



MEMORANDUM CIRCULAR NO. 048-2025

TO : ALL CONCERNED

FROM : DIRECTOR GENERAL

SUBJECT : AMENDMENT TO PHILIPPINE CIVIL AVIATION REGULATIONS AIR NAVIGATION SERVICES (CAR-ANS) PART 13 ADOPTING AMENDMENT 91 TO ICAO ANNEX 10 VOLUME V - AERONAUTICAL TELECOMMUNICATIONS - AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION

REFERENCE/S:

- 1) Philippine Civil Aviation Regulations- Air Navigation Services Part 13 Aeronautical Telecommunications Governing Aeronautical Radio Frequency Spectrum Utilization
- 2) ICAO Annex 10 Volume V, Amendment 91
- 3) CAAP Regulations and Standards Management Manual
- 4) Board Resolution No. 2025-33 dated 28 May 2025

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 Regulations Amendment Procedure with Board Resolution No. 2025-033 dated 28 May 2025, I hereby approve the adoption of ICAO Annex 10 Volume V Amendment 91 to the Philippine Civil Aviation Regulations – Air Navigation Services (CAR-ANS) Part 13.

ORIGINAL REGULATIONS SUBJECT FOR REVIEW AND REVISION:

**CAR-ANS PART 13 AERONAUTICAL TELECOMMUNICATIONS
GOVERNING AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION**

13.1 DEFINITIONS

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WAIC component. Any tangible entity of a WAIC network on board an aircraft.

WAIC network. A network comprised of interrelated WAIC components, such as components used for wireless communications, security or network management.

WAIC system. A system which provides wireless communications between points on board a single aircraft. A WAIC system may be comprised of one or more WAIC networks necessary for establishing, maintaining and securing wireless communications. A WAIC

system consists of interrelated sets of WAIC components on board the same aircraft, so that a single aircraft contains only a single WAIC system.

Wireless avionics intra-communications (WAIC). Radiocommunication between two or more aircraft stations located on board a single aircraft for aircraft applications supporting the safe operation of the aircraft.

13.4 UTILIZATION OF FREQUENCIES ABOVE 30 MHz

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13.4.2 Utilization in the frequency band 108 - 117.975 MHz

13.4.2.1 The block allotment of the frequency band 108 - 117.975 MHz shall be as follows:

— *Band 108 - 111.975 MHz:*

- a) ILS in accordance with 13.3.2.2 and ICAO Annex 10, Volume I, 3.1.3, provided that only frequencies ending in *odd tenths* of a megahertz or *odd tenths plus a twentieth* of a megahertz are used;
- b) VOR provided that:
 - 1) no harmful adjacent channel interference is caused to ILS;
 - 2) only frequencies ending in either *even tenths* or *even tenths plus a twentieth* of a megahertz are used; and
- c) GNSS ground-based augmentation system (GBAS) in accordance with *CAR-ANS Part 6, 6.3.7.3.5 Annex 10, Volume I, 3.7.3.5.*

— *Band 111.975 - 117.975 MHz:*

a) VOR; and

b) GNSS ground-based augmentation system (GNSS GBAS) in accordance with *CAR-ANS Part 6, 6.3.7.3.5. ICAO Annex 10 Vol. 1, 3.7.3.5 provided that no harmful interference is caused to VOR.*

Note 1. - Guidance material relating to the distance separation required to prevent harmful interference between ILS, VOR and GBAS/VHF data broadcast (VDB) when using the band 108 - 111.975 MHz is found in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718), Volume II Frequency assignment planning criteria for aeronautical radio communication and navigation systems. is found in Section 3 of Attachment C to Annex 10, Volume I.

Note 2.— Guidance material relating to the distance separation required to prevent harmful interference between VOR and GBAS when using the band 112.050 - 117.900 MHz is found in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718), Volume II - Frequency assignment planning criteria for aeronautical radio communication and navigation systems.

Note 3.— As of 26 November 2026, subject to the conditions stated in 5.2.1, the frequency 113.250 MHz may be used for the provision of RPAS C2 Link communication services described in Annex 10, Volume V, Chapter 5 this regulation.

13.4.2.2 For planning, the frequencies for ILS facilities will **shall** be selected in the following order:

- a) localizer channels ending in *odd tenths* of a megahertz and their associated glide path channels;
- b) localizer channels ending in *odd tenths plus a twentieth* of a megahertz and their associated glide path channels.

13.4.2.2.1 ILS channels identified by localizer frequencies ending in an *odd tenth plus one twentieth* of a megahertz in the band 108 - 111.975 MHz will **shall** be permitted to be utilized on the basis of regional agreement **for general use on or after 1 January 1976**, when they become applicable in accordance with the following:

- a) for restricted use commencing 1 January 1973;
- b) for general use on or after 1 January 1976.

See Note to 13.4.2.3.1.

