



Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

MEMORANDUM CIRCULAR NO.: 34-18

TO : ALL CONCERNED
FROM : THE DIRECTOR GENERAL
SUBJECT : AMENDMENT TO PHILIPPINE CIVIL AVIATION REGULATIONS – AIR NAVIGATION SERVICES (CAR-ANS) PART 9 INCORPORATING AMENDMENT 90 TO ICAO ANNEX 10 VOL IV (SURVEILLANCE AND COLLISION AVOIDANCE SYSTEMS)

REFERENCE:

1. Philippine Civil Aviation Regulations-Air Navigation Services Part 9 Aeronautical Telecommunications Governing Surveillance Radar Systems
2. ICAO Annex 10 Volume IV – Aeronautical Telecommunications Annex 10 Volume IV (Surveillance and Collision Avoidance Systems)
3. Regulations Amendment Procedures
4. Board Resolution No. 2012-054 dated 28 September 2012

Pursuant to the powers vested in me under the Republic Act 9497, otherwise known as the Civil Aviation Authority Act of 2008 and in accordance with the Board Resolution No. 2012-054 dated 28 September 2012, I hereby approve the incorporation of ICAO Annex 10 Volume IV Amendment No. 90 to the Philippine Civil Aviation Regulations-Air Navigation Services (CAR-ANS) Part 9.

ORIGINAL REGULATIONS SUBJECT FOR REVIEW AND REVISION:

CAR-ANS Part 9

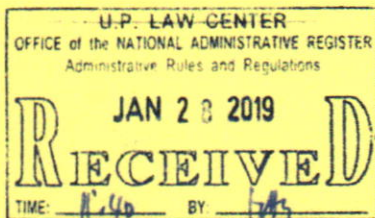
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CHAPTER 9.1. DEFINITIONS

Transponder occupancy. A state of unavailability of the transponder from the time it detects an incoming signal that appears to cause some action or from the time of a self-initiated transmission, to the time that it is capable of replying to another interrogation.

Note.— Signals from various systems that contribute to transponder occupancy are described in the Aeronautical Surveillance Manual (Doc 9924), Appendix M.

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CHAPTER 9.2 GENERAL

9.2.1 SECONDARY SURVEILLANCE RADAR (SSR)



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9.2.1.7 Transponder occupancy

Note.— See Appendix M of the Aeronautical Surveillance Manual (Doc 9924) for guidance on consistent modelling of transponder occupancy

CHAPTER 9.3 SURVEILLANCE SYSTEMS

9.3.1 SECONDARY SURVEILLANCE RADAR (SSR) SYSTEM CHARACTERISTICS

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9.3.1.1 Systems having only Mode A and Mode C capabilities

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9.3.1.1.6 REPLY TRANSMISSION CHARACTERISTICS (SIGNALS-IN-SPACE)

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9.3.1.1.6.2 INFORMATION PULSES

9.3.1.1.6.2.1 Information pulses. Information pulses shall be spaced in increments of 1.45 microseconds from the first framing pulse. The designation and position of these information pulses shall be as follows:

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Note.— The Standard relating to the use of these pulses is given in 9.2.1.4.1. However, the position of Information on the "X" pulse is not used in replies to Mode A or Mode C interrogations and is contained in the Aeronautical Surveillance Manual (Doc 9924) specified only as a technical standard to safeguard possible future expansion of the system. It has nevertheless been decided that such expansion should be achieved using Mode S. The presence of a pulse in the X pulse position is used in some States to invalidate replies.

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9.3.1.1.6.2.2 The position of the X pulse shall not be used in replies to Mode A or Mode C interrogations if the safe operation of surveillance systems cannot be maintained

9.3.1.2 Systems having Mode S capabilities

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9.3.1.2.5 INTERMODE AND MODE S ALL-CALL TRANSACTIONS

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9.3.1.2.5.2.1.4.3 Field content for a selectively addressed interrogation used by an interrogator without an assigned interrogator code. An interrogator that has not been assigned with a unique discrete interrogator code and is authorized to transmit shall use the I1 code 0 to perform the selective interrogations. In this case, selectively addressed interrogations used in connection with acquisition using lockout override shall have interrogation field contents restricted as follows:

