### STATE OF KUWAIT

2025/6/1

DIRECTORATE GENERAL OF CIVIL AVIATION AVIATION SAFETY



دولة الكويت الإدارة العامة للطيران المدني سلامة الطيران

### 2025/48/SUPDT-R/41

### All KCASR Stockholders and Users

### Subject.: Notice of Proposed Amendment's (NPA) No. 2025-08 to Kuwait Civil Aviation Safety Regulations KCASR 10 - Aeronautical Telecommunications Volume V Rev 2.

Dear Sir,

#### **Purpose:**

The purpose of this NPA is to announce to the KCASR users the intention of the Directorate General of Civil Aviation to amend <u>KCASR 10 – Aeronautical Telecommunications Volume V</u> (issue 4) to comply with ICAO standers and recommended practices up to amendment (91).

#### **Action Required:**

All users of KCASR are required to refer to DGCA/ASD website (<u>https://kcasr.dgca.gov.kw</u>) for reviewing the NPA and mail or email (safety@dgca.gov.kw) their comments to DGCA by 08/Sep/2024 using the attached NPA Response Sheet Forms No. 1500 or using NPA comments & feedback form on the website. If we do not receive your response by this date, it will be assumed that you do not have any comments on the proposal.

If required, the DGCA/Aviation Safety Department personnel are available to answer your questions on the interpretation and intended implementation of the proposed amendments.

This is for your information and distribution to the concerned parties.

Yours Sincerely,

President of Civil Aviation

Abdullah F. Alrajhi

Acting / Deputy Director General for Aviation Salety, Air Transport & Aviation Security CC: Director General of Civil Aviation. Dy, Dir. Gen. Kuwait. Intel. Airport Affairs. Dy. Dir. Gen. for Air Navigation Services Affairs. Safety Management Coordination Center (SMCC). Head of Technical Office. Civil Aviation Security Department. Aviation Safety Director. Air Transport Director. Inspection & oversight Superintendent. Head of Standards & Aviation Safety Regulations Division.



Rev. 11

HRA

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## Notes on the presentation of the Amendment Notice Of Proposed Amendment (NPA)

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## Notice Of Safety Regulation Amendment (NPA, NSRA and Revisions)

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## NPA RESPONSE FORM NPA





Please add your comments on the proposal by ticking [✓] the appropriate box below. Any additional constructive comments, suggested amendments or alternative action will be welcome and may be provided on this response sheet or by separate correspondence.				
<ul> <li>No comments on the proposal.</li> <li>Comments on the proposal. (Please provide explanatory comment).</li> </ul>				
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KCASR 10 – Aeronautical Telecommunications

Volume V



# Kuwait Civil Aviation Safety Regulations

# KCASR 10 – Aeronautical Telecommunications Volume V

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## Amendment Record

Amendment No	Date of Issue	Remarks
1	June 2018	Part Rename
2	Aug 2021	Updated to ICAO Annex Amendment No. 90
<u>3</u>	<u>Oct 2025</u>	Updated to ICAO Annex Amendment No. 91

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**Remote pilot station (RPS).** The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.

**Remotely piloted aircraft (RPA).** An unmanned aircraft which is piloted from a remote pilot station.

**Remotely piloted aircraft system (RPAS).** A remotely piloted aircraft, its associated remote pilot station(s), the required C2 Link(s) and any other component as specified in the type design.

**Simplex.** A method in which telecommunication between two stations takes place in one direction at a time.

Note: In application to the aeronautical mobile service, this method is subdivided as follows:

- (a) single channel simplex;
- (b) double channel simplex;
- (c) offset frequency simplex.

**Single channel simplex.** Simplex using the same frequency channel in each direction.

**VHF digital link (VDL).** A constituent mobile subnetwork of the aeronautical telecommunication network (ATN), operating in the aeronautical mobile VHF frequency band. In addition, the VDL may provide non-ATN functions such as, for instance, digitized voice.

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 avionic 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.

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4.1.6.1.2. Frequencies for operational control communications may be required to enable aircraft operating agencies to meet the obligations prescribed in Part 6, Part I, in which case they should be selected from a dedicated band which is determined regionally.

**Note:** It is recognized that the assignment of such frequencies and the licensing of the operation of the related facilities are matters for national determination. However, in regions where a problem exists with respect to the provision of frequencies for operational control purposes, it may be advantageous if States endeavour to coordinate the requirements of aircraft operating agencies for such channels prior to regional meetings.

4.1.6.2. The frequencies that may be allotted for use in the aeronautical mobile (R) service in a particular region shall be limited to the number determined as being necessary for operational needs in the region.

