Demonstration of compliance with the Surveillance Performance and Interoperability regulation (SPI IR) – Comission Implementing Regulation (EU) no 1207/2011

# Issue 2.0 Feb 2016

Laying down requirements for the performance and the interoperability of surveillance for the single European sky

# ANSP Regulatory Compliance Matrix

## Introduction

This compliance matrix is aimed to provide guidance regarding the means of compliance to the provisions of the SPI IR that are applicable to the ground based surveillance systems and their constituents. It does not therefore contain the airborne provisions or provisions that are not applicable to the air navigation service providers (ANSP). The provisions of the SPI IR regulation for which guidance is provided in this matrix focuses on the provisions that have a direct, indirect or potential impact for the ANSPs involved in services provided to flights as identified in paragraph 2 of Article 2 of the IR. This guidance is not intended for military organisations to which this regulation has a relevance to. An Information Notice (IN) was published by the CAA in Sep 2013 clarifying the dates of applicability against the various articles in the IR.

The Air Navigation Service Providers must ensure compliance with the provisions of the SPI IR that must be already complied with. The provisions of the SPI IR that are applicable retrospectively must be complied with by the relevant date of applicability. If ANSPs existing systems are already in compliance with the IR the relevant references can be provided as evidence to the CAA. However if existing processes/systems are not in compliance with the IR the ANSP must ensure compliance and provide the necessary evidence to the CAA to support the compliance statements. Equally the relevant Declaration of Verifications, Technical File and Declaration of Suitability of Use must be made available to the relevant CAA engineering Inspectors. Where the existing interoperability files submitted to the CAA does not cover the provisions of this regulation, new DoV, Technical Files and DSU must be submitted.

**NOTE**: The existing compliance dates of this IR may subject to change in future following a consultation by the European Commission.

