GEN 3.4 COMMUNICATION SERVICES

1 Responsible Services

1.1 The Civil Aviation Telecommunications Services in the United Kingdom are administered by the Civil Aviation Authority.

Post: Civil Aviation Authority , CAA House, 45-59 Kingsway, London WC2B 6TE
Phone: 020-7379 7311
Telex: 883092
Fax: 020-7240 1153
AFS: EGGAYAYX

1.2 **Applicable ICAO Documents**

1.2.1 The Standards, Recommended Practices and, when applicable, the procedures contained in the following ICAO documents are applied:

Annex 10	- Aeronautical Telecommunications;
Doc 7030	- Regional Supplementary Procedures;
Doc 7910	- Location Indicators for geographical locations;
Doc 8400	- ICAO Abbreviations and Codes;
Doc 8585	- Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

1.2.2 Differences from ICAO Standards Recommended Practices and Procedures are given at GEN 1.7.

2 Areas of Responsibility for Providing Aeronautical Telecommunications Services

2.1 En-route Telecommunications Services

2.1.1 All en-route telecommunications (air-interpreted navigational aids and communications) services, together with those services at aerodromes administered by Highlands and Islands Airports Ltd, except where otherwise identified in the AIP, are provided by the NATS (En Route) plc.

Post: NATS (En Route) plc, General Manager Engineering Service Delivery, Corporate and Technical Centre, 4000 Parkway, Whiteley, Fareham, Hampshire. PO15 7FL.
Phone: 01489-616508
Fax: 01489-444015

2.2 Communications and Navigational Aids at UK Aerodromes

2.2.1 Several organisations are approved by the CAA to provide Civil Aviation Telecommunications Services at UK aerodromes.

2.2.2 These services at the following aerodromes are administered by NATS Ltd:

Aberdeen (including Off-shore responsibilities), Belfast/Aldergrove, Birmingham, Cardiff, Edinburgh, Farnborough, Glasgow, London/City, London Gatwick, London Heathrow (including Thames Radar), London Stansted, Manchester, Southampton and Sumburgh (including Off-shore responsibilities).

2.2.3 All correspondence relating to the services provided should be addressed as follows:

(a) Aerodromes at which ATS is provided under contract by NATS Ltd:

Post: National Air Traffic Services Ltd, Head of Aerodrome Engineering Support (Head of AES), NATS - Airports Services, Control Tower Building, London Heathrow Airport, Hounslow, Middx TW6 1JJ
Phone: 020-8745-3703
Fax: 020-8745-3690

(b) Aerodromes at which ATS is not provided by NATS Ltd and that are not listed in paragraph 2.2.3:

Contact the individual aerodrome/heliport operators identified at AD 2.2/AD 3.2

2.3 AFTN and associated Data Services

Post: NATS Ltd, Civil Aviation Communications Centre (CACC) , Sopwith Way, Swanwick, Southampton, Hampshire SO31 7AY.
Phone: Operations (H24) 01489-612790
Fax: 01489-612793
AFS: EGGGYFAD
Phone: Ops Support 01489-612925
Email: cacc.opssupport@nats.co.uk

2.4 Enquiries and Complaints

2.4.1 Enquiries or complaints about the performance of Civil Aviation Telecommunications Services should be referred in the first instance to the operational organisation providing the services. Urgent matters should be communicated verbally and supported by written reports.

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3 Type of Service

3.1 Radio Navigation Services

3.1.1 The following types of radio aids to navigation are provided in the UK:

(a) MF Non-Directional Beacon (NDB);

(b) VHF Direction-Finding Station (VDF);

(c) Approach Radar (RAD);

(d) Microwave Landing System (MLS);

(e) Precision Approach Radar (PAR) at certain military aerodromes;

(f) Instrument Landing System (ILS);

(g) VHF Omni-directional Radio Range (VOR);

(h) Distance Measuring Equipment (DME).

3.1.2 **MF Non-directional Beacon (NDB)**

(a) The range promulgated for UK NDBs is based on a daytime protection ratio between wanted and unwanted signals that limits bearing errors at that distance to ±5 degrees or less. At ranges greater than those promulgated bearing errors will increase. Adverse propagation conditions particularly at night will also increase bearing errors.

(b) NDBs provided for use as approach aids, during the notified hours of ATS, at aerodromes for which instrument approach procedures are published in the AD section are notified in this AIP as locator beacons (L). Most locator beacons continue to transmit a usable signal outside notified hours, these signals are provided for the purposes of navigational aid only. Aerodrome NDBs not notified as locator beacons are provided for navigational use only.