UF = 4, 5, 20 or 21

PC = 0

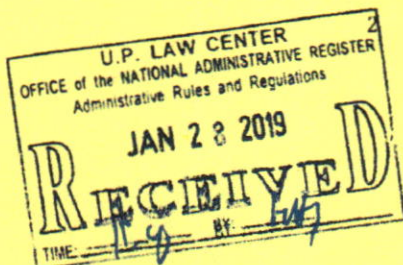
RR ≠ 16 if RRS = 0

DI = 7

IIS = 0

LOS = 0 except as specified in 9.3.1.2.5.2.1.5

TMS = 0



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9.3.1.2.5.2.1.4.4 An interrogator that has not been assigned with a unique discrete interrogator code and is authorized to transmit using II code 0 shall not attempt to extract air-initiated Comm-B message announced by DR = 1 or 3.

Note.— These restrictions permit surveillance and GICB transactions, and Comm-B broadcast extraction, but prevent the interrogation from making any changes to transponder multisite lockout or communications protocol states.

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9.3.1.2.6 ADDRESSED SURVEILLANCE AND STANDARD-LENGTH COMMUNICATION TRANSACTIONS

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9.3.1.2.6.1.2 RR: Reply request. This 5-bit, (9-13) uplink field shall command the length and content of a requested reply.

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Coding

RR = 0-15 shall be used to request a reply with surveillance format (DF = 4 or 5);

RR = 16-31 shall be used to request a reply with Comm-B format (DF = 20 or 21);

RR = 16 shall be used to request transmission of an air-initiated Comm-B message according to 9.3.1.2.6.11.3 or to request the extraction of a Comm-B broadcast message according to 9.3.1.2.6.11.4;

RR = 17 shall be used to request a data link capability report according to 9.3.1.2.6.10.2.2;

RR = 18 shall be used to request aircraft identification according to 9.3.1.2.9;

19-31 are not assigned in section 9.3.1.

Note.— Codes 19-31 are reserved for applications such as data link communications, airborne collision avoidance systems (ACAS), etc

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9.3.1.2.6.11 STANDARD LENGTH COMMUNICATIONS PROTOCOLS

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9.3.1.2.6.11.4 Comm-B broadcast

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9.3.1.2.6.11.4.1 Initiation A Comm-B broadcast cycle shall not be initiated when an air-initiated Comm-B is waiting to be transmitted. A Comm-B broadcast cycle shall begin with:

9.3.1.2.6.11.4.1.1 A Comm-B broadcast cycle shall begin with:

a) the insertion of DR code 4 or 5, (9.3.1.2.6.5.2) into replies with DF 4, 5, 20 or 21; and loading of the broadcast message into the Comm-B buffer;

b) the starting of the B-timer for the current Comm-B message; and

Note.— If there is more than one Comm-B message waiting for transmission, the timer is only started once the message becomes the current Comm-B broadcast.

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c) the selection of DR code 4 or 5, (9.3.1.2.6.5.2) for insertion into future replies with DF 4, 5, 20 or 21 when ACAS information is not available, or DR code 6 or 7 when ACAS information is available.

9.3.1.2.6.11.4.1.2 The DR field shall be changed to the next value each time a new Comm-B broadcast message is initiated by the transponder.

Note.— The change of the DR value is used by the interrogator to detect that a new Comm-B broadcast message is announced and to extract the new Comm-B message.

9.3.1.2.6.11.4.1.3 A Comm-B broadcast cycle shall not be initiated when an air-initiated Comm-B message is waiting to be transmitted.

9.3.1.2.6.11.4.1.4 A new Comm-B broadcast cycle shall not interrupt a current Comm-B broadcast cycle.

9.3.1.2.6.11.4.2 *Extraction.* To extract the broadcast message, an interrogator shall transmit RR equals 16 and DI not equal to 3 or 7 or RR equals 16 and DI equals 3 or 7 with RRS equals 0 in a subsequent interrogation.

9.3.1.2.6.11.4.6 *Management of Comm-B messages waiting for transmission.* If the content of a waiting Comm-B broadcast message is updated, only the most recent value for each downlink broadcast identifier shall be retained and broadcast once the current Comm-B broadcast is finished.