# Regulatory Compliance Matrix and Related Guidance

| 1. **ARTICLE**
 | 1. **ANSP RESPONSIBILITIES AND GUIDANCE MATERIAL**
 | 1. **ANSP RESPONSE**
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| 1. **2 Scope**
 | 1. The purpose of this section is to clarify the scope of the IR as per the legal definitions of the terms in accordance with SES regulations.
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| 1. 2.1. This Regulation shall apply to the surveillance chain constituted of:
2. (a) airborne surveillance systems, their constituents and associated procedures;
3. (b) ground-based surveillance systems, their constituents and associated procedures;
4. (c) surveillance data processing systems, their constituents and associated procedures;
5. (d) ground-to-ground communications systems used for distribution of surveillance data, their constituents and associated procedures.
 | 1. ‘surveillance chain’ means a system composed of the aggregation of airborne and ground-based constituents used to determine the respective surveillance data items of aircraft, including the surveillance data processing system, if deployed;
2. ‘system’ means the aggregation of airborne and ground-based constituents, as well as space-based equipment, that provides support for air navigation services for all phases of flight;
3. ‘constituents’ means tangible objects such as hardware and intangible objects such as software upon which the interoperability of the EATMN depends;
 | 1. N/A
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| 1. 2.2. This Regulation shall apply to all flights operating as general air traffic in accordance with instrument flight rules within the airspace provided for in Article 1(3) of Regulation (EC) No 551/2004 of the European Parliament and of the Council (1) with the exception of Articles 7(3) and 7(4) which shall apply to all flights operating as general air traffic.
 | 1. ‘general air traffic’ means all movements of civil aircraft, as well as all movements of State aircraft (including military, customs and police aircraft) when these movements are carried out in conformity with the procedures of the ICAO;
 | 1. N/A
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| 1. 2.3. This Regulation shall apply to air traffic service providers which provide air traffic control services based on surveillance data, and to communication, navigation or surveillance service providers which operate systems laid down in paragraph 1.
 | 1. ‘air traffic services’ means the various flight information services, alerting services, air traffic advisory services and ATC services (area, approach and aerodrome control services);
2. ‘air traffic control (ATC) service’ means a service provided for the purpose of:
3. (a) preventing collisions:
4. between aircraft, and
5. in the manoeuvring area between aircraft and obstructions; and
6. (b) expediting and maintaining an orderly flow of air traffic;
7. ‘surveillance services’ means those facilities and services used to determine the respective positions of aircraft to allow safe separation;
 | 1. N/A
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| 1. **4 Performance Requirements**
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| 1. 4.1. Air navigation service providers shall ensure seamless operations within the airspace under their responsibility and at the boundary with adjacent airspace by applying appropriate minimum requirements for the separation of aircraft.
2. (Date of applicability 13 Dec 2013)
 | 1. Within the airspace under an ANSP’s responsibility, some ANSPs may use a mosaic surveillance display which consists of a surveillance display formed of various areas on the display served by different surveillance sensors. Where this is the case, the ANSP must demonstrate that the mosaic techniques do not create a; gap in coverage or position uncertainty due to relative time difference between target detection times in mosaic zones in order to ensure a seamless operation.
2. At the boundary with adjacent airspace
3. The ANSPs must have appropriate co-ordination procedures in place for aircraft transitioning from one ANSP’s airspace to airspace under their responsibility to ensure adequate separation is maintained.
4. ANSP must be able to demonstrate that their operations are seamless as per this requirement, if already not so.
 | 1. ANSP Example response:
2. The {XXXX} airport uses a mosaic display which contains an in-fill area served by an in-fill radar. The in-fill area and the airspace outside in-fill area are seamlessly integrated. The mosaic display was tested as part of in-fill radar Integration Project. See Safety case Part 2 [Reference XXXX}.
3. {XXXX} airport has a procedure {Reference XXXX} for aircraft transferring at the boundary of the adjacent airspace that is controlled by {XXXX ANSP}.
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| 1. 4.2. Air navigation service providers shall ensure that systems referred to in points (b), (c) and (d) of Article 2(1) are deployed as necessary to support the minimum requirements for the separation of aircraft applied in accordance with paragraph 1.
2. (Date of applicability 13 Dec 2013)
 | 1. ANSPs must deploy systems that are capable of meeting the requirements for safe separation of aircraft in the airspace where services are provided using surveillance data.
2. This is met by ANSPs SMS and the ANO approval process whereby ANSPs provide a robust safety argument to argue that the system meets all performance, safety and interoperability requirements necessary for the safe separation of aircraft.
3. Therefore ANSPs must be able to refer to the systems and their relevant approvals used to provide separation services to aircraft.
 | 1. ANSP Example response:
2. {XXXX} airport provides approach control services with a separation standard of 3NM out to a range of 40NM in controlled airspace and to traffic in uncontrolled airspace where deconfliction services are provided with a deconfliction minima of 5NM. The airspace consists of both co-operative and non-cooperative targets.
3. [XXXX] airport has an S band primary surveillance radar and a wide area multilateration system implemented to support these services. A plot assigner/combiner system combines the co-operative and non-cooperative data to ensure all targets are displayed on approach displays to allow safe separation. Safety Case approvals have been received for PSR/MLAT/PAC, RDP and display systems by SARG. ANO 205 approval certificates attached.
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| 1. 4.3. Air navigation service providers shall ensure that the output of the surveillance chain referred to in Article 2(1) complies with the performance requirements set out in Annex I provided that the airborne constituent functions used are compliant with the requirements set out in Annex II.
2. (Date of applicability 13 Dec 2013)
 | 1. All ANSPs are required to comply with this article by the 13th of December 2013.