(c) Details of the Maritime Radio beacons (NDB) are published by the Hydrographer of the Navy, Hydrographic Department (MOD), Taunton, Somerset TA1 2DN, and are available from Admiralty Chart Agents.

3.1.3 **VHF Direction-Finding Station (VDF)**

(a) VDF bearings are classified as follows:

- Class A: accurate to within ±2 degrees;
- Class B: accurate to within ±5 degrees;
- Class C: accurate to within ±10 degrees.

(b) VDF bearing information will only be given when conditions are satisfactory. Normally no better than Class B bearing will be available.

3.1.4 **Approach Radar (RAD)**

(a) The VHF communications frequencies for use with Approach Radars are listed in AD 2 item 2.18

3.1.5 **Instrument Landing System (ILS)**

(a) Aircraft overflying the localizer or manoeuvring on or near the runway may disturb the ILS guidance signals. ATC will apply increased separation and such other measures considered necessary to prevent interference during Category II and III operations.

(b) Such measures will also be applied at the discretion of ATS when requested by pilots wishing to use Category II and III landing procedures when meteorological conditions do not necessitate them

(c) For all civil ILS notified in AD 2 item 2.19 the Localizer usable coverage sector is ±35° about the nominal course line and the glidepath provides coverage to the minimum ICAO requirement of 10 nm unless otherwise stated. Pilots using these instrument landing systems are advised not to attempt to intercept and follow the glidepath until the aircraft is established on the Localizer centre-line. Due to the presence of false courses on some localizers operating in the UK, pilots are advised not to attempt to use any ILS facility outside ±35° of the front course line. This advice is in addition to the notes promulgated in AD 2 item 2.19 for individual ILS. Use of ILS facilities in the UK is the subject of AIC 12/2008 (Pink 134).

(d) Steep Angle facilities listed in the ILS entries in AD 2 item 2.19 provide a more limited coverage than that described in paragraph 1.5(c), the Localizer usable coverage sector being limited to 10 nm at ±35° and to 18 nm at ±10°. The glidepath provides coverage to 8 nm.

(e) Although all MoD ILS facilities are technically classed as ‘uncategorised’, they are flight checked to ICAO CAT I standards. However, pilots of aircraft cleared to carry out practice auto-coupled approaches with the appropriate visual references to below CAT I limits are to note the following: Unless specifically promulgated otherwise, ILS facilities at MoD airfields are not capable of providing the required quality of beam structure to enable auto-coupled approaches to be continued below the minimum CAT I Decision Height.

3.1.6 **Instrument Landing System (ILS) and Distance Measuring Equipment (DME)**

(a) A DME facility at an aerodrome, which is frequency paired with the ILS, is arranged to give zero range indication with respect to the threshold of the runway with which it is associated and precise ranges will only be indicated when aircraft

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are in line with the runway on the approach path. As a consequence of this, if used other than in accordance with promulgated procedures indicated range should be taken as an approximate range to the aerodrome.

3.1.7 **VHF Omni-directional Radio Range (VOR) and Distance Measuring Equipment (DME)**

(a) The Designated Operational Coverage promulgated for UK VOR and DME together with details of any unsatisfactory conditions known to exist, are listed in AD 2 item 2.19 or at ENR 4.1.

(b) Because inaccurate bearing information may be radiated by a VOR during a changeover to the standby transmitter, no identification signal is radiated until the changeover is completed. Pilots are advised to continually monitor the identification signal throughout a VOR approach.

(c) Where a VOR and TACAN are frequency paired, but not within the co-location limit of 600 m, the last letter of the TACAN identification will be a 'Z'. Civil Pilots are advised not to make operational use of distance information provided by Military TACAN facilities promulgated as unreliable and/or transmitting a series of dots after the identification code.

(d) Where an en-route VOR or VOR/DME facility has an instrument approach procedure published in the AD section, a note in Column 7 at ENR 4.1 indicates the aerodrome so served. The hours of service as an approach aid are within the notified hours of the Air Traffic Services at the aerodrome served.

3.1.8 **Microwave Landing Systems (MLS)**

(a) For all MLS notified in AD 2 item 2.19 the azimuth coverage section is ±40° about the nominal course line. Range is 20 nm unless otherwise stated.

3.1.9 **Aerodrome Distance Measuring Equipment (DME)**

(a) Aerodrome DME referred to in an instrument approach procedure published in the AD section is provided for use as an approach aid during the notified hours of ATS only. Most DME continue to transmit outside ATC notified hours for the purpose of navigational aid only.

