPS 1.037 EASA ORO.AOC.130 ICAO Doc 9422; 9376 CAP 739 Links: http://www.caa.co.uk/default.aspx?categoryid=100&pagetype=76&groupid=117</p>

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GALILEO	<p>OPEN SERVICE: 2014 or later</p> <p>SAFETY OF LIFE: 2020 or later</p>	<p>Galileo is the European programme for a global satellite navigation system under civil control. The final solution will consist of 30 GIOVE satellites, the associated ground infrastructure and regional/local augmentations. This however, will not happen till about 2020. First operational services will be provided not before 2014 and are based on 18 Satellites.</p> <p>The final solution will offer 5 services:</p> <ul style="list-style-type: none"> • Open Service, • Commercial Service, • Safety-Of-Life, • Public Regulated Service (secure) and • Search and Rescue Service <p>The GALILEO open service (OS) will be available for anybody operating a compatible receiver and free of user charge. The GALILEO Safety of Life (SoL) service - Will be offered and guaranteed to the critical transport community, e.g. aviation, maritime, etc., delivering enhanced performance including integrity function such as warning of system malfunction.</p> <p>See also SBAS See also EGNOS</p>	<p>Link: http://ec.europa.eu/dgs/energy_transport/galileo/index_en.htm</p>
GBAS Global positioning Landing System	OPTIONAL	GBAS or D-GPS (Differential GPS), where ground-based equipment corrects and improves the accuracy of (airborne) GPS receivers. The GLS might be the airborne component of that system, though I don't know if GBAS is in operational use anywhere.	
GBAS Cat 1 Ground Based Augmentation System for GNSS	Under consideration at selected airport. Implementation: Unknown	<p>GBAS equipment is contained in aircraft multi mode receiver (MMR). GBAS performance specification is contained in RTCA DO 253a LAAS receiver MOPS.</p> <p>GBAS SARPS for CAT 1 became applicable in Nov 2001 refer to ICAO SARPS annex 10 volume 1 Also see specification RTCA DO 229D and FAA TSO C145/146.</p>	<p>RTCA DO 253a LAAS RTCA DO 229C E/TSO C145/146 ICAO Annex 10 Vol 1. SARPS ECIP NAV09 FAA AC120-29A Appendix 2 EASA AMC20-26 EASA AMC20-27</p> <p>http://www.eurocontrol.int/eec/public/standard_page/EEC_News_2008_1_GBAS.html</p>

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GLS GNSS Landing System	OPTIONAL	GBAS will compliment WAAS by providing GLS landing service for Category II/III precision approach operations. GBAS will also provide GLS Category-I capability at locations where WAAS service may not be available.	
GNSS NPA GNSS non precision approach	Not applicable for Europe	Not a European Programme but being used in some states	EASA AMC 20-5 AC20-130A AC20-138A Germany AIC IFR 17/99, Germany AIP ENR 1.5-20 France AIC A 16B/04
P-RNAV Precision RNAV	OPTIONAL RQ`D IMPLEMENTED	<p>Carriage of approved RNAV equipment with a lateral track keeping accuracy equal to or better than +/- 1NM on a 95% probability basis.</p> <p>Optional carriage to enable initial application of PRNAV in the TMA for suitably equipped aircraft. PRNAV airspace procedures now be introduced as early as November 2004 and April 2005 in countries like Germany, Switzerland, France and Austria.</p> <p>Approval is required to fly published P-RNAV airspace procedures.</p> <p>Conventional Terminal area procedures will continue to be provided. However, Basic-RNAV (B-RNAV) will be limited to RNAV procedures above MSA that are designed according to en route principles.</p> <p>Compliance with MASPS for RNP1 -RNAV will satisfy P-RNAV criteria.</p>	JAA TGL 10 JAA PP029_11 (FAQ) ECIP NAV03 and INFO 1&3 Austria AIC A9/03 Belgium AIC 05/2006 Croatia AIC 01/07 Cyprus AIC A05/06 Czech Republic AIC A8/06 Denmark AIC A20/03 Estonia AIC A05/06 Finland AIC A16/2001 France AIC A19/07 Germany AIC IFR 3 Greece AIC A2/06 Hungary AIC 04/07 Ireland AIC 01/07 Italy AIC A3/04 Latvia AIC A01/04 Lithuania AIC 09/06 Malta AIC A05/03 The Netherlands AIC A05/06 Norway AIC 01/04 Poland AIC A02/07 Portugal AIC 001-2007 Romania AIC A01/05 Serbia & Mont. AIC A6/07 Slovak Republic AIC A-9-2003 Slovenia AIC A02/2006 Spain AIP GEN 1.5-1 Sweden AIC A9/2006 Switzerland AIC A19/07 Turkey AIC 05/03 United Kingdom AIC 125-2006 www.ecacnav.com