2. See Annex 1 guidance below. Compliance must be demonstrated against all requirements in Annex 1 for all surveillance sensors and their constituent elements which are used by the ANSP for providing services.
 | 1. ANSP Example response
2. See response below for Annex I.
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| 1. 4.4. If an air navigation service provider identifies an aircraft whose avionics exhibit a functional anomaly, he shall inform the operator of the flight of the deviation from the performance requirements.
2. (Date of applicability 13 Dec 2013)
 | 1. ANSPs must make records of all the aircraft that exhibit a functional anomaly, if identifiable.
2. The ANSP must, where possible, inform the operator of the anomaly via voice comms whilst providing a service to the aircraft. Otherwise, the ANSP must endeavour to identify the operator of the aircraft and to make a formal notification to the operator regarding the anomaly where identity can be established.
3. In accordance with the EU Directive 2003/42/EC ANSP shall record the faulty transponder as an occurrence, The ANSP should have a process for the action to be taken if an operator continues to operate in the airspace of their responsibility with the unresolved functional anomaly.
4. ANSP must be able to demonstrate compliance with this requirement by the applicability date.
 | 1. ANSP Example response:
2. {XXXX} airport has a procedure for dealing with aircraft who avionics exhibit anomalies. The airport maintains a log of aircraft that have been identified as having transponders potentially malfunctioning. See procedure {XXXX}.
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| 1. **5 Interoperability Requirements**
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| 1. 5.1. Air navigation service providers shall ensure that all surveillance data transferred from their systems identified in points (b) and (c) of Article 2(1) to other navigation service providers complies with the requirements set out in Annex III.
2. (Date of applicability 13 Dec 2013)
 | 1. See Annex III guidance below for compliance with this paragraph.
2. This is a requirement placed on the providers of the surveillance data rather than the recipient of the data.
3. Note: Where an ANSP providing surveillance services to civil aircraft receive surveillance feeds from a military ANSP, the ANSP must ensure that the data received from a military ANSP providing air traffic services to flights operating as general air traffic complies with the requirements in Annex III.
4. This requirement must be complied with by 13th Dec 2013 for all existing surveillance feeds received from other ANSP including Annex III.
 | 1. ANSP Example response:
2. See response below for Annex III.
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| 1. 5.2. Air navigation service providers when transferring surveillance data from their systems identified in points (b) and (c) of Article 2(1) to other air navigation service providers, shall establish formal arrangements with them for the exchange of the data in accordance with the requirements set out in Annex IV.
2. (Date of applicability 13 Dec 2013)
 | 1. This is a requirement placed on the party that supplies/transfers data to another ANSP.
2. ANSPs providing surveillance data to other ANSPs shall have a written service level agreement in place containing the requirements set out in Annex IV.
3. This agreement shall be available for inspection at request by the CAA SARG inspectors or regulators.
4. Note: Where an ANSP providing surveillance services to civil aircraft receive surveillance feeds from a military ANSP, they must ensure that the provider of the data makes formal arrangements with them in accordance with requirements in Annex IV.
5. Full compliance to this requirement including Annex IV must be demonstrated by 13 Dec 2013 for all future and existing data transfer arrangements in place.
 | 1. ANSP Example response:
2. {XXXX} airport receives an in-fill radar data feed from {YYYY} and an SSR feed from {ZZZZ}.
3. The airport has signed a Service Level Agreement with {XXXX} and the ANSP supplying the in-fill radar data which demonstrates that the requirements set out in Annex IV are met. See the {XXXX} airport copy of the agreements attached.
4. - Attachment A (formal arrangements with ZZZZ)
5. - Attachment B (formal arrangements with YYYY) airport for the in-fill feed.
 |
| 1. 5.3. Air navigation service providers shall ensure that, by 2 January 2020 at the latest, the cooperative surveillance chain has the necessary capability to allow them to establish individual aircraft identification using downlinked aircraft identification made available by aircraft equipped in accordance with Annex II.
2. (Date of applicability 2 Jan 2020)
 | 1. It is advisable to take this requirement into consideration for ANSPs who are currently implementing or replacing their existing ground based surveillance systems with modern systems, in preparation for compliance by 2020.
2. A separate IR; “(EU) No 1206/2011 laying down requirements on aircraft identification for surveillance for the single European sky” which came in to force in 2011 details this requirement.
3. Modern co-operative surveillance systems are capable of receiving and processing downlinked aircraft identification.
 | 1. ANSP Example response:
2. {XXXX} airport SSR system already has the capability of receiving and processing downlinked aircraft identification data. This data is also in the SSR labels on the controller’s displays.
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| 1. 5.8. Air navigation service providers shall ensure that, before putting into service the systems referred to in points (b), (c) and (d) of Article 2(1), they are implementing the most efficient deployment solutions taking into account the local operating environments, constraints and needs as well as airspace users capabilities.
2. (Date of applicability 13 Dec 2013)
 | 1. No special compliance statement is required other than the Safety Case.
2. The ANSPs in the UK must however comply with the national surveillance coverage requirements published in CAP 670 SUR 01.
 | 1. ANSP Example response:
2. {XXXX} airport has a PSR and multilateration combined surveillance system for which ANO Article 205 approval has been received.
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| 1. **ARTICLE 6**
2. **Spectrum Protection**
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| 1. 6.1. By 5 February 2015 at the latest Member States shall ensure that a secondary surveillance radar transponder on board any aircraft flying over a Member State is not subject to excessive interrogations that are transmitted by ground-based surveillance interrogators and which either elicit replies or whilst not eliciting a reply are of sufficient power to exceed the minimum threshold level of the receiver of the secondary surveillance radar transponder.
2.
3. (Date of applicability 5 Feb 2015)