(b) Aerodrome DME with their zero range off-set to occur at specific runway thresholds are identified by comments in Column 7 at AD 2 item 2.19. Any DME range indications observed when between runway thresholds should be ignored. Other aerodrome DME indicate true slant range from aircraft to DME site.

3.1.10 **Radio Navigation Aids - Designated Operational Coverage**

3.1.10.1 Due to the limitations in the availability of spectrum, most NDB, VOR and DME facilities operate on a shared frequency channel. Frequency planning criteria based on ICAO Standards and Recommended Practices are employed to reduce the risk of interference from other facilities operating on the same frequency (co-channel interference).

3.1.10.2 When interference occurs, it is likely to be manifested in one of the following ways:

(a) Garbled identification;

(b) Bearing/range errors;

(c) Inability to acquire the navigational signal;

(d) Acquiring the undesired signal instead of the desired one.

3.1.10.3 Under abnormal propagation conditions interference can occur. For VOR and DME this is rare in the European region. However for a NDB, such conditions occur for a number of reasons (see paragraph 3.1.11).

3.1.10.4 The attention of pilots and aircraft operators is drawn to the following:

(a) Using a VOR/DME outside the Designated Operational Coverage (DOC) can lead to errors in navigation. Such errors can be dangerous. This is particularly to be noted when using multiple DME in the RNAV configuration where it is difficult, if not impossible, to make a positive identification of the beacon being used.

(b) DOCs are published in the UK AIP AD 2 item 2.19 and ENR 4.1. Where pilot channel selection is made, it is essential that this document be consulted as part of the pre-flight briefing to determine the DOC of every radio navigation aid upon which the safety of the intended flight may depend.

3.1.11 **Limitations of Non-Directional Beacons and Automatic Direction Finding Equipment**

3.1.11.1 Although VHF Omni-Range facilities (VOR) have increasingly replaced Non-Directional Beacons (NDBs) in many parts of the world, NDBs are still in use as navigation and instrument approach aids and are likely to be utilised in these roles for several years to come.

3.1.11.2 The increasing use of VOR may result in pilots losing sight of the inherent limitations of the NDB and its associated airborne Automatic Direction-Finding (ADF) equipment which if used under certain conditions is capable of producing large and potentially dangerous errors.

3.1.11.3 The principal factors liable to affect NDB/ADF system performance and integrity are:

- Static Interference;
- Station Interference;
- Night Effect;
- Mountain Effect;

- Coastal Refraction;
- Absence of failure warning system.

3.1.11.3.1 Very occasionally the Authority becomes aware of other conditions in ADF/NDB systems which give rise to false indications. In all such cases notification is given to the affected aircraft and ground equipment operators.

3.1.11.3.2 **Static Interference -** All kinds of precipitation (including falling snow) and thunderstorms can cause static interference of varying intensity to ADF systems. Precipitation static reduces the effective range and accuracy of bearing information and thunderstorms can give rise to bearing errors of considerable magnitude and even to false 'overhead' indications. Indeed it is often said that in an area affected by thunderstorm activity, the ADF bearing pointer is useful only as an indication of the direction of the most active storm cell.

3.1.11.3.3 **Station Interference -** Most countries adopt measures to minimise the possibility of interference between transmissions from different stations by spacing frequencies and limiting the power outputs of those which might conflict. However, the LF and MF frequency bands remain inevitably congested and there is a risk that some interference will occasionally occur. When interference is experienced, bearing errors of varying degree will result. By day, the use of a NDB within the promulgated service range (based on daylight conditions) will normally afford protection against interference. Providing the NDB is correctly selected and identified reliable performance can usually be expected. By night, however, it is possible for skywave signals from other (more distant) transmitters to penetrate those areas considered protected during the day, thus giving rise to the possibility of two signals being received and resulting in unreliable bearing indications. Extreme care should therefore be exercised when making use of NDBs during night or twilight hours, even when well within the promulgated service range. A similar degree of care is necessary by day when close to the limit of the promulgated service range. Positive identification of the callsign of the required NDB is essential and is just as important with modern incrementally-tuned crystal controlled ADF sets, as with the earlier designs since frequency references alone cannot guarantee that the required NDB is being unambiguously received. Following initial identification and when ADF indications are being followed, further checks on reception of the correct callsign and on the accuracy of tuning should also be made at frequent intervals.