Note.— Downlink broadcast identifiers are defined in the Manual on Technical Provisions for Mode S Services and Extended Squitter (Doc 9871).

9.3.1.2.10 ESSENTIAL SYSTEM CHARACTERISTICS OF THE SSRMODE S TRANSPONDER

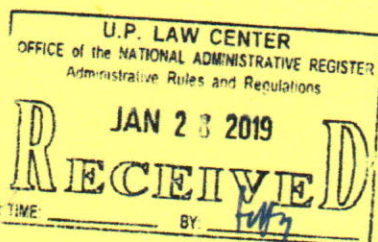
9.3.1.2.10.1.1.5 *Spurious response*

9.3.1.2.10.1.1.5.2 For ~~equipment~~ transponder designs first certified on or after 1 January 2011, the spurious Mode A/C reply ratio ~~generated by~~ resulting from low level Mode S interrogations shall be no more than:

a) an average of 1 per cent in the input interrogation signal range between -81 dBm and the Mode S MTL; and

b) a maximum of 3 per cent at any given level in the input interrogation signal range between -81 dBm and the Mode S MTL.

Note 1.— Failure to detect a low level Mode S interrogation can also result in the transponder decoding a three-pulse Mode A/C/S all-call interrogation. This would result in the transponder responding with a Mode S all-call (DF = 11) reply. The above requirement will also control these DF = 11 replies since it places a limit on the probability of failing to correctly detect the Mode S interrogation.



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Note 2.— More information about issuing a type certificate for aircraft and separate design approval can be found in the Airworthiness Manual (Doc 9760).

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9.3.1.2.10.3 SPECIAL CHARACTERISTICS

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9.3.1.2.10.3.7 Minimum reply rate capability, Modes A, C and S

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9.3.1.2.10.3.7.3 Minimum reply rate capability, Mode S. A transponder capable of transmitting only short Mode S replies shall be able to generate replies at the following rates:

- 50 Mode S replies in any 1-second interval
- 18 Mode S replies in a 100-millisecond interval
- 8 Mode S replies in a 25-millisecond interval
- 4 Mode S replies in a 1.6-millisecond interval

In addition to any downlink ELM transmissions, a level 2, 3 or 4 transponder shall be able to generate as long replies at least:

- 16 of 50 Mode S replies in any 1-second interval
- 6 of 18 Mode S replies in a 100-millisecond interval
- 4 of 8 Mode S replies in a 25-millisecond interval
- 2 of 4 Mode S replies in a 1.6-millisecond interval

Transponders used in conjunction with ACAS shall be able to generate as long replies at least:

- 60 Mode S replies in any 1-second interval
- 6 of 18 Mode S replies in a 100-millisecond interval
- 4 of 8 Mode S replies in a 25-millisecond interval
- 2 of 4 Mode S replies in a 1.6-millisecond interval

In addition to downlink ELM transmissions, a level 5 transponder shall be able to generate as long replies at least:

- 24 of 50 Mode S replies in any 1-second interval
- 9 of 18 Mode S replies in a 100-millisecond interval
- 6 of 8 Mode S replies in a 25-millisecond interval
- 2 of 4 Mode S replies in a 1.6-millisecond interval

~~In addition, a transponder within an ACAS installation shall be able to generate as ACAS coordination replies at least 3 of 50 Mode S replies in any 1-second interval.~~

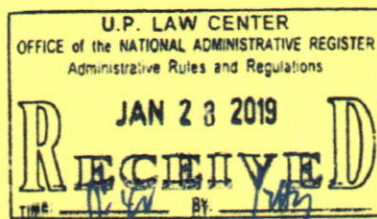
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9.3.1.2.11 ESSENTIAL SYSTEM CHARACTERISTICS OF THE GROUND INTERROGATOR

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9.3.1.2.11.1.1.2 Maximum number of Mode S all-call replies triggered by an interrogator. For aircraft that are not locked out, a Mode S interrogator shall not trigger, on average, more than 6 Mode S all-call replies per period of 200 ms and no more than 26 Mode S all-call replies counted over a period of 18 seconds.