 | 1. The ANSP must strictly adhere to the transmitter power levels permitted for the ground based interrogator as stated in the NISC Interrogator Certificate for all co-operative surveillance systems.
2. The ANSP must also configure the system such that all-call interrogations by Mode S systems (MLAT or SSR) are kept to a minimum and in accordance with the conditions attached to the NISC Interrogator Certificate.
3.
 | 1. ANSP Example response:
2. [XXXX] airport Mode S SSR operates fully in accordance with the power limits and conditions attached in the NISC Interrogator Approval Certificate and the conditions of the MICA Code Certificate. See the attached NISC Interrogator Approval Certificate No {XXXX} and MICA Code Certificate {XXXX}.
 |
| 1. 6.2. For the purpose of paragraph 1, the sum of such interrogations shall not cause the secondary surveillance radar transponder to exceed the rates of reply per second, excluding any squitter transmissions, specified in paragraph 3.1.1.7.9.1 for Mode A/C replies and in paragraph 3.1.2.10.3.7.3 for Mode S replies of Annex 10 to the Chicago Convention, Volume IV, Fourth Edition.
2. (Date of applicability 5 Feb 2015)
 | 1. Complying with the conditions attached in the NISC Interrogator Certificate for co-operative surveillance systems must be met at all times during the operational life of the Interrogator.
 | 1. ANSP Example response:
2. The airport Mode S SSR operates fully in accordance with the power limits, interrogation rates and conditions attached in the NISC Interrogator Approval Certificate and the conditions of the MICA Code Certificate. See attached the NISC Interrogator Approval Certificate No {XXXX} and MICA Code Certificate {XXXX}.
 |
| 1. 6.3. By 5 February 2015 at the latest Member States shall ensure that the use of a ground based transmitter operated in a Member State does not produce harmful interference on other surveillance systems.
2. (Date of applicability 5 Feb 2015)
 | 1. Adherence to the conditions of the Interrogator certificate must be met at all times. In addition an Interrogator operated by an ANSP must not cause harmful interference on any other surveillance systems.
2. For non-cooperative systems (PSR), the PSR transmitted power is stated in the Frequency Assignment Document issued by the CAA.
3. The conditions attached to the WTA Act Licence for primary surveillance systems must also be met at all times.
4. As part of the CAA/NISC statutorily obligations, compliance monitoring is carried out to insure that an interrogator is operating in accordance with the technical parameters laid down in an Approval.
 | 1. ANSP Example response:
2. {XXXX} airport Mode S SSR interrogator operates fully in accordance with the Power Limits, interrogation rates and other conditions attached in the NISC Interrogator Approval Certificate and the conditions of the MICA Code Certificate. The airport has procedure [XXXX] for correct implementation of Interrogator Code and the associated coverage map in the Mode System.
3. [XXXX] airport PSR operates fully in accordance with the power levels stated in the Wireless Telegraphy Act Licence and the frequency assignment documents issued by the SARG for the system.
4. No issues of known interference effects on other surveillance systems have been identified.
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| 1. **Article 7**
2. **Associated Procedures**
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| 1. 7.1. Air navigation service providers shall assess the level of performance of ground based surveillance chain before putting them into service as well as regularly during the service, in accordance with the requirements set out in Annex V.
2. (Date of applicability 13 Dec 2013)
 | 1. ANSPs must define the required performance of the surveillance systems in their safety case material when concerning implementation of a surveillance system.
2. Performance requirements for surveillance systems, are defined in CAP 670 SUR 02.
3. Annex I of this regulation also defines performance requirements of the ground based surveillance systems.
4. Once a surveillance system is implemented, prior to commissioning, the ANSP must provide test and analysis evidence of performance assessments carried out, as part of their safety case. The safety arguments must demonstrate that the system meets the required performance criteria.
5. The UK requirements for performance assessment of ground based surveillance systems are published in CAP 670 SUR 12.
6. See guidance for Annex V for further guidance. Full compliance to this requirement including Annex V must be met by the applicability date for all surveillance systems and constituents used by the ANSP.
 | 1. ANSP Example response:
2. When {XXXX} airport PSR was deployed the airport conducted flight trials and performance assessment using SASS-C tool. The detailed test evidence was submitted to SARG as part of Safety case Part 2(Reference XXXX}. The system met the required performance criteria as detailed in the flight trial report {reference XXXX}.
3. See response in Annex V for “during the service” performance verification compliance.
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| 1. **Article 8**
2. **State Aircraft**
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| 1. 8.5. Air traffic service providers shall ensure that the State aircraft identified in paragraph 3 can be accommodated, provided that they can be safely handled within the capacity of the air traffic management system.
2. (Date of applicability 7 Dec 2017 for aircraft stated in para 1 and 1 January 2019 for aircraft stated in para 2))
3.
 | 1. If any state aircraft i.e. any aircraft used for military, customs and police purposes fly within an ANSP’s airspace of responsibility, and if any state aircraft are to fly within the airspace without complying (for reasons stated in para 3 of article 8) with the equipage requirements for SSR transponders as set out in Annex II part A of this regulation, the ANSPs must ensure that such aircraft can be safely handled within the capacity of their ATM system.
2. The ANSP must have appropriate procedures and technical capability within their ATM infrastructure to be able to accommodate such traffic which are not fully compliant with SSR transponder requirements. If the ANSP already accommodates such state aircraft in their airspace they must be able to provide safety assurance to the CAA that such aircraft can be safely handled and accommodated.
 | 1. ANSP Example response:
2. {XXXX} airport has a procedure {Reference XXXX) for handling state aircraft that are not complaint with the avionics capability requirements of the SPI IR. The airport has a primary radar system that provides surveillance data required by the controllers to ensure they are detected and handled safely within the coverage area.
 |
| 1. 8.7. Air traffic service providers shall communicate on an annual basis to the Member State that has designated them their plans for the handling of State aircraft which are not equipped according with paragraphs 1 or 2. Those plans shall be defined by taking into account the capacity limits associated with the procedures referred to in paragraph 6.