3.1.11.3.4 **Night Effect -** At night in addition to the interference which can occur between transmissions from different stations (already described in paragraph 1.11.3.3) it is possible for the reception of a ground wave signal from an individual NDB to be contaminated by a skywave signal from the same transmission source. This will give rise to bearing errors of varying magnitude depending on the heights of the ionised layers and the polarisation of the signals on arrival at the receiver. Night effect is usually most marked during the twilight hours when skywave contamination can cause 'fading' of signal strength with resultant wandering of the ADF bearing pointer. Caution should therefore be exercised whenever fluctuations in bearing indications are observed in the circumstances described.

3.1.11.3.5 **Mountain Effect -** ADF systems may be subject to errors caused by the reflection and refraction of the transmitted radio waves in mountainous areas. High ground between the aircraft and the NDB may increase the errors especially at low altitude.

3.1.11.3.6 **Coastal Refraction -** In coastal areas the differing radio energy absorption properties of land and water result in refraction of NDB transmissions. This error, known as 'Coastal Refraction', is most marked when the transmissions cross the coastline at an oblique angle and when the NDB is located away from the coast. Such bearings should, therefore, be used with caution.

3.1.11.3.7 **Lack of Failure Warning System -** Because of the absence of failure warning devices on most ADF instruments, failure in any part of the system (including the NDB) may produce false indications which are not readily detectable. NDB failures in particular could adversely effect both systems of a dual ADF installation in the aircraft. Having selected and identified the NDB, monitoring the audio identification signal and the pointer behaviour is the correct method of assuring normal system operation. This will reduce the risk of a false indication being followed and applies particularly when making an approach toward the NDB, when, in the event of failure, the ADF pointer could indicate that the beacon is ahead of the aircraft even though the beacon has been passed. Particular care should be exercised when an instrument approach procedure is commenced at ADF pointer reversal, in Instrument Meteorological Conditions to below sector safety altitude where no independent cross check is available.

3.1.11.4 Two methods of modulation are used to transmit the Morse identification signal of a NDB. In the UK all NDB utilise Modulated Continuous Wave (N0N A2A) type of modulation but in many other countries Interrupted Continuous Wave (N0N A1A) modulation may be employed which requires the use of a Beat Frequency Oscillator (BFO) or tone generator in the ADF receiver. Pilots must therefore be aware of the type of emission to expect and to pre-select the ADF receiver controls accordingly. In the case of Interrupted Continuous Wave (N0N A1A) type emissions, the ADF bearing pointer may wander during the ident period, due to the interruptions in the carrier frequency.

3.1.11.5 In conclusion it has to be stressed that at the comparatively short distances, ie less than 50 nautical miles, over which NDB are most commonly used, the most potentially dangerous errors are those resulting from all types of precipitation static, thunderstorms and station interference (particularly at night). When these are experienced, the ADF system should be used only when necessary and then with extreme caution; VHF aids are much less affected and these should be used in preference wherever possible. Cross-checking on the accuracy of ADF indications by reference to other available navigational aids is not only a matter of good airmanship but also a most necessary safeguard wherever any difficulty is experienced in the reception or identification of the intended NDB.

3.2 The Aeronautical Mobile Service

3.2.1 **General**

(a) Facilities are provided to meet the Air/Ground communications requirements of the Air Traffic Services described in the AIP and the Emergency Services detailed at paragraph 3.2.4. These services include coverage over the greater part of the United Kingdom Flight Information Regions above 3000 ft. Some limited cover may be possible below this altitude.

(b) United Kingdom Air/Ground facilities will communicate with aircraft on frequencies within the Aeronautical Mobile (R) Service which has been allocated to the band 118 to 136.975 MHz.

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(c) United Kingdom Airspace is a 25 kHz channel spaced environment with 760 communication channels, including some off-set carrier systems.

(d) The language to be used when communicating on the United Kingdom Aeronautical Mobile Service is English.

(e) Procedures to follow in the event of Radio failures are contained in the AD and ENR Sections.

(f) At a civil aerodrome the following words in a callsign identify an Air Traffic Control Service: TOWER, APPROACH, GROUND, ZONE, RADAR, DIRECTOR, DELIVERY.

(g) In a callsign, only the word INFORMATION is used to identify an Aerodrome Flight Information Service, Aerodrome Terminal Information Service or Area Flight Information Service.

(h) In a callsign, only the word RADIO is used to identify an aerodrome Air/Ground communication service.