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CHAPTER 9.4. AIRBORNE COLLISION AVOIDANCE SYSTEM

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9.4.3 GENERAL PROVISIONS RELATING TO ACAS II AND ACAS III

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9.4.3.8 Signal formats

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9.4.3.8.4.2.2 *Subfields in MB for the data link capability report.* When BDS1 = 1 and BDS2 = 0, the following bit patterns shall be provided to the transponder for its data link capability report:

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Note 2.— The use of hybrid surveillance to limit ACAS active interrogations is described in 9.4.5.1. The ability only to support decoding of DF = 17 extended squitter messages is not sufficient to set bit 72 69.

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9.4.3.11 Requirements for a Mode S transponder used in conjunction with ACAS

9.4.3.11.1 *Transponder capabilities.* In addition to the minimum transponder capabilities defined in Chapter 9.3, 9.3.1, the Mode S transponder used in conjunction with ACAS shall have the following capabilities:

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b) ability to receive long Mode S interrogations (UF = 16) and generate long Mode S replies (DF = 16) at a continuous rate of 16.6 ms (60 per second) as per 9.3.1.2.10.3.7.3;

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9.4.3.11.3 COMMUNICATION OF ACAS INFORMATION TO OTHER ACAS

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9.4.3.11.3.2 *Coordination reply.* The ACAS Mode S transponder shall transmit a coordination reply upon receipt of a coordination interrogation from an equipped threat subject to the conditions of 9.4.3.11.3.2.1. The coordination reply shall use the long air-air surveillance reply format, DF = 16, with the VS field as specified in Chapter 9.3, 9.3.1.2.8.2, the RI field as specified in Chapter 9.3, 9.3.1.2.8.2 and in 9.4.3.8.4.1.2, the SL field as specified in 9.4.3.8.4.2.5 and the MV field as specified in 9.4.3.8.4.2.4. ~~Coordination replies shall be transmitted even if the minimum reply rate limits of the transponder (Chapter 9.3, 9.3.1.2.10.3.7.2) are exceeded.~~

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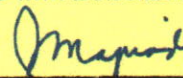
9.4.5 ACAS USE OF EXTENDED SQUITTER

9.4.5.1 ACAS hybrid surveillance using extended squitter position data

Note. — Hybrid surveillance is the technique used by ACAS to take advantage of passive position information available via extended squitter DF = 17. Using hybrid surveillance, ACAS validates the position provided by extended squitter through direct active range measurement. An initial validation is performed at track initiation. Revalidation is performed once every 60 seconds for targets that do not meet the conditions in altitude or range. Revalidation is performed once per 10 seconds if the intruder becomes a near threat in altitude or range. Finally, regular active surveillance is performed once per second on intruders that become a near threat in both altitude and range. In this manner, passive surveillance (once validated) is used for non-threatening intruders thus lowering the ACAS interrogation rate. Active surveillance is used whenever an intruder becomes a near threat in

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~~order to preserve ACAS independence as an independent safety monitor. Surveillance protocols defined in this section are for ACAS hybrid surveillance, and surveillance protocols for ACAS not equipped for hybrid surveillance are defined in 9.4.3.7.1.~~

9.4.5.1.1 DEFINITIONS

~~...~~
Extended hybrid surveillance. The process of using qualified ADS-B airborne position messages via 1 090 MHz extended squitter without validating 1 090 extended squitter data for the track by ACAS active interrogations.

Hybrid surveillance. The process of using a combination of active surveillance and passive surveillance with validated data to update an ACAS track ~~to validate and monitor other aircraft being tracked principally using passive surveillance~~ in order to preserve ACAS independence.

~~**Initial acquisition.** The process of starting the formation of a new track upon receipt of a squitter from a Mode S aircraft for which there is no track by making an active interrogation.~~

Passive surveillance. The process of tracking another aircraft without interrogating it, by using the other aircraft's extended squitters. ACAS uses the information ~~contained~~ obtained via 1 090 MHz extended squitter ~~in passive tracks obtained~~ to monitor the need for active surveillance, but not for any other purpose. Passive surveillance applies to both hybrid and extended hybrid surveillance.

