

# ICAO Annex 10 Volume III

## Chapter 9. Aircraft Addressing System

9.1 The aircraft address shall be one of 16 777 214 twenty-four-bit aircraft addresses allocated by ICAO to the State of Registry or common mark registering authority and assigned as prescribed in the Appendix to this Chapter.

### Appendix to Chapter 9. A World-Wide Scheme for the Allocation, Assignment and Application of Aircraft Addresses

#### 1. General

1.1 Global communications, navigation and surveillance systems shall use an individual aircraft address composed of 24 bits. At any one time, no address shall be assigned to more than one aircraft. The assignment of aircraft addresses requires a comprehensive scheme providing for a balanced and expandable distribution of aircraft addresses applicable world-wide.

#### 2. Description of the scheme

2.1 Table 9-1 provides for blocks of consecutive addresses available to States for assignment to aircraft. Each block is defined by a fixed pattern of the first 4, 6, 9, 12 or 14 bits of the 24-bit address. Thus, Blocks of different sizes (1 048 576, 262 144, 32 768, 4 096 and 1 024 consecutive addresses respectively) are made available.

#### 3. Management of the scheme

3.1 The International Civil Aviation Organization (ICAO) shall administer the scheme so that appropriate international distribution of aircraft addresses can be maintained.

#### 4. Allocation of aircraft addresses

4.1 Blocks of aircraft addresses shall be allocated by ICAO to the State of Registry or common mark registering authority. Address allocations to States shall be as shown in Table 9-1.

4.2 A State of Registry or common mark registering authority shall notify ICAO when allocation to that State of an additional block of addresses is required for assignment to aircraft.

4.3 In the future management of the scheme, advantage shall be taken of the blocks of aircraft addresses not yet allocated. These spare blocks shall be distributed on the basis of the relevant ICAO

region:

Addresses starting with bit combination 00100: AFI region

Addresses starting with bit combination 00101: SAM region

Addresses starting with bit combination 0101: EUR and NAT regions

Addresses starting with bit combination 01100: MID region

Addresses starting with bit combination 01101: ASIA region

Addresses starting with bit combination 1001: NAM and PAC regions

Addresses starting with bit combination 111011: CAR region

In addition, aircraft addresses starting with bit combinations 1011, 1101 and 1111 have been reserved For future use.

4.4 Any future requirement for additional aircraft addresses shall be accommodated through co-ordination between ICAO and the States of Registry or common mark registering authority concerned. A request for additional aircraft addresses shall only be made by a registering authority when at least 75 percent of the number of addresses already allocated to that registering authority have been assigned to aircraft.

4.5 ICAO shall allocate blocks of aircraft addresses to non-Contracting States upon request.

## 5. Assignment of aircraft addresses

5.1 When required for use by suitably equipped aircraft entered on a national or international register, individual aircraft addresses within each block shall be assigned to aircraft by the State of Registry or common mark registering authority.

5.2 Aircraft addresses shall be assigned to aircraft in accordance with the following principles:

- a) at any one time, no address shall be assigned to more than one aircraft;
- b) only one address shall be assigned to an aircraft, irrespective of the composition of equipment on board;
- c) the address shall not be changed except under exceptional circumstances and shall not be changed during flight;
- d) when an aircraft changes its State of Registry, the previously assigned address shall be relinquished and a new address shall be assigned by the new registering authority;
- e) the address shall serve only a technical role for addressing and identification of aircraft and shall not be used to convey any specific information; and
- f) the addresses composed of 24 ZEROs or 24 ONEs shall not be assigned to aircraft.

## 6. Application of aircraft addresses

6.1 The aircraft addresses shall be used in applications which require the routing of information to or from individual suitably equipped aircraft.

Note 1. -- Examples of such applications are the aeronautical telecommunication network (ATN), SSR Mode S and airborne collision avoidance system (ACAS).