3.2.2 **Use of VHF R/T Channels**

(a) Geographical separation between international services using the same or adjacent frequencies is determined so as to ensure as far as possible that aircraft at the limits of height and range to each service do not interfere with one another. In the case of en-route sectors these limits correspond to that of the ATC sector concerned and those for international aerodrome services are appropriate a radius of 25 nm up to a height of 4000 ft (TWR) or 10000 ft (APP).

(b) Except in emergency, or unless otherwise instructed by the Air Traffic Services, pilots should observe these limits. Services other than international services are provided on frequencies which are shared between numerous ground stations and have to operate to a higher utilisation in order to satisfy the demand for frequencies. Pilots using these frequencies should assist in reducing interference by keeping communications to a minimum and by limiting the use of aircraft transmitters to the minimum height and distance from the aerodrome that are operationally necessary. In the case of TWR, AFIS and A/G facilities, communications on these frequencies should be restricted as far as possible to heights up to 1000 ft in the immediate vicinity of the aerodrome concerned and in any event within 10 nm and 3000 ft.

3.2.3 **Common Frequency for Helicopter Departures**

(a) At locations having no ground radio facilities a VHF channel is available to assist departing helicopters.

(b) Conditions of use are:

(i) It shall only be used at locations having no radio facilities. If another VHF assignment is valid for that location, it must be used even outside the normal operating hours;

(ii) Transmissions shall occur only when helicopters are below 500 ft agl;

(iii) Helicopters approaching a site should monitor the channel. Blind transmissions are not permitted.

(c) Departing helicopters shall state:

(i) 'To all stations';

(ii) The callsign of the aircraft;

(iii) The location either by name or by reference to a readily identifiable feature;

(iv) The direction and height of the intended departure.

(d) The frequency assigned is 122.950 MHz and shall be known as 'DEPCOM'.

3.2.4 **Common VHF Frequency for Use at Aerodromes having no notified Ground Radio Frequency**

(a) At aerodromes having no notified ground radio frequency a VHF frequency is available to assist pilots to avoid potential collisions between arriving and departing aircraft. Pilots may use this frequency to broadcast their intentions for safety purposes.

(b) The frequency assigned is 135.475 MHz and is known as 'SAFETYCOM'.

(c) The conditions of use are:

(i) SAFETYCOM shall only be used at aerodromes having no notified ground radio frequency. If a VHF frequency is notified for a location, that notified frequency must be used even outside the notified operating hours.

(ii) Transmissions shall be made only within a maximum range of 10 nm of the aerodrome of intended landing, and below 2000 feet above the aerodrome elevation.

(iii) SAFETYCOM shall only be used to transmit information regarding the pilot's intentions, and there should be no response, except where the pilot of another aircraft also needs to transmit his intentions or, exceptionally, has information critical to the safety of an aircraft in a condition of distress or urgency.

(iv) Phraseology is to comply with the requirements of CAP 413 (Radiotelephony Manual) Chapter 4 Section 6.

(v) SAFETYCOM is not to be used for the conduct of formation flights unless landing at or taking off from an aerodrome for which no other frequency is notified and within the limits specified at sub paragraph (ii).

(vi) Pilots operating at aerodromes without a notified frequency are recommended to use SAFETYCOM, but its use is not mandatory. However, if pilots choose to use it, they must make the transmissions listed in CAP 413 as 'essential'. It must not be assumed that all other pilots in the vicinity are monitoring the frequency and, as at all other times, pilots must maintain a good lookout.

GEN 3.4 COMMUNICATION SERVICES (continued)

(vii) No air traffic service is associated with SAFETYCOM. Where an aerodrome lies within controlled airspace, pilots must establish contact with the responsible air traffic services unit, and obtain clearance prior to entering controlled airspace.

(viii) Information transmitted on SAFETYCOM confers no priority or right of way. Pilots shall comply with the Rules of the Air Regulations, including the provisions in relation to avoiding aerial collisions.

(d) Unless specifically approved by the CAA, SAFETYCOM is not to be used for special events as defined in CAP 403 (Flying Displays and Special Events: A Guide to Safety and Administrative Arrangements). Frequencies for special events should continue to be requested through existing channels.

3.2.5 **Emergency Service**

(a) An emergency communications and aid service is continuously available on 121.500 MHz from the Distress and Diversion (D & D) section located at RAF (U) Swanwick.

(b) Operational control is exercised from RAF (U) Swanwick D & D, callsign 'LONDON CENTRE'. The service provides coverage over the greater part of the United Kingdom above 3000 ft. In addition, the stations and units listed at GEN 3.6 have the capability of providing an emergency service on 121.500 MHz. (For further details see GEN 3.6, paragraph 6.5).