2.
3. (Date of applicability ;Before 7 Dec 2017 for aircraft stated in para 1 and before 1 January 2019 for aircraft stated in para 2 since member states publish procedures as per para 6)
4.
 | 1. Once the member state (CAA/MoD) publishes the procedures for the handling of State aircraft which are not equipped as per paragraphs 1 and 2 of this article in the UK AIP (as stated in para 6), the air traffic service providers shall communicate their plans for safe handling of aircraft not equipped as per paragraphs 1 and 2 of this article, to the member state (CAA/MoD).
2. Where the existing procedures are published in the AIP(both civil and military) and If the ANSP already has procedures in MATS part 2 or Letters of Agreement that have been signed between relevant state authorities and the unit concerning handling of state aircraft, references to these must be provided.
3. Any changes to such agreements or procedures must be informed to the CAA relevant Inspectorate.
 | 1. ANSP Example response:
2. {XXXX} airport already have a procedure to accommodate and safe handling of state aircraft that are not appropriately equipped. These plans and procedures are stated in MATS Part 2 section XXXX.
3. CAA Southern/Northern Regional Office will be informed on an annual basis of any changes that may have to be accommodated in order to handle state aircraft in a safe manner.
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| 1. **Article 9**
2. **Safety Requirements**
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| 1. 9.1. Member States shall ensure that, by 5 February 2015 at the latest, a safety assessment is conducted by the parties concerned for all existing systems referred to in points (b), (c) and (d) of Article 2(1).
2. (Date of applicability 5 Feb 2015)
 | 1. The ANO approval granted by the CAA to the ANSPs concerning ground based surveillance systems, constitutes an element of safety assessment for the existing systems for which the approvals have been granted. Ongoing safety oversight and audit of the ATM systems used by an ANSP ensures that safety is maintained of existing systems.
2. As long as the ANSP holds an ANO Article 205 approval for the pre-SMS legacy systems and all existing surveillance systems and constituents ANSPs are not required to re-assess their systems against requirements identified in ANNEX VI.
3. It is ANSP responsibility to ensure that safety is maintained during the entire operational life time of the system hence under the SMS processes hazards that are likely to occur are always identified and mitigated.
4. See guidance in paragraph 3.
 | 1. ANSP Example response:
2. The airport has ANO approval issued by the national Supervisory Authority (CAA) for all existing surveillance systems and their constituents.
 |
| 1. 9.2. Member States shall ensure that any changes to the existing systems referred to in points (b), (c) and (d) of Article 2(1) or the introduction of new systems are preceded by a safety assessment, including hazard identification, risk assessment and mitigation, conducted by the parties concerned.
2. (Date of applicability 13 Dec 2013)
 | 1. Introduction of Safety Management Systems ensures that the ANSPs must conduct hazard identification, risk assessment and mitigation and the ANSP submits a robust safety argument including evidence of such assessment in the safety case material.
2. The current SMS processes and on-going safety oversight process ensures compliance.
3. See guidance in paragraph 3.
 | 1. ANSP Example response:
2. {XXXX} airport has a SMS process which ensures hazard identification, risk assessment and mitigation when implementing new systems or safety related changes to existing systems.
 |
| 1. 9.3. During the assessments identified in paragraphs 1 and 2, the requirements set out in Annex VI shall be taken into consideration as a minimum.
2. (Date of applicability 13 Dec 2013)
 | 1. Note the dates of applicability for the articles identified in ANNEX VI. Some provisions of these articles don’t apply until a future date, so ANSP aren’t legally obliged to comply until the dates of applicability relevant for the articles.
2. If already not considered during safety assessments (already conducted or to be conducted), ANSPs must consider the safety impact arising from potential non-compliance with the items of the IR listed in ANNEX VI.
 | 1. N/A
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| 1. **Article 11**
2. **Verification of Systems**
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| 1. 11.1. Air navigation service providers which can demonstrate or have demonstrated that they fulfil the conditions set out in Annex VIII shall conduct a verification of the systems referred to in points (b), (c) and (d) of Article 2(1) in compliance with the requirements set out in Part A of Annex IX.
2. (Date of applicability 13 Dec 2013)
 | 1. The verification of systems concerns demonstrating compliance against interoperability, performance and safety requirements of this IR.
2. ANSPs those who conduct this verification themselves, must comply with conditions set out in Annex VIII of this IR.
3. If so, those ANSPs must present evidence in writing to the CAA that they comply with Annex VIII.
4. Those ANSPs who successfully demonstrate compliance with Annex VIII, are required to conduct a verification of their ground based surveillance systems. The verification must be performed in compliance with requirements set out in Annex IX part A.
5. For the ANSPs existing systems for which ANP approval has already been granted by the CAA, verifications need not be performed unless any element of the interoperability, performance and safety requirements of this IR have not been part of the verifications conducted previously.
6. For all new systems or changes to existing systems need to be verified against interoperability, performance and safety requirements of this IR.
 | 1. ANSP Example response:
2. Our organisation {XXXX} has already been accepted by the CAA as being an ANSP compliant with the conditions in Annex VIII {Reference XXXX}.
3. We have conducted testing and submitted the Technical File and the Declaration of Verification of Systems for the PSR, and WAM system that the airport operates (Reference XXXX}.
 |
| 1. 11.2. Air navigation service providers which cannot demonstrate that they fulfil the conditions set out in Annex VIII shall subcontract to a notified body a verification of the systems referred to in points (b), (c) and (d) of Article 2(1). This verification shall be conducted in compliance with the requirements set out in Part B of Annex IX.
2. (Date of applicability 13 Dec 2013)
 | 1. The ANSPs who cannot demonstrate that they are unable to meet with the requirements set out in Annex VIII, must subcontract a notified body to conduct the verification of ground based surveillance systems for the ANSP.