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13.4.2.3.1 Frequencies for VOR facilities ending in *even tenths plus a twentieth* of a megahertz in the band 108 - 111.975 MHz and all frequencies ending in 50 kHz in the band 111.975 - 117.975 MHz will **shall** be permitted to be utilized **for general use** on the basis of a regional agreement when they have become applicable in accordance with the following:

- a) in the band 111.975 - 117.975 MHz for restricted use;
- b) **a)** for general use in the band 111.975 - 117.975 MHz at a date fixed by the Council but at least one year after the approval of the regional agreement concerned;
- c) **b)** for general use in the band 108 - 111.975 MHz at a date fixed by the Council but giving a period of two years or more after the approval of the regional agreement concerned.

Note. - "Restricted use", where mentioned in 13.4.2.2.1 a) and 13.4.2.3.1 a), is intended to refer to the limited use of the frequencies by only suitably equipped aircraft and in such a manner that:

- a) *the performance of ILS or VOR equipment not capable of operating on these frequencies will be protected from harmful interference;*
- b) *a general requirement for the carriage of ILS or VOR airborne equipment capable of operation on these frequencies will not be imposed; and*
- c) *operational service provided to international operators using 100 kHz airborne equipment is not derogated.*

13.4.2.4 To protect the operation of airborne equipment during the initial stages of deploying VORS utilizing 50 kHz channel spacing in an area where the existing facilities may

not fully conform with the Standards in CAR-ANS Part 6, all existing VORS within interference range of a facility utilizing 50 kHz channel spacing will **shall** be modified to comply with the provisions of CAR-ANS Part 6, 3.4.8.

13.4.2.5 *Frequency deployment.* The geographical separation between facilities operating on the same and adjacent frequencies will **shall** be determined regionally and will shall be based on the following criteria:

- a) the required functional service radii of the facilities;
- b) ~~each localizer is assigned a different identification signal; and~~ the maximum flight altitude of the aircraft using the facilities;
- c) ~~arrangements are made whereby the localizer and glide path not in operational use cannot radiate.~~ the desirability of keeping the minimum IFR altitude as low as the terrain will permit.

Note. - ~~The Standards in Annex 10, Volume I, 3.1.2.7.2 and 3.1.3.9, specify the equipment arrangements to be made. Guidance material on this subject is contained in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718), Volume II - Frequency assignment planning criteria for aeronautical radio communication and navigation systems.~~

13.4.3 Utilization in the **frequency band 960 - 1 215 MHz for DME**

Note 1. - ~~Guidance on the frequency planning of channels for distance measuring equipment (DME) DME systems is given in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718), Volume II - Frequency assignment planning criteria for aeronautical radio communication and navigation systems, ICAO Annex 10, Volume I, Attachment C, Section 7.~~

Note 2.— ~~As of 26 November 2026, subject to the conditions stated in 5.2.1, the frequency band 960 - 1 164 MHz may be shared with RPAS C2 Link communication services described in Annex 10, Volume V, Chapter 5 this regulation.~~

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13.4.5 Utilization in the **frequency band 4 200-4 400 MHz**

13.4.5.1 Utilization for radio altimeters
(To be developed)

13.4.5.2 Utilization for wireless avionics intra-communications (WAIC) systems

Note.— ~~The following provisions for WAIC define the requirements that ensure that WAIC systems and radio altimeters can provide their intended functions while multiple aircraft are in mutual radio range. Coexistence between WAIC systems and radio altimeters installed on board~~

the same aircraft is addressed by the specific implementation and established airworthiness certification processes. Further guidance on those implementation issues is addressed in the European Organisation for Civil Aviation Equipment (EUROCAE)/RTCA documents ED-319 and DO-402 Minimum Operating Performance Specification (MOPS) for Wireless Avionics Intra-Communication Equipment within 4 200 - 4 400 MHz. In addition, considerations on protecting aircraft systems from unauthorized interactions are addressed in EUROCAE/RTCA ED-203A and DO-356A Airworthiness Security Methods and Considerations.

13.4.5.2.1 WAIC systems shall only be used for communications related to the safety and regularity of flight between two or more points on a single aircraft.

13.4.5.2.2 WAIC systems shall not cause harmful interference to radio altimeter systems and WAIC systems on other aircraft.

Note. — Compliance with 13.4.5.2.2 is achieved by limiting the power of WAIC emissions below the level at which altimeter performance may be affected, consistent with 13.4.5.2.4 below. Furthermore, careful consideration is necessary when accommodating components of the WAIC system located outside of the aircraft fuselage. EUROCAE/RTCA documents ED-260A and DO-378A provide one acceptable method of demonstrating compliance with that power limit.

13.4.5.2.3 A WAIC system located on board one aircraft shall perform its intended function while subject to emissions from WAIC and radio altimeter systems located on board other aircraft.

Note. — EUROCAE/RTCA documents ED-260A and DO-378A provide one acceptable method of demonstrating compliance with 13.4.5.2.3 via test. Alternatively, the critical coexistence scenario described in those documents may also be used to develop appropriate analyses to demonstrate compliance with 13.4.5.2.3.

13.4.5.2.4 Radio frequency (RF) characteristics of WAIC systems

13.4.5.2.4.1 WAIC systems shall operate in the frequency band 4 200 - 4 400 MHz.

13.4.5.2.4.2 The power of the total aggregate emissions of all WAIC transmitters on board an aircraft shall not exceed an equivalent isotropic radiated power of -20 dBm, referenced to a point source, which is assumed to be located at the geometrical centre of the aircraft.