(c) Pilots of aircraft in emergency and using 121.500 MHz should broadcast the initial 'MAYDAY' or 'PAN PAN' call. The Air Traffic Controller at Swanwick will answer the call and initiate appropriate action. (For use of SSR in emergency see ENR 1.6).

(d) If the emergency is ended the pilot should inform the controlling authority of the fact and state his intentions before leaving the frequency. This will ensure that any action to alert diversion aerodromes or other assistance will be cancelled.

(e) Details of the ATSUs with Emergency Facilities are shown at GEN 3.6.

3.2.6 **Emergency Satellite Voice Calls from Aircraft** – See GEN 3.6.

3.2.7 **Radio Communications between Aerodrome Fire Services and Aircraft during an Emergency**

(a) Whenever an emergency has been declared at an aerodrome where this service is notified, aircraft may communicate direct with the Fire Service in attendance with the following conditions:

(i) The service must be used only when the aircraft is on the ground.

(ii) Contact with ATC, on the appropriate frequency must be maintained.

Note: *This service is only available by arrangement via ATC and may only be used for the duration of the emergency. The fire service does not normally monitor this service at other times.*

(b) The availability of this service is indicated in the AD section at item 2.18. It should be noted that the service provided is not an Air Traffic Service.

3.2.8 **Relay of RTF Communications to the Public**

(a) ATS RTF communications may be relayed to departing passengers in certain specified public areas at the following airport(s):

London Heathrow (Terminal 4 'Holideck').

This is in compliance with the Wireless Telegraphy Act 1949. The ATS provider reserves the right to disconnect the communication feed during any emergency occurrence without prior notice.

3.3 Aeronautical Fixed Services

3.3.1 In the United Kingdom the following Aeronautical Fixed Services are provided:

(a) The Operational Telephone Network for use by ATC and supporting operational services;

(b) the Administrative Telephone Network for use by authorised agencies connected with air traffic operations;

(c) the Aeronautical Fixed Telecommunications Network (AFTN), for the exchange of messages between aeronautical fixed stations within the network.

Note: *Messages of authorised categories can be accepted at designated stations for transmission on the AFS. The rules and procedures for handling of communications on the AFS are contained in Annex 10, Vol II Chapters 3-4.*

3.4 Aeronautical Broadcast Service

(a) The Aeronautical Broadcast Service provides broadcasts which contain meteorological, navigation and aerodrome information.

(b) Details of these broadcasts are listed under the name of the controlling aerodrome or Air Traffic Control Unit in the AD section at 2.18/3.17 and in GEN 3.5, paragraph 7.

4 Requirements and Conditions

4.1 **Approval and Licensing of Aircraft Radio Stations**

4.1.1 **General**

GEN 3.4 COMMUNICATION SERVICES (continued)

4.1.1.1 The Civil Aviation Authority must approve in writing the design and installation of radio equipment in aircraft and the station must be licensed by the Radiocommunications Agency, Aeronautical Licensing Section before such radio equipment may be operated in an aircraft. The regulations governing the compulsory carriage of radio equipment are contained in Part III of the Air Navigation Order 2000.

4.1.2 **Approval and Licensing Procedure**

4.1.2.1 Full details of the procedure governing the approval and licensing of aircraft radio stations, together with information regarding modifications to such stations, are given in Chapter A3-5 of Section A of the British Civil Airworthiness Requirements Handbook. This publication, or appropriate sections of it, are obtainable from Communisis UK, (see GEN 3.2, paragraph 3.2). The approval of an aircraft radio station is based, among other things, upon the results of radio tests in flight; details of the associated procedures are given below.

4.1.3 **Carriage of Radio and Radar Equipment**

4.1.3.1 The requirements for the carriage of radio and radar equipment are contained in the Air Navigation Order 2000 and the Air Navigation (General) Regulations 1993 as amended. The main provisions are published at GEN 1.5 paragraph 5.

4.1.4 **Radio Tests in Flight**

4.1.4.1 The CAA only expects Radio Tests in flight to be carried out in exceptional circumstances.

4.1.4.2 Tests of VHF RTF communications equipment may be carried out with one of the Air Traffic Service Units listed below. Such tests may only be carried out on the frequency stated and when the aircraft is within the Designated Operational Coverage (DOC) of the station as described in the table below.