2. The notified body subcontracted by the ANSP must perform a verification of ANSP’s surveillance systems in compliance with requirements set out in Annex IX Part B.
 | 1. ANSP Example response:
2. We contracted {XXXX} which is a notified body and submitted the certificate of conformity by the notified body, declaration of verification of systems, and the Technical File to the CAA for WAM system that we operate.
3. The PSR is a legacy system for which ANO approval was granted in 2000, and no safety related change has been made to the system since.
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| 1. 11.3. Certification processes complying with Regulation (EC) No 216/2008 shall be considered as acceptable procedures for the verification of systems if they include the demonstration of compliance with the applicable interoperability, performance and safety requirements of this Regulation
2. (Date of applicability 13 Dec 2013)
 | 1. Where the verification of systems referred in paragraphs 1 and 2 are not conducted in compliance with Part A of Annex IX by the ANSP or Part B of Annex IX by the notified body, EASA certification processes that comply with (EC) No 216/2008 are acceptable so long as they include demonstration of compliance with interoperability, performance and safety requirements of the SPI IR.
2. However this is more of a future requirement as there are no such EASA certification specifications that states interoperability, performance and safety requirements of the SPI IR at present.
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| 1. **Article 12**
2. **Additional Requirements**
3. **(Date of applicability 12 Dec 2011)**
 |  |  |
| 1. 12.1. Air navigation service providers shall ensure that all personnel concerned are made duly aware of the requirements laid down in this Regulation and that they are adequately trained for their job functions.
 | 1. ANPSs must ensure that all personnel who are involved in maintenance, operation, implementation, performance verification and use of the ground based surveillance systems are made fully aware of this IR.
2. ANSP s must also ensure all such personnel are adequately trained and qualified for their job functions.
3. Where the maintenance, operation, implementation, performance verification is conducted by 3rd parties who are contracted to do these job functions, the ANSP shall be responsible to ensure that the organisations contracted by them and personnel in such organisations are competent to carry out these functions for them.
 | 1. ANSP Example response:
2. All personnel involved in operating, maintaining and using the surveillance systems are fully qualified and trained by our organisation. The controllers are rated for providing the services using the surveillance equipment used by the airport.
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| 1. 12.2. Air navigation service providers shall:
2. (a) develop and maintain operations manuals containing the necessary instructions and information to enable all personnel concerned to apply this Regulation;
3. (b) ensure that the manuals referred to in point (a) are accessible and kept up to date and that their update and distribution are subject to appropriate quality and documentation configuration management;
4. (c) ensure that the working methods and operating procedures comply with this Regulation.
 | 1. Air Navigation Service Providers must identify the areas which they need to develop operations manuals to all personnel concerned who may operate, use or maintain the systems and their constituents identified in this regulation.
2. Also, once developed such operations manuals need o be kept up to date. Updating and distribution process of these operational manuals must be subject to quality management and document configuration control.
3. When required by the CAA, such documentation must be available for inspection along with the records of configuration control applied.
 | 1. ANSP Example response:
2. All maintenance and operations manuals for the surveillance systems are stored secure storage and are accessible by the relevant staff who are engaged in maintenance, management and operation of the systems. The documents are subject to document configuration control and subject to quality control process.
3. All manuals and procedures for controllers are fully accessible to controllers and kept up to date by the senior air traffic controller at the airport.
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| 1. **Article 13**
2. **Exemptions on the cooperative surveillance chain**
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| 1. 13.1. For the specific case of approach areas where air traffic services are provided by military units or under military supervision and when procurement constraints prevent compliance with Article 5(3), Member States shall communicate to the Commission by 31 December 2017 at the latest, the date of compliance of the cooperative surveillance chain that shall not be later than 2 January 2025.
 | 1. ANSPs providing who provide services to “flights operating as general air traffic” in accordance with Instrument Flight Rules must consider the applicability of this regulation to their respective airspace.
2. Where this regulation impacts any civil ANSP providing services to “flights operating as general air traffic” shall inform the CAA SARG Head of Surveillance”.
3. CAA SARG will liaise with DAATM (Defence Airspace and Air Traffic management) as required. Any relevant notification will then be sent to DfT for onward transmission to the Commission.
 | 1. ANSP Example response:
2. Not applicable to {XXXX} airport.
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| 1. **ANNEX 1- Performance Requirements Referred to in Article 4(3)**
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| 1. ANNEX 1
2. 1. Surveillance data requirements
3. 1.1. All surveillance chains referred to in Article 4(3) shall provide as a minimum the following surveillance data:
4. (a) 2D positional data (aircraft horizontal position);
5. (b) surveillance data status:
* cooperative/non-cooperative/combined;
* coasted or not;
* time of applicability of 2D positional data.
 | 1. See the definitions of “surveillance chain” under scope. Article 3 provides definitions of the terms “coasted”, “cooperative surveillance chain”, and “time of applicability”.
2. The “output of the surveillance chain” stated in Article 4(3) can be considered as excluding the HMI. Hence the requirements must be met at the system level. The IR is not explicit about providing these data to the controller on the HMIs. However most of these data will be shown to the controller on displays by most systems. For example the controller would be able to identify if the data is co-operative, non-cooperative or combined where different symbols are used to make this distinction.