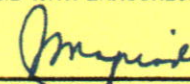
Validation. The process of verifying the relative position of an intruder using passive information via 1 090 MHz extended squitter by comparing it to the relative position obtained by ACAS active interrogation.

9.4.5.1.3 PASSIVE SURVEILLANCE

9.4.5.1.3.1 EXTENDED HYBRID SURVEILLANCE

9.4.5.1.3.1.1 Systems using extended hybrid surveillance mode shall establish a track in such a way that no interrogations are performed, i.e. acquiring the track through exclusive use of ADS-B extended squitter, when the following conditions are met:

- a) Own aircraft position data meets the following minimum level of quality:
 - 1) own aircraft horizontal position uncertainty (95 per cent) is < 0.1 NM; and
 - 2) own aircraft horizontal position integrity shall be such that the probability of an undetected position error, which is greater than 0.6 NM radius, is less than 1×10^{-7}
- b) The received signal strength is equal or less than -68 dBm +/-2 dB (extended hybrid surveillance minimum triggering level), or own aircraft is operating on the surface; and
- c) The intruder data quality meets the following minimum requirements:



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- a) the ADS-B version number ≥ 2 ;
- b) the reported NIC ≥ 6 (< 0.6 NM);
- c) the reported NACp ≥ 7 (< 0.1 NM);
- d) the reported SIL = 3;
- e) the reported SDA = 2 or 3; and
- f) the barometric altitude is valid.

9.4.5.1.3.1.2 The system shall not use ADS-rebroadcast (ADS-R) and TIS-B data to passively acquire an aircraft.

Note 1.— ADS-R is described in the Technical Provisions for Mode S Services and Extended Squitter (Doc 9871).

Note 2.— The signal level strength cannot be applied to ADS-R and TIS-B data.

9.4.5.1.3.1.3 A track maintained under extended hybrid surveillance mode shall transition to a track maintained under active surveillance mode if range and altitude of hybrid threat criteria are met.

Note.— Information concerning range and altitude hybrid threat criteria can be found in RTCA DO-300A Change 1/EUROCAE ED-221A – Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance.

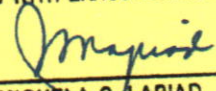
9.4.5.1.3.1.4 A track under extended hybrid surveillance mode shall transition to a track under hybrid surveillance mode if:

- a) The signal indicates a high probability to be in close proximity, i.e. signal $>$ Extended Hybrid Surveillance MTL, except when operating on the airport surface; or
- b) Intruder data or own data quality does not meet minimum requirements.

9.4.5.1.3+2 *Validation.* To validate the position of an intruder reported by extended squitter and not meeting the criteria for extended hybrid surveillance mode, ACAS shall determine the relative range and relative bearing as computed from the position and geographical heading of own aircraft and the intruder's position as reported in the extended squitter. This derived range and relative bearing and the altitude reported in the squitter shall be compared to the range, relative bearing and altitude determined by active ACAS interrogation of requiring a short reply from the aircraft. Differences between the derived and measured range and relative bearing and the squitter and reply altitude shall be computed and used in tests to determine whether the extended squitter data is valid. If these tests are satisfied the passive position shall be considered to be validated and the track shall be maintained on passive data unless it is a near threat as described in 9.4.5.1.4. If any of these validation tests fail, active surveillance shall be used to track the intruder.

Note.— Suitable tests for validating extended squitter data information for the purposes of ACAS hybrid surveillance can be found in RTCA-DO-300/RTCA DO-300A Change

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1/EUROCAE ED-221A – Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance.

9.4.5.1.3.23 *Supplementary active interrogations.* In order to ensure that an intruder's track is updated at least as frequently as required in the absence of extended squitter data (9.4.3.7.1.2.2), each time a track is updated using squitter information the time at which an active interrogation would next be required shall be calculated. An active interrogation shall be made at that time if a further squitter has not been received before the interrogation is due.

9.4.5.1.4 *Near threat.* An intruder shall be tracked under active surveillance if it is a near threat, as determined by separate tests on the range and altitude of the aircraft. These tests shall be such that an intruder is considered a near threat before it becomes a potential threat, and thus triggers a traffic advisory as described in 4.3.3. These tests shall be performed once per second. All near threats, potential threats and threats shall be tracked using active surveillance.