Air Traffic Service Unit	RTF Call sign	Frequency (MHz)	DOC (based upon ARP unless otherwise stated)
Aberdeen/Dyce	Aberdeen Approach / Aberdeen Radar	119.050	55 nm / FL 250
Belfast Aldergrove	Aldergrove Approach / Aldergrove Radar	128.500	60 nm / FL 245
Birmingham	Birmingham Approach / Birmingham Radar	118.050	25 nm / FL 100
Bournemouth	Bournemouth Approach / Bournemouth Radar	119.475	50 nm / FL 120
Cambridge	Cambridge Approach	123.600	25 nm / FL 100
Cardiff	Cardiff Approach / Cardiff Radar	125.850	50 nm / FL 190
East Midlands	East Midlands Approach / East Midlands Radar	134.175	60 nm / FL 150
Edinburgh	Edinburgh Approach /Edinburgh Radar	121.200	40 nm / FL 100
Exeter	Exeter Approach / Exeter Radar	128.975	40 nm / FL 100
Glasgow	Glasgow Approach / Glasgow Radar	119.100	25 nm / FL 100
Isle of Man	Ronaldsway Approach / Ronaldsway Radar	120.850	40 nm / FL 100
Leeds Bradford	Leeds Bradford Approach	123.750	25 nm / FL 100
Liverpool	Liverpool Approach /Liverpool Radar	119.850	40 nm / FL 100
London Terminal Control	Essex Radar	120.625	Within the operational area of Essex Radar.
Newcastle	Newcastle Approach / Newcastle Radar	124.375	40 nm / FL 150
Norwich	Norwich Approach / Norwich Radar	119.350	40 nm / FL 70
Prestwick	Prestwick Approach / Prestwick Radar	129.450	40 nm / FL 195
Shoreham	Shoreham Approach / Shoreham Tower / Shoreham Radio	123.150	25 nm / FL 100
Southend	Southend Approach / Southend Radar	130.775	40 nm / FL 100
Sumburgh	Sumburgh Tower	118.250	25 nm / FL 40

4.1.4.3 Please note that not all these aeronautical radio stations operate H24, for hours of operation refer to the relevant aerodrome's AIP entry.

4.1.4.4 Prior arrangement with these aeronautical radio stations is not required, however, when radio traffic conditions are unfavourable it may not be possible for tests to be carried out. Where possible prior arrangements with the ATSU concerned should be made.

4.1.4.5 Test of HF RTF communications equipment may be carried out with any ATSU that is suitably equipped, it should be noted that the UK does not have any ATSU that operate HF for this purpose.

4.1.4.6 Radio tests in flight of other radio equipment, including the testing of all prototype radio equipment, shall only be carried out with the prior agreement of the Safety Regulation Group of the Civil Aviation Authority.

4.1.4.7 **Conditions for Tests**

4.1.4.7.1 Except where problems are suspected to have developed during the current flight, RTF equipment tests in flight shall only be made following satisfactory ground testing.

4.1.4.7.2 VHF RTF test transmission may only be made with the following emission characteristics.

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4.1.4.7.2.1 6K80A3EJN for frequency assignments.

4.1.4.7.2.2 5K00A3EJN for 8.33 Channel assignments.

4.1.4.7.3 HF RTF test transmissions may only be made, using fixed or trailing antenna, with either 2K70J3EJN or 6K00A3EJN emission characteristics as appropriate to the radio station that the communications is with.

4.1.4.8 **Priority of Messages**

4.1.4.8.1 Communications concerning safety or flight regularity will always be given priority over messages transmitted for test purposes.

4.1.4.9 **Radio Test in Flight Procedure**

4.1.4.9.1 Aircraft must meet minimum airworthiness requirements before commencing any flight for radio test in flight purposes.

4.1.4.9.2 Aircraft must comply with the Air Traffic Service rules applicable to the area within which they are flying.

4.1.4.9.3 All radio transmissions for test in flight purposes shall be of the minimum duration necessary for the test and shall not continue for more than 10 seconds. The recurrence of such transmissions shall be kept to the minimum necessary for the test.

4.1.4.9.4 The nature of the test transmission shall be such that it is identifiable as a test transmission and can not be confused with other communications. To achieve this the following format shall be used:

(a) 'the call sign' of the aeronautical radio station being called, followed by the words ‘THIS IS’;

(b) 'the aircraft identification';

(c) the words ‘RADIO CHECK ON’;

(d) 'the frequency (or 8.33 channel)' being used for the test;

(e) 'the aircraft identification'.