3. Time of applicability may be the time that the sensor or the processing system time stamped the data or other techniques where the system ensures that the data passed to the controller is timely, therefore system does not pass data to the HMI aged than a pre-defined criteria.
 | 1. ANSP Example response:
2. The surveillance systems used by the {XXXX} airport meets with the data requirements. See the airport surveillance system specification attached for a description of the data the system provides.
 |
| 1. ANNEX 1
2. 1.2. In addition, all cooperative surveillance chains referred to in Article 4(3) shall provide as a minimum the following surveillance data:
3. (a) vertical positional data (based upon pressure altitude received from the aircraft);
4. (b) operational identification data (aircraft identity received from the aircraft like aircraft identification and/or Mode A code);
5. (c) supplemental indicators:
* emergency indicators (i.e. unlawful interference, radio failure and general emergency);
* special position indicator;
1. (d) surveillance data status (time of applicability of vertical position data).
 | 1. Refer to the guidance above in 1.1.
 | 1. ANSP Example response:
2. The multilateration system and the SSR feed used by {XXXX} airport meets with the data requirements. See the airport surveillance system specification attached for a description of the data the system provides.
 |
| 1. ANNEX 1
2. 2. Surveillance data performance requirements
3. 2.1. The air navigation service providers shall define performance requirements for the accuracy, availability, integrity, continuity and timeliness of the surveillance data provided by the systems referred to in Article 4(3) and used to enable the surveillance applications conducted.
 | 1. CAP 670 SUR 02 defines and sets requirements for the Required Performance of surveillance systems. Annex C in CAP 670 provides guidance regarding various surveillance applications for which an ANSP might use surveillance data.
2. The required performance must be identified by the ANSP depending on the individual applications for which data from a ground based surveillance system are used. These may be defined in CAP 670, or other industry standards such as EUROCONTROL ATM specifications, or EUROCAE, RTCA specifications. However the ANSP where such criteria are obtained from industry standards must consider them as minimum performance requirements and must consider the validity and the suitability of the criteria in their own context where the application is conducted.
3. By ensuring compliance with CAP 670 SUR 02 requirements the ANSP should demonstrate all performance requirements identified in the IR are defined.
 | 1. ANSP Example response:
2. The required performance for the 5NM separation at {XXXX} airport is defined in Safety Case Part1 for the {XXXX} airport surveillance system.
3. The required performance for the surface movement surveillance is defined in safety Case Part 1 for the Surface Movement Radar system implemented at the airport.
 |
| 1. ANNEX 1
2. 2.2. The evaluation of the accuracy of the horizontal position provided by the systems referred to in Article 4(3) shall include, as a minimum, the assessment of horizontal position error.
 | 1. The ANSPs are required to define the accuracy of the surveillance data as stated in 2.1. As per Article 4(3) ANSPS are required to ensure that the output of the surveillance chain complies with the performance requirements. Hence performance evaluation must have included an assessment of horizontal position error as a minimum.
2. The horizontal position error may have been assessed during flight testing in comparison with an independent position source, or in traffic study in comparison with a reference system that is known to be accurate.
 | 1. ANSP Example response:
2. When PSR required performance was defined in Safety Case Part 1 {reference XXXX}. Prior to the commissioning of the system extensive flight tests were carried out to verify accuracy, resolution by means of an aircraft carrying a GPS position source. The error of the reported position by the PSR and the GPS positions were evaluated and was within acceptable margins. Test reports {Reference abc and XXXX} were provided as part of Safety Case Part 2 evidence.
 |
| 1. ANNEX 1
2. 2.3. The air navigation service providers shall verify compliance with the performance requirements defined in accordance with points 2.1 and 2.2.
 | 1. ANSPs must verify that the system is capable of meeting the defined required surveillance performance.
2. CAP 670 SUR 12 sets national requirements for performance assessment of surveillance systems.
 | 1. ANSP Example response:
2. The performance delivered by the ground based surveillance systems {PSR} was verified during pre-commissioning flight tests and SASS analysis.
3. The test results demonstrated that the PSR meets the required performance. Test reports were submitted as evidence to SC Part 2{reference XXXX}.
 |
| 1. ANNEX 1
2. 2.4. Verification of compliance shall be performed on the basis of the surveillance data provided at the output of the surveillance chain, to the surveillance data user.
 | 1. Here the “output of the surveillance chain” is considered to be excluding the HMI. In other words if the data were impacted by the discrepancies of the HMI equipment, that is not considered for the “performance” of the ground based surveillance system.
2. Also as per 2.1 the ANSP conducting the applications using the data provided by the systems must determine the required performance. Hence the “performance criteria” must be verified by the ANSP using that data who conducts surveillance applications.
 | 1. ANSP Example response:
2. {XXXX} airport has verified the overall performance of the surveillance system that consists of airfields PSR, and remote SSR feed, Plot Assigner Combiner System and processing system. Required performance for proving 3NM separation and SRAs to 1NM from touchdown were met. Test report attached.
 |
| 1. **ANNEX III**
2. **Surveillance data exchange requirements referred to in Article 5(1)**
 |  |  |
| 1. **ANNEX III**
2. 1. Surveillance data exchanged between the systems referred to in points (b) and (c) of Article 2(1), shall be subject to a data format that is agreed between the parties concerned.
 | 1. The ANSPs who are transferring surveillance data to another ANSP must agree the data format for transferring data.
2. Whilst ASTERIX is the recommended standard, as stated in CAP 670 SUR 03, this requirement does not mandate ASTERIX to be the data format. However requirements in paragraphs 2 and 3 means that ASTREIX format is required and where ANPS use legacy standards may not be able to demonstrate full compliance.
 | 1. ANSP Example response:
2. As per the Service Level Agreement, the data format for exchanging surveillance data is agreed between {XXXX} airport and {YYYY} airport. {i.e. ASTERIX format}
3. or;
4. See response for Article 5(2). Formal Arrangements in Annex IV item (e) meets this requirement.
 |
| 1. **ANNEX III**
