



AIRPORTS AUTHORITY OF INDIA

Department of Aerodrome Safeguarding

Rajiv Gandhi Bhawan, New Delhi-110003

[File No. ATM-16027/13/2026-ATM-DoAS]

AERODROME SAFEGUARDING CIRCULAR (ADSAC) 02 OF 2026

Subject: Operational Impact Analysis of the Building/Structures on High Frequency Transmitter (HF Tx) operation, over continental airspace.

1. Introduction

- 1.1 High Frequency (HF) communication uses radio waves in the 3–30 MHz range (shortwave) to enable long-distance, over-the-horizon voice and data transmission, by reflecting signals off the ionosphere (skywave propagation).
- 1.2 HF is mainly used in oceanic region when there is no way to make communication through VHF frequency range. While VHF radio is commonly used for short range Line of Sight communications, only HF is capable of communicating over distance of 2000 Km or more.
- 1.3 HF communication allows for air-ground communication and broadcasts of meteorological and air traffic control (ATC) information over large distances.
- 1.4 Rules of GSR 751(E)-2015 for height restrictions for safeguarding of Aircraft operations were amended vide GSR 770(E)-2020 in which sub paragraphs were added for High frequency Transmitter. These clauses were added to safeguard the service volume of HF Tx.



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2. Purpose

There is a demand for reviewing the regulations for safeguarding of HF Tx. There are no clear standards or guidelines from ICAO in this regard and these restrictions are affecting the vertical growth of the Metropolitan cities.

As of now, there is no simulation tools available to study the impact of the obstructions on the performance of HF Tx.

Purpose of simulation is to study the impact of structures on EM signals. As the existing EMACS tool available with AAI doesn't have the capability to conduct HF study, it is decided to conduct the operational impact analysis to assess the impact on HF TX EM waves in continental airspace, till the AAI procures simulation tool for HF.

The objective of this ADSAC is to clearly lay down policies and procedures to carry out the operational impact analysis of the structures/buildings around the HF transmitting station on the performance of HF Tx

Purpose of this ADSAC is to review the CNS assessment process for granting heights w.r.t. HF TX, over continental airspace, where robust VHF coverage is available. The GSR 751 (E) states that CNS facilities service volume to be protected, as per Annex 10 criteria. The designated operational service volume of HF is over high seas, thus different guidelines of protection over continental airspace are considered.

3. Scope / Applicability

- 3.1** This ADSAC applies to all Airports for which AAI is responsible for Aerodrome Safeguarding, vide the provisions of GSR 751(E)/770(E), as amended from time to time.

4. Cancellation

NIL



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5. Effective date

5.1 This ADSAC will be effective from the date of its issue.

6. Protection of Service Volume of High frequency Transmitters as per GSR 770 (E)

6.1 No Construction Zone for High Frequency transmitter: Land within hundred meters from the extremity of the high frequency transmitter antenna system.

6.2 Service volume protection for HF Transmitter: Between 100 to 2000 meter from the centre of the high frequency transmitter antenna system, the height of the permissible structure is allowed up to an elevation angle of 2.5 degrees starting at 10 meter above the ground level.

7.0 When to carry out the Operational Impact Analysis:

For height restriction around HF Tx Station the Guidelines of GSR 751 (E) and GSR 770 (E) prevails. However, for continental region the impact of the proposed structure/building on the performance of HF Tx operations will be assessed under the following conditions:

- (i) The obstruction is already cleared by AGA & PANS-OPS, other CNS criteria and the restriction is only from HF Tx and
- (ii) The obstruction falls in the continental/terrestrial airspace only. No case shall be considered for analysis under the scope of this ADSAC if the building/structure is located towards oceanic airspace served by the HF transmitter w.r.t. High Frequency Transmitting station. And
- (iii) The structure/building is not in the No Construction Zone (NCZ) of HF Tx, as defined in GSR 770 (E).



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8. The Operational Impact Analysis Process:

- 8.1 (a) At airport having HF Tx, proposed structure restricted by HF Tx shall be examined as per normal NOCAS process by concerned Designated officer.
- (b) If the structure is cleared by AGA, PANS-OPS and other CNS facilities and restricted by HF Tx, RNOCC shall submit the file to DoAS-CHQ who will submit the file to ED(CNS)-OM for operational impact analysis.
- (c) If required CNS-OM may seek additional information regarding proposed construction or visit the site.
- (d) The analysis is to be carried out only when the Regional Committee receives the file from Regional NOC Centre (if para no. 7 is compiled).

8.2 The analysis will be carried out by the following Regional Committee:

- (a) GM (CNS) of concerned Metro Airport
- (b) GM (CNS-COM) – CNS-OM Dte., CHQ
- (c) Unit in -charge of HF Communication System of the affected station, not below the rank of DGM, who will also act as the coordinator.

8.3 If required by the committee, with the approval of ED (CNS-OM), a study can be conducted to analyse the impact of the proposed structure/building on the performance of HF Tx operation. The study can be conducted either from:

- (a) Institutions of National repute like IIT, NIT or other reputed institutions; or
- (b) Any agency certified/Authorised by National Accreditation Board to carry out the testing, inspection and analysis of the impact of such structures on HF Tx operation.

8.4 CNS(OM) Directorate will intimate the analysis result to DoAS-CHQ who will intimate the concerned Designated Officer, based on which Designated Officer may decide to issue the NOC with or without further restriction, or decide to reject the application for NOC stating reasons for the same.



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9 Role of Regional NOC Centre

While issuing the NOC letter, the proposed mitigation measures like use of RF absorbing material/panel shall be included. The non-compliance by the builder in this regard shall be treated as violation of NOC.

10 The Analysis report and proposal of the Committee:

The committee shall assess the study report (if applicable) and consider the mitigation measures such as:

- a) Availability of other communication measures VHF coverage (RCAG), CPDLC etc.
- b) Measures to minimize reflections of RF energy towards oceanic region, by using RF absorbing materials
- c) An undertaking from applicant is to be obtained for the compliance of the above condition and their willingness to submit a certificate from Govt. agency or agency certified by NABL that RF absorbing material/panel is used in the construction of the building above the height cleared through NOCAS.
- d) Safety concurrence from AVS Dte for the Safety assessment carried out by the station.

11 Approval

The Committee report along with analysis report, Safety Concurrence and proposed mitigation measures shall be submitted to ED (CNS-OM) for necessary approval. Once approved, authorization letter for the issuance of NOC shall be forwarded to the RNOCC, by GM DoAS-CHQ.

The guidelines shall be reviewed every two years or as and when needed based on operational requirement.



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- 12. Validity:** This ADSAC shall remain valid till it is amended or withdrawn or incorporated in the Aerodrome Safeguarding Manual.
- 13. Document Control and feedback:** This ADSAC has been issued by the office of ED (ATM) with the concurrence of Directorate of CNS-O&M. Any feedback, suggestion or the error in this document may be brought into the notice of GM (DoAS), CHQ, AAI CHQ at gmdoaschq@aai.aero.

Purbita

(PURBITA THAKUR SINHA)
Executive Director (ATM)

Dated: 18th March 2026

Distribution:

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