Note.— *Suitable tests for determining that an intruder is a near threat can be found in ~~RTCA DO-300~~ RTCA DO-300A Change 1/EUROCAE ED-221A – Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance.*

9.4.5.1.5 *Revalidation and monitoring.* If an aircraft is being tracked using passive surveillance and if criteria for extended hybrid surveillance mode are not met, periodic active interrogations shall be performed to validate and monitor the extended squitter data as required in 9.4.5.1.3.4.2. The default rates of revalidation shall be between once per minute for a non-threat and once per 10 seconds for a near threat. The tests required in 9.4.5.1.3.4.2 shall be performed for each interrogation, and active surveillance shall be used to track the intruder if these revalidation tests fail.

Note.— *More information about criteria of revalidation rate can be found in RTCA DO-300A Change 1/EUROCAE ED-221A – Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance.*

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9.4.5.1.6.2 A track under active surveillance shall transition to passive surveillance if it is neither a near, potential threat nor a threat. The tests used to determine it is no longer a near threat shall be similar to those used in 9.4.5.1.4 but with larger thresholds in order to have hysteresis which prevents the possibility of frequent transitions between active and passive surveillance.

Note. — *Suitable tests for determining that an intruder is no longer a near threat can be found in ~~RTCA DO-300~~ RTCA DO-300A Change 1/EUROCAE ED-221A – Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance.*

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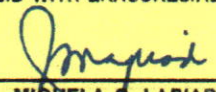
CHAPTER 9.5. MODE S EXTENDED SQUITTER

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9.5.1 MODE S EXTENDED SQUITTER TRANSMITTING SYSTEM CHARACTERISTICS

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9.5.1.3 ADS-B OUT requirements for surface vehicles

9.5.1.3.1 All surface vehicles supporting any versions of extended squitter ADS-B capability shall transmit extended squitter messages as per 9.5.1.1.2.

9.5.1.3.2 *Extended squitter version 2 required system performance.* The position source and equipment installed in surface vehicles to transmit extended squitter version 2 messages shall support the following performance characteristics:

9.5.1.3.2.1 The NAC_P for the navigation position data shall be greater than or equal to 9, a 95 per cent accuracy bound on horizontal position less than 30 metres.

Note. — NAC_P is calculated based on satellite performance.

9.5.1.3.2.2 The NAC_V for the navigation velocity data shall be greater than or equal to 2, a velocity error less than 3 metres per second.

9.5.1.3.2.3 The NAC_P and NAC_V minimum values shall be met at a minimum availability of 95 per cent.

9.5.1.3.2.4 The system design assurance parameter shall be equal to 1 or more, which defines the probability of a failure resulting in transmission of false or misleading information to be less than or equal to 1×10^{-3} .

Note 1. — These minimum performance requirements for extended squitter version 2 transmitted position data from surface vehicles are necessary to support aircraft-based alerting applications.

Note 2. — Guidance material for implementation of surface vehicle ADS-B systems is contained in the Technical Provisions for Mode S Services and Extended Squitter (Doc 9871).

CHAPTER 9.6. MULTILATERATION SYSTEMS

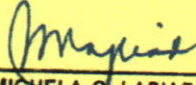
Note 2. — Detailed technical guidance for MLAT and WAM can be found in the Aeronautical Surveillance Manual (Doc 9924), Appendix L. Material contained in EUROCAE ED-117A – MOPS for Mode S Multilateration Systems for Use in A-SMGCS and ED-142 – Technical Specifications for Wide Area Multilateration System (WAM) provides a good basis information for planning, implementation and satisfactory operation of MLAT systems for most applications.

9.6.1 DEFINITIONS

Wide area multilateration (WAM) system. A multilateration system deployed to support en-route surveillance, terminal area surveillance and other applications such as height monitoring and precision runway monitoring (PRM).