Note 2. -- This Standard does not preclude assigning the aircraft addresses for special applications associated with the general applications defined therein. Examples of such special applications are the utilization of the 24-bit address in a pseudo-aeronautical earth station to monitor the aeronautical mobile-satellite service ground earth station and in the fixed Mode S transponders (reporting the on-the-ground status as specified in Volume IV, 3.1.2.6.10.1.2) to monitor the Mode S ground station operation. Address assignments for special applications are to be carried out in conformance with the procedure established by the State to manage the 24-bit address assignments to aircraft.

6.2 An address consisting of 24 ZEROs shall not be used for any application.

## Table 9-1. Allocation of aircraft addresses to States

Note. -- The left-hand column of the 24-bit address patterns represents the most significant bit (MSB) of the address.

State	Number of addresses in block					Allocation of blocks of addresses (a dash represents a bit value equal to 0 or 1)
	1024	4096	32768	262144	1048576	
Afghanistan		*				0 1 1 1 0 0 0 0 0 0 0 0 - - - - - - - - - - -
Albania	*					0 1 0 1 0 0 0 0 0 0 0 1 0 0 - - - - - - - - - - -
Algeria			*			0 0 0 0 1 0 1 0 0 - - - - - - - - - - - - - - - - -
Angola		*				0 0 0 0 1 0 0 1 0 0 0 0 - - - - - - - - - - - -
Antigua and Barbuda	*					0 0 0 0 1 1 0 0 1 0 1 0 0 0 - - - - - - - - - - -
Argentina				*		1 1 1 0 0 0 - - - - - - - - - - - - - - - - - -
Armenia	*					0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 - - - - - - - - - - -
Australia				*		0 1 1 1 1 1 - - - - - - - - - - - - - - - - - -
Austria			*			0 1 0 0 0 1 0 0 0 - - - - - - - - - - - - - - - - -
Azerbaijan	*					0 1 1 0 0 0 0 0 0 0 0 0 0 1 0 - - - - - - - - - - -
Bahamas		*				0 0 0 0 1 0 1 0 1 0 0 0 - - - - - - - - - - - -
Bahrain		*				1 0 0 0 1 0 0 1 0 1 0 0 - - - - - - - - - - - -
Bangladesh		*				0 1 1 1 0 0 0 0 0 0 1 0 - - - - - - - - - - - -
Barbados	*					0 0 0 0 1 0 1 0 1 0 1 0 0 0 - - - - - - - - - - -
Belarus	*					0 1 0 1 0 0 0 1 0 0 0 0 0 0 - - - - - - - - - - -
Belgium			*			0 1 0 0 0 1 0 0 1 - - - - - - - - - - - - - - - - -
Belize	*					0 0 0 0 1 0 1 0 1 0 1 1 0 0 - - - - - - - - - - -
Benin	*					0 0 0 0 1 0 0 1 0 1 0 0 0 0 - - - - - - - - - - -
Bhutan	*					0 1 1 0 1 0 0 0 0 0 0 0 0 0 - - - - - - - - - - -
Bolivia		*				1 1 1 0 1 0 0 1 0 1 0 0 - - - - - - - - - - - -
Bosnia and Herzegovina	*					0 1 0 1 0 0 0 1 0 0 1 1 0 0 - - - - - - - - - - -
Botswana	*					0 0 0 0 0 0 1 1 0 0 0 0 0 0 - - - - - - - - - - -
Brazil				*		1 1 1 0 0 1 - - - - - - - - - - - - - - - - - -
Brunei Darussalam	*					1 0 0 0 1 0 0 1 0 1 0 1 0 0 - - - - - - - - - - -
Bulgaria			*			0 1 0 0 0 1 0 1 0 - - - - - - - - - - - - - - - - -
Burkina Faso		*				0 0 0 0 1 0 0 1 1 1 0 0 - - - - - - - - - - - -
Burundi		*				0 0 0 0 0 1 1 0 0 1 0 - - - - - - - - - - - -
Cambodia		*				0 1 1 1 0 0 0 0 1 1 1 0 - - - - - - - - - - - -
Cameroon		*				0 0 0 0 0 1 1 0 1 0 0 - - - - - - - - - - - -
Canada				*		1 1 0 0 0 0 - - - - - - - - - - - - - - - - - -
Cape Verde	*					0 0 0 0 1 0 0 1 0 1 1 0 0 0 - - - - - - - - - - -
Central African Republic		*				0 0 0 0 0 1 1 0 1 1 0 0 - - - - - - - - - - - -