2. 2. The surveillance data transferred outside the systems referred to in points (b) and (c) of Article 2(1) to other air navigation service providers shall allow:
3. (a) identification of the data source;
4. (b) identification of the type of data.
 | 1. The data transferred by a third party ANSP to an ANSP’s local system shall allow the identification of the sensor or the sensor network (e.g. MLAT) from which the data is provided.
2. The data feeds must also allow the identification of type of data either in terms of an ASTERIX category or an indication of whether the data is from a mono sensor or a fused/combined system.
 | 1. ANSP Example response:
2. The {XXXX) airport receives an ASTERIX Category 48 feed from {YYYY}.
 |
| 1. **ANNEX III**
2. 3. Surveillance data transferred outside the systems referred to in points (b) and (c) of Article 2(1) to other air navigation service providers shall be time stamped and expressed as coordinated universal time (UTC).
 | 1. This is a requirements placed on the provider of the data rather than the recipient of the data. The ANSPs providing surveillance data feeds from their systems must therefore ensure data they provide meet with the requirement. Providers of Non-ASTERIX data may be impacted and require system modification to ensure data is time-stamped in UTC.
 | 1. ANSP Example response:
2. {XXXX} airport provides data to 3rd party ANSPs in ASTERIX format which is time stamped in UTC.
 |
| 1. **ANNEX IV**
 |  |  |
| 1. **ANNEX IV**
2. Requirements for the establishment of formal arrangements referred to in Article 5(2)
3. Formal arrangements between air navigation service providers for the exchange of surveillance data shall include the following minimum content:
 | Complete a) – m) as requiredThis is considered to be a straight forward answering of the questions posed, so no guidance is considered necessary. | a)b)c)d)e)f)g)h)i)j)k)l)m) |
| 1. **ANNEX V**
2. **Requirements for the assessment of the level of performance of surveillance chains referred to in Article 7(1)**
 |  |  |
| 1. ANNEX V
2. 1. The assessment of the level of the ongoing performance of the systems referred to in points (b), (c) and (d) of Article 2(1) shall be performed in the volume of airspace where the corresponding provision of surveillance services utilising the systems is undertaken.
 | 1. The on-going performance assessment must be performed by the ANSP using the surveillance data, in the airspace where the surveillance services utilising the data is undertaken.
2. Where surveillance data are received from a 3rd party ANSP whilst the 3rd party ANSP must comply with the items agreed under the formal arrangements identified in Annex IV, the overhaul on-going performance of the systems must be conducted in the environment where the data will be used to provide services.
3. This annex applies retrospectively to all surveillance systems and constituents used by the ANSP.
 | 1. ANSP Example response:
2. {XXXX} airport monitors on-going performance of the airport PSR and the SSR systems used to provide approach control services. The performance is monitored and tested in the {XXXX} airspace where the airport is responsible for providing approach control services. The on-going performance assessment methods for the PSR are explained in the PSR system specification document {Reference XXXX}. SSR on-going performance monitoring and assessment methods are stated in manufacturers system design document {Reference XXXX}.
 |
| 1. ANNEX V
2. 2. Air navigation service providers shall periodically check the system and its components and develop and enforce a performance validation regime. The periodicity shall be agreed with the national supervisory authority taking into account the specificities of the system and its components.
 | 1. All ANSPs must agree with their respective CAA Regional Inspector, regarding the periodicity where periodic checks of surveillance systems are carried out.
2. There shall be a formal record of the periodicity and the performance validation regime agreed between the CAA and the ANSP.
3. Each ANSP must inform NSA, the means of checking the system performance periodically. Performance checks may be conducted either by means of system in-built testing, using special tools such as SASS, or by manual test methods.
 | 1. ANSP Example response:
2. The airport has agreed with the CAA regional Inspector of the performance validation regime and the periodicity of checks to be performed.
3. The performance validation regime is documented in airport procedure {Reference A}.
 |
| 1. ANNEX V
2. 3. Before the implementation of airspace design modification the systems referred to in points (b), (c) and (d) of Article 2(1) shall be verified in order to check that they still meet the required performance in the new volume of operation.
 | 1. If an ANSP, using surveillance data to provide a service to aircraft, requires implementation of an airspace design modification, whenever such modifications are to be implemented, the ANSP must verify that the surveillance systems and their constituents are still capable of meeting the “required performance” for the applications in the new airspace volume of operation.
2. Note that the “performance” of surveillance systems is defined in Annex I.
3. An ANSP wishing make and airspace design change must submit the Airspace Change Proposal to the CAA AAA division. The ANSP shall identify the applicable safety and engineering requirements and provide evidence to the CAA regulators overseeing the project that the surveillance systems referred in this regulation meets the required performance in the new volume of operation, prior to airspace modification design implementation.
 | 1. ANSP Example response:
2. The airport Airspace Change Proposal {Reference XXXX} was submitted and approved by the CAA in December 2013. The change proposal contained details of the ATM system changes and verifications required including the airport surveillance facilities in order to support the airspace change. Evidence was submitted as part of the safety case {Reference XXXX} for the change that contained test results of the surveillance system meeting the required performance for the additional 20NM coverage volume.
 |

Appendix A

# Useful definitions

## SES definitions

Below are some useful definitions from the Single European Sky regulations that are relevant to this Implementing Rule.

‘Air navigation service providers’ means any public or private entity providing air navigation services for general air traffic;

‘Air navigation services’ means air traffic services; communication, navigation and surveillance services; meteorological services for air navigation; and aeronautical information services;

‘Communication services’ means aeronautical fixed and mobile services to enable ground-to-ground, air-to-ground and air-to-air communications for ATC purposes;

‘Surveillance services’ means those facilities and services used to determine the respective positions of aircraft to allow safe separation;