Note. — Refer to EUROCAE/RTCA documents ED-260A and DO-378A Minimum Aviation System Performance Standard (MASPS) for Coexistence of Wireless Avionics Intra-Communication (WAIC) Systems within 4 200 - 4 400 MHz, which adopt the total aggregate effective isotropic radiated power (EIRP) limit for WAIC systems and provide a practical verification procedure on how to ascertain whether the limit is satisfied.

13.4.5.2.4.3 The overall occupied bandwidth shall be maintained completely within the allocated frequency band 4 200 – 4 400 MHz including any offsets such as Doppler shift or frequency tolerances, where the occupied bandwidth is defined as the bandwidth for which 99 per cent of the signal energy falls within the lower and upper frequency limits.

Note. — The ITU Radio Regulations define the occupied bandwidth as “the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage $\beta/2$ of the total mean power of a given emission”, the value of $\beta/2$ being 0.5 per cent.

13.4.5.2.4.4 The necessary bandwidth (NB) of the WAIC transmitter shall be calculated according to Appendix 1 of the ITU Radio Regulations.

13.4.5.2.4.5 The boundary between the out-of-band and spurious domains shall be determined according to Annex 1, Appendix 3 of the ITU Radio Regulations. The required attenuation of the mean power of any unwanted emission relative to the total mean power P shall meet or exceed the following conditions:

— 50 per cent of NB $< f < 150$ per cent of NB: Linear increase (in dB) from 24d B to 35 dB within a reference bandwidth of 4 kHz (Note 1);

— 150 per cent of NB $< f < \text{start of the spurious domain}$: 35 dB within a reference bandwidth of 4 kHz (Note 1); and

— Spurious domain: $56+10\log(P)$ or 40 dB, whichever is less stringent, measured in a reference bandwidth of 1 MHz (Note 2).

Note 1.— Reference bandwidth of 4 kHz within the out-of-band domain in accordance with Annex 11, Recommendation ITU-R SM.1541-6 of the ITU Radio Regulations. The parameter f is the frequency separation from the centre frequency of the transmit signal.

Note 2.— Reference bandwidth of 1 MHz within the spurious domain in accordance with Appendix 3, paragraph 7 of the ITU Radio Regulations and determination of attenuation for low-power device radio equipment in accordance Appendix 3, paragraph 13 of the ITU Radio Regulations.

13.4.5.2.5 Out-of-band interference tolerance of a WAIC receiver

Note. — These requirements describe the out-of-band tolerance in which the WAIC receiver must meet its performance requirements without taking into account any mitigation afforded by its installation.

13.4.5.2.5.1 Receivers shall tolerate interference from sources operating outside of the frequency band 4 200 – 4 400 MHz whose total combined emitted power falling within the

frequency band 4 200 – 4 400 MHz as measured at the receiver does not exceed a power spectral density of -120 dBm/MHz.

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NEW / AMENDED REGULATIONS:

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— *Band 111.975 – 117.975 MHz:*

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Note 1.— Guidance material relating to the distance separation required to prevent harmful interference between ILS, VOR and GBAS/VHF data broadcast (VDB) when using the band 108 - 111.975 MHz is found in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718), Volume II - Frequency assignment planning criteria for aeronautical radio communication and navigation systems.

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“End of Amendment”

Separability Clause. - If for any reason, any provision of this Memorandum Circular is declared invalid or unconstitutional, the other part or parts thereof which are not affected thereby shall continue to be in full force and effect.

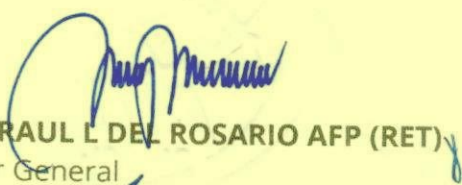
Repealing Clause. - All orders, rules, regulations, and issuances, or parts thereof which are inconsistent with this Memorandum Circular are hereby repealed, superseded, or modified accordingly.

Determination of changes. - To highlight the amendments and/or revisions in the Memorandum Circular, the deleted text shall be shown with strikethrough and the newly inserted text shall be highlighted with grey shading, as illustrated below:

1. Text deleted: Text to be deleted is shown with a line through it.
2. New text inserted: New text is highlighted with grey shading.
3. New text replacing existing text: Text to be deleted is shown with a line through it followed by the replacement text which is highlighted with grey shading.

Effectivity Clause. - This Memorandum Circular shall take effect fifteen (15) days following completion of its publication in a newspaper of general circulation or the Official Gazette and a copy filed with the U.P. Law Center - Office of the National Administrative Register. These amendments shall be incorporated into the Philippine Civil Aviation Regulations - Air Navigation Services (CAR-ANS) Part 13.

Signed this 15 day of OCT 2025, at the Civil Aviation Authority of the Philippines, MIA Road, Pasay City.


LTGEN RAUL L DEL ROSARIO AFP (RET)
Director General