4.1.4.9.5 The operator of the aeronautical radio station being called will assess the transmission and will advise the aircraft making the test transmission in terms of the readability scale below, together with a comment on the nature of any abnormality noted (ie excessive noise) using the following format:

(a) ‘the aircraft identification' followed by the words ‘THIS IS’;

(b) 'the call sign' of the aeronautical radio station replying;

(c) information regarding the readability of the aircraft transmission using the words ‘READABILITY x’ where 'x' is a number taken from the table below that equates to the assessment of the transmission;

(d) additional concise and unambiguous information with respect to the noted abnormality may be given;

(e) 'the call sign' of the aeronautical radio station replying;

(f) for practical reasons it may be necessary for the operator of an aeronautical radio station to reply with ‘THIS IS' followed by 'the call sign' of the aeronautical radio station ‘STATION CALLING ON’ state 'the frequency (or 8.33 channel) UNREADABLE’

4.1.4.9.6

Quality	Scale
Unreadable	1
Readable now and then	2
Readable but with difficulty	3
Readable	4
Perfectly Readable	5

4.1.4.9.7 The test transmission and reply thereto are recorded at the ATSU.

4.1.4.9.8 The operator of the airborne station shall complete a 'Flight Test Report' based upon the assessment information conveyed to them, this should be recorded in the aircraft maintenance records. Action should be taken to rectify any identified problems be fore further test or use.

4.2 **Approval and Licensing of Ground Radio Stations**

4.2.1 General

4.2.1.1 The Civil Aviation Authority must approve in writing the operation of a ground radio station and the station must be licensed under the the terms of the Wireless Telegraphy Act before it may be operated.

4.2.2 Approval and Licensing Procedure

4.2.2.1 Full details of the procedures governing the approval and licensing of ground radio stations are obtainable from:

Post: Civil Aviation Authority, ATS Standards Department, Aviation House, Gatwick Road, Gatwick Airport South, West Sussex RH6 0YR
Phone: 01293-573692
AFS: EGGRYAYA

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Telex: 878753
Fax: 01293-573974

4.2.2.2 Full details of the procedures governing the Wireless Telegraphy Act, aeronautical licensing are obtainable from:

Post: Radio Licensing Section, Surveillance and Spectrum Management, Civil Aviation Authority, K6, G6, CAA House, 45-59 Kingsway, London WC2B 6NN
Phone: 020-7453 6555
Fax: 020-7453 6556
Email: radio.licensing@dap.caa.co.uk

4.3 **Malfunctions, Maintenance and Test Transmissions**

4.3.1 During periods of malfunction or maintenance of navigational aids, the promulgated identification signal is suppressed as a means of warning users that the transmission cannot be safely used for navigation purposes. The identification signal will be suppressed in one of two ways:

(a) by complete removal;

(b) by radiating a continuous tone.

4.3.2 Any transmission using the identification 'TST' is radiating for test purposes only and must not be used for operational purposes.

4.4 **Interference from High Powered Transmitters**

4.4.1 Pilots are advised that interference may be experienced in aircraft flying in the vicinity of high power broadcast stations. If such interference is troublesome or is experienced well beyond the vicinity of the ground transmitter, pilots are requested to file a Ground Fault Report Form CA 647 which should include the following information:

(a) Frequency on which interference occurred;

(b) position and height of aircraft;

(c) aircraft registration letters;

(d) date and time of interference;

(e) description of interfering signal eg music, speech, language, etc.

4.4.2 Other sources of High Intensity Radio Transmission are listed in the ENR Section. Pilots are warned that within the areas defined, interference or damage to aircraft electronic equipment may occur. Navigation information from equipment may be unreliable.

4.4.3 ILS/VOR navigation and VHF communication receivers may still suffer interference from high powered FM broadcast stations in the 88 to 108 MHz band.

4.4.3.1 Since 1 Jan 2001, the use of FM-immune ILS/VOR navigation and VHF communications receivers is required for IFR operations within the UK FIR. Performance standards for FM-immune receivers are specified at section 3.1.4 and 3.3.8 of ICAO Annex 10, Volume 1, and the applicable performance standards and the requirement for carriage of such equipment in UK airspace in CAP 455, Airworthiness Notice, No 84 (as amended), which may be accessed from the Publications page on the website www.srg.caa.co.uk

4.4.3.2 The improved performance of these receivers means that interference from licensed FM broadcast stations should no longer occur.

4.4.3.3 Users of ILS/VOR navigation and VHF communications receivers that do not comply with FM immunity standards may continue to suffer interference from FM broadcast stations. Furthermore, the CAA will no longer conduct an assessment of the potential for interference to such receivers, nor promulgate areas where interference is likely to be suffered.

5 Miscellaneous

5.1 To be developed.

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