**Note:** The number of frequencies required in a particular region is normally determined by the Council on the recommendations of Regional Air Navigation Meetings.

## 4.2. Utilization in the frequency band 108 – 117.975 MHz

- 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 4.2.2 and KCASR 10, Volume I, 3.1.3; <u>provided</u> 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 KCASR 10, Volume I, 3.7.3.5, provided that no harmful interference is caused to ILS and VOR.

Note: ILS/GBAS geographical separation criteria and geographical separation criteria for GBAS and VHF communication services operating in the 118 – 137 MHz band are under development. Until these criteria are defined and included in the SARPs, it is intended that frequencies in the band 112.050 – 117.900 MHz will be used for GBAS assignments.

- Band 111.975 117.975 MHz:
- (a) VOR;

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(b) GNSS ground-based augmentation system (GBAS) in accordance with KCASR 10, Volume I, 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, and VOR and GBAS/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). is found in Section 3 of Attachment C to KCASR 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 <u>is found in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc. 9718, Volume II).</u> is found in Section 7.2.1 of Attachment D to KCASR 10, Volume I.

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.

- 4.2.2. For regional assignment planning, the frequencies for ILS facilities 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.
  - 4.2.2.1. <u>4.2.2.1</u> ILS channels identified by localizer frequencies ending in an odd tenth plus one twentieth of a megahertz in the band 108 111.975 MHz 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.

Note: See Note to 4.2.3.1.

- 4.2.3. For regional assignment planning, the frequencies for VOR facilities shall be selected in the following order:
  - (a) frequencies ending in *odd tenths* of a megahertz in the band 111.975 117.975 MHz;
  - (b) frequencies ending in *even tenths* of a megahertz in the band 111.975 117.975 MHz;
  - (c) frequencies ending in *even tenths* of a megahertz in the band 108 111.975 MHz;
  - (d) frequencies ending in *50 kHz* in the band 111.975 117.975 MHz, except as provided in 4.2.3.1;
  - (e) frequencies ending in *even tenths plus a twentieth* of a megahertz in the band 108 111.975 MHz except as provided in 4.2.3.1.

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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 shall be permitted to be utilized for <u>general use</u> 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) <u>a)</u> 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 4.2.2.1 a) and 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.
- 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 KCASR 10, Volume I, Chapter 3, all existing VORs within interference range of a facility utilizing 50 kHz channel spacing shall be modified to comply with the provisions of KCASR 10, Volume I, 3.3.5.7.
- 4.2.5. *Frequency deployment.* The geographical separation between facilities operating on the same and adjacent frequencies shall be determined regionally and shall be based on the following criteria:
  - (a) the required functional service radii of the facilities;
  - (b) the maximum flight altitude of the aircraft using the facilities;
  - (c) the desirability of keeping the minimum IFR altitude as low as the terrain will permit.

*Note:* Guidance material on this subject is contained in the <u>Handbook on Radio Frequency Spectrum</u> <u>Requirements for Civil Aviation (Doc 9718, Volume II).</u> <u>Attachments to this Regulation</u>.

<u>4.2.6</u> To alleviate frequency congestion problems at locations where two separate ILS facilities serve opposite ends of the same runway or different runways at the same

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airport, the assignment of identical ILS localizer and glide path paired frequencies should be permitted, provided that:

- (a) the operational circumstances permit;
- (b) each localizer is assigned a different identification signal; and
- (c) arrangements are made whereby the localizer and glide path not in operational use cannot radiate.

**Note:** The Standards in KCASR 10, Volume I, 3.1.2.7.2 and 3.1.3.9, specify the equipment arrangements to be made.

## 4.3. Utilization in the frequency band 960 – 1 215 MHz for DME

**Note 4:\_** (As of Nov. 2026) Guidance on the frequency planning of channels for DME systems is given in\_ the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718, Volume II).KCASR 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.

4.3.1. DME operating channels bearing the suffix "X" or "Y" in Table A, Chapter 3 of KCASR 10, Volume I shall be chosen on a general basis without restriction.

**Note:** The channel pairing plan provides for the use of certain Y channels with either VOR or MLS. The guidance material in KCASR 10, Volume I, Attachment C, Section 7, includes specific provisions relating to situations where the same, or adjacent channel, is used in the same area for both systems.

- 4.3.2. DME channels bearing the suffix "W" or "Z" in Table A, Chapter 3 of KCASR10, Volume I, shall be chosen on the basis of regional agreement when they become applicable in accordance with the following:
  - (a) for restricted regional use on or after, whichever is the later:
    - 1) 1 January 1989; or
    - a date prescribed by the Council giving a period of two years or more following approval of the regional agreement concerned;
  - (b) for general use on or after, whichever is the later:
    - 1) 1 January 1995; or
    - a date prescribed by the Council giving a period of two years or more following approval of the regional agreement concerned.