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RNP 10 Navigation	Not applicable for Europe	Not a European programme but being required in certain parts of the world such as EUR-SAM routes. The AMC explains how the technical content and the operational principles of the FAA Order 8400.12A may be applied as a means to obtain EASA approval for RNP-10 operations.	EASA AMC20-12 UK AIC 93/2002 FAA Order 8400.12A Spain AIC 10/00 (RNP 10 EUR/SAM)
RNP APCH (APV/Baro VNAV) RNP Approach with or without APV BARO-VNAV	Under consideration at selected airports	The identified AMC provides an acceptable means that can be used to obtain airworthiness approval of an Area Navigation (RNAV) system based on a Global Navigation Satellite System (GNSS) standalone receiver or multisensory system including at least one GNSS sensor in order to conduct RNP Approach (RNP APCH) operations with or without vertical guidance based on BARO-VNAV. APV is to be introduced as a replacement for NPA and therefore a means to reduce CFIT incidents by providing aircraft a stabilized approach. The EASA AMC 20-27 and a proposed Certification Memo CM-AS-002 provides additional guidance on the approval of AMC 20-27 compliant installations.	EASA AMC 20-27 EASA CM-AS-002 AC20-138C AC20-129
RNP AR Required Navigation Performance - authorization required	Airport Requirement TBA	The identified AMC provides a means of compliance for applicants for an airworthiness approval to conduct Required Navigation Performance Authorisation Required (RNP AR) Operations and the applicable criteria to obtain an operational approval. RNP AR is the same as SAAAR – Special Aircraft and Aircrew Authorization Required.	EASA AMC 20-26 FAA AC 90-101 – Approval Guidance for RNP Procedures with SAAAR
RNP RNAV	Under consideration	See RNP APCH See RNP AR	
RVSM	Mandated for A/C operating in EUR airspace between FL290 and FL410	ICAO Minimum Aircraft System Performance Standard (MASPS)	JAA TGL 6 Revision1 JAR OPS 1.700, 1.705, 1.710, 1.727 ICAO Doc. 7300 ED5 SUPPS www.ecacnav.com
SBAS Space Based Augmentation System	N/A	Systems in place: <ul style="list-style-type: none"> • EU: EGNOS (European Geostationary Navigation Overlay System) and • US, CAD, MEX: WAAS (Wide Area Augmentation System) • JAP: MSAS (Multifunctional Satellite Augmentation System) • IND: GAGAN (GPS Aided Geostationary Augmented Navigation) For details see: <ul style="list-style-type: none"> • SBAS-LPV • SBAS-APV 	

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<p>SBAS APV I /II</p> <p>Space Based Augmentation System – Approach Vertical Guidance</p>	<p>OPTIONAL</p> <p>Under consideration at selected airports</p>	<p>Use of SBAS navigation service in ECAC airspace for all phases of flight including NPA, RNAV approaches with vertical guidance (APV), and CAT 1 precision approach.</p> <p>Requirements for SBAS receivers is contained in ICAO annex 10 Volume 1. Also see specification RTCA DO 229C and FAA TSO C145/146A.</p> <p>Currently SBAS will not be capable to provide CAT 1 precision approach but may provide lower minima than RNP APCH (APV/Baro VNAV).</p> <p>The JAA AWOSC is developing criteria for stabilized, constant angle descent profiles.</p>	<p>Equipment specification RTCA DO 229D and FAA/EASA E/TSO C145/146A</p> <p>ECIP NAV08 and INFO 1&3</p> <p>EASA AMC20-27</p> <p>AC20-138C</p> <p>AC20-129</p>
<p>SBAS LPV (RNAV GNSS LPV)</p> <p>Space Based Augmentation System – Localizer Performance with Vertical Guidance</p>	<p>OPTIONAL</p>	<p>Approaches currently planned and implemented. Identified as LPV.</p>	<p>AMC20-28 (DRAFT)</p>
<p>TAWS</p> <p>Terrain Awareness and Warning System EU-OPS</p> <p>AEROPLANES</p>	<p>JAR-OPS</p> <p>1 January 2007 for turbine powered aeroplanes with MCTOM>5700kg or having PAX>9</p>	<p>Ground proximity warning system that includes a forward looking terrain avoidance function Class A TAWS (Terrain Awareness and Warning System – TAWS)</p>	<p>JAR-OPS 1.665</p> <p>ICAO Annex 6 Amdt. 28; Chpt. 6.15</p> <p>Adopted NPA OPS-24</p> <p>JAA TGL 12</p> <p>Ireland AN O27</p>
<p>TAWS</p> <p>Terrain Awareness and Warning System EASA OPS (PROPOSED)</p> <p>AEROPLANES</p>	<p>EASA OPS (PROPOSED)</p> <p>TAWS-A for turbine powered MCTOM>5700 kg or MPSC>9</p> <p>TAWS-B for reciprocating engine MCTOM>5700 kg or MPSC>9</p>	<p>The EASA OPS Proposal requires:</p> <p>Ground proximity warning system that includes a forward looking terrain avoidance function Class A TAWS (Terrain Awareness and Warning System – TAWS)</p>	<p>EASA CAT.IDE.A.150</p>

Note: Latest amendments are marked in yellow
MCTOM... Maximum certified Take-Off Mass
MPSC... Maximum Passenger Seating Configuration
TBA... To be advised