— END —

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AMENDED REGULATIONS:

CAR-ANS PART 9

CHAPTER 9.1. DEFINITIONS

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Transponder occupancy. A state of unavailability of the transponder from the time it detects an incoming signal that appears to cause some action or from the time of a self-initiated transmission, to the time that it is capable of replying to another interrogation.

Note.— Signals from various systems that contribute to transponder occupancy are described in the Aeronautical Surveillance Manual (Doc 9924), Appendix M.

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CHAPTER 9.2 GENERAL

9.2.1 SECONDARY SURVEILLANCE RADAR (SSR)

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9.2.1.7 Transponder occupancy

Note.— See Appendix M of the Aeronautical Surveillance Manual (Doc 9924) for guidance on consistent modelling of transponder occupancy

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CHAPTER 9.3 SURVEILLANCE SYSTEMS

9.3.1 SECONDARY SURVEILLANCE RADAR (SSR) SYSTEM CHARACTERISTICS

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9.3.1.1 Systems having only Mode A and Mode C capabilities

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9.3.1.1.6 REPLY TRANSMISSION CHARACTERISTICS (SIGNALS-IN-SPACE)

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9.3.1.1.6.2 INFORMATION PULSES

9.3.1.1.6.2.1. Information pulses shall be spaced in increments of 1.45 microseconds from the first framing pulse. The designation and position of these information pulses shall be as follows:

...

Note. — The Standard relating to the use of these pulses is given in 2.1.4.1. Information on the "X" pulse is contained in the Aeronautical Surveillance Manual (Doc 9924).

9.3.1.1.6.2.2 The position of the X pulse shall not be used in replies to Mode A or Mode C interrogations if the safe operation of surveillance systems cannot be maintained.

...

9.3.1.2 Systems having Mode S capabilities

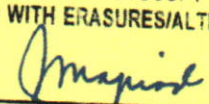
...

9.3.1.2.5 INTERMODE AND MODE S ALL-CALL TRANSACTIONS

...

9.3.1.2.5.2.1.4.3 Field content for a selectively addressed interrogation used by an interrogator without an assigned interrogator code. An interrogator that has not been

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assigned with a unique discrete interrogator code and is authorized to transmit shall use the II code 0 to perform the selective interrogations. In this case, selectively addressed interrogations used in connection with acquisition using lockout override shall have interrogation field contents restricted as follows:

UF = 4, 5, 20 or 21
PC = 0
DI = 7
IIS = 0
LOS = 0 except as specified in 9.3.1.2.5.2.1.5
TMS = 0

9.3.1.2.5.2.1.4.4 An interrogator that has not been assigned with a unique discrete interrogator code and is authorized to transmit using II code 0 shall not attempt to extract air-initiated Comm-B message announced by DR = 1 or 3.

Note. — These restrictions permit surveillance transaction, GICB transaction and Comm-B broadcast extraction, but prevent the interrogation from making any changes to transponder multisite lockout or communications protocol states.

...
9.3.1.2.6 ADDRESSED SURVEILLANCE AND STANDARD-LENGTH COMMUNICATION TRANSACTIONS

...
9.3.1.2.6.1.2 RR: Reply request. This 5-bit, (9-13) uplink field shall command the length and content of a requested reply.

...
Coding

RR = 0-15 shall be used to request a reply with surveillance format (DF = 4 or 5);

RR = 16-31 shall be used to request a reply with Comm-B format (DF = 20 or 21);

RR = 16 shall be used to request transmission of an air-initiated Comm-B message according to 9.3.1.2.6.11.3 or to request the extraction of a Comm-B broadcast message according to 9.3.1.2.6.11.4;

RR = 17 shall be used to request a data link capability report according to 9.3.1.2.6.10.2.2;

RR = 18 shall be used to request aircraft identification according to 9.3.1.2.9;
19-31 are not assigned in section 9.3.1.

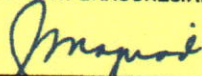
Note. — Codes 19-31 are reserved for applications such as data link communications, airborne collision avoidance systems (ACAS), etc.

...
9.3.1.2.6.11 STANDARD LENGTH COMMUNICATIONS PROTOCOLS

...
9.3.1.2.6.11.4 Comm-B broadcast

...
9.3.1.2.6.11.4.1 Initiation

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