*Note:* "Restricted use" is intended to refer to the limited use of the channel by only suitably equipped aircraft and in such a manner that:

(a) the performance of existing DME equipment not capable of operating on these multiplexed channels will be protected from harmful interference;

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- 4.3.3.1. *Groups 1 to 5.* These DME channels shall be permitted to be used generally. In selecting channels for assignment purposes, the following rules are applicable:
  - (a) when an MLS/DME is intended to operate on a runway in association with an ILS, the DME channel, if possible, shall be selected from Group 1 or 2 and paired with the ILS frequency as indicated in the DME channelling and pairing table in Table A of KCASR 10, Volume I, Chapter 3. In cases where the composite frequency protection cannot be satisfied for all three components, the MLS channel may be selected from Group 3, 4 or 5;
  - (b) when an MLS/DME is intended to operate on a runway without the coexistence of an ILS, the DME channel to be used shall preferably be selected from Group 3, 4 or 5.
- 4.3.3.2. *Groups 6 to 10.* These DME channels shall be permitted to be used on the basis of a regional agreement when they have become applicable in accordance with the conditions specified at 4.3.2.
- 4.3.4. Coordination of regional DME channel assignments should be effected through ICAO.

## 4.4. Utilization in the frequency band 5 030.4 – 5 150.0 MHz

**Note 1:** Guidance material on the frequency protection planning of MLS facilities is contained in Attachment G to KCASR 10, Volume I.

**Note 2:** Guidance on determining coordination distances between MLS facilities and ground stations providing feeder links to non-geostationary mobile satellites is contained in ITU-R Recommendation S.1342.

Note 3. (As of 26 November 2026), subject to the conditions stated in 5.2.1, this frequency band is shared with RPAS C2 Link terrestrial communication services in the portion 5 030.4 – 5 091 MHz, as described in Annex 10, Volume V, Chapter 5.

- 4.4.1. The MLS channels shall be selected from Table A, Chapter 3 of KCASR 10, Volume I.
- 4.4.2. For regional planning purposes, MLS channels shall be selected in accordance with the conditions specified in 4.4.3 for the associated DME facility.
- 4.4.3. Channel assignments in addition to those specified in 4.4.1 shall be made within the 5 030.4 5 150.0 MHz sub-band as necessary to satisfy future air navigation requirements.

## 4.5 Utilization in the frequency band 4 200-4 400 MHz

4.5.1 Utilization for radio altimeters

(To be developed)

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### 4.5.2 Utilization for wireless avionic intra-communication (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 ED-319 and DO-402 Minimum Operating Performance Specification (MOPS) for Wireless Avionics Intra-Communication Equipment within 4200-4400 MHz. In addition, considerations on protecting aircraft systems from unauthorized interactions are addressed in ED-203A and DO-356A Airworthiness Security Methods and Considerations.

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.

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

**Note**.— Compliance with 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 4.5.2.4 below. Furthermore, careful consideration is necessary when accommodating components of the WAIC system located outside of the aircraft fuselage. The European Organisation for Civil Aviation Equipment (EUROCAE)/RTCA Inc. documents ED-260A/DO-378A provide one acceptable method of demonstrating compliance with that power limit.

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/DO-378A provide one acceptable method of demonstrating compliance with 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 4.5.2.3.

4.5.2.4 Radio frequency (RF) characteristics of WAIC systems.

4.5.2.4.1 WAIC systems shall operate in the frequency band 4 200–4 400 MHz.

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 ED-260A and DO-378A "the Minimum Aviation System Performance Standards (MASPS) for Coexistence of Wireless Avionics Intra Communication (WAIC) Systems within 4 200-4 400 MHz", which adopt the total aggregate EIRP limit for WAIC systems and provide a practical verification procedure how to ascertain whether the limit is satisfied.

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.

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.

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:

<u>50 per cent of NB < *f* < 150 per cent of NB: Linear increase (in dB) from 24dB to 35dB within a reference bandwidth of 4kHz (Note 1);</u>

<u>150 per cent of NB < *f* < start of the spurious domain: 35 dB within a reference bandwidth of 4 kHz (Note 1); and</u>

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

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**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.

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.

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.

4.5.2.5.2 Receivers shall tolerate interference from sources operating outside of the frequency band 4 200–4 400 MHz whose total combined power as measured at the receiver does not exceed -20 dBm.

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