Chad		*				000010000100----- -
Chile		*				111010000000----- -
China				*		011110----- -
Colombia		*				000010101100----- -
Comoros	*					00000011010100----- -
Congo		*				000000110110----- -
Cook Islands	*					10010000000100----- -
Costa Rica		*				000010101110----- -
Côte d'Ivoire		*				000000111000----- -
Croatia	*					01010000000111----- -
Cuba		*				000010110000----- -
Cyprus	*					01001100100000----- -
Czech Republic			*			010010011----- -
Democratic People's Republic of Korea			*			011100100----- -
Democratic Republic of the Congo		*				000010001100----- -
Denmark			*			010001011----- -
Djibouti	*					00001001100000----- -
Dominican Republic		*				000011000100----- -
Ecuador		*				111010000100----- -
Egypt			*			000000010----- -
El Salvador		*				000010110010----- -
Equatorial Guinea		*				000001000010----- -
Eritrea	*					00100000001000----- -
Estonia	*					01010001000100----- -
Ethiopia		*				000001000000----- -
Fiji		*				110010001000----- -
Finland			*			010001100----- -
France				*		001110----- -
Gabon		*				000000111110----- -
Gambia		*				000010011010----- -
Georgia	*					01010001010000----- -
Germany				*		001111----- -
Ghana		*				000001000100----- -
Greece			*			010001101----- -
Grenada	*					00001100110000----- -

Guatemala		*				000010110100----- -
Guinea		*				000001000110----- -
Guinea-Bissau	*					00000100100000----- -
Guyana		*				000010110110----- -
Haiti		*				000010111000----- -
Honduras		*				000010111010----- -
Hungary			*			010001110----- -
Iceland		*				010011001100----- -
India				*		10000----- -
Indonesia			*			100010100----- -
Iran, Islamic Republic of			*			011100110----- -
Iraq			*			011100101----- -
Ireland		*				010011001010----- -
Israel			*			011100111----- -
Italy				*		001100----- -
Jamaica		*				000010111110----- -
Japan				*		100001----- -
Jordan			*			011101000----- -
Kazakhstan	*					01101000001100----- -
Kenya		*				000001001100----- -
Kiribati	*					11001000111000----- -
Kuwait		*				011100000110----- -
Kyrgyzstan	*					01100000000100----- -
Lao People's Democratic Republic		*				011100001000----- -
Latvia	*					01010000001011----- -
Lebanon			*			011101001----- -
Lesotho	*					00000100101000----- -
Liberia		*				000001010000----- -
Libyan Arab Jamahiriya			*			000000011----- -
Lithuania	*					01010000001111----- -
Luxembourg	*					01001101000000----- -
Madagascar		*				000001010100----- -
Malawi		*				000001011000----- -
Malaysia			*			011101010----- -
Maldives	*					00000101101000----- -
Mali		*				000001011100----- -
Malta	*					01001101001000----- -

Marshall Islands	*					10010000000000- - - - - -
Mauritania	*					00000101111000- - - - - -
Mauritius	*					00000110000000- - - - - -
Mexico			*			000011010- - - - -
Micronesia, Federated States of	*					01101000000100- - - - - -
Monaco	*					01001101010000- - - - - -
Mongolia	*					01101000001000- - - - - -
Morocco			*			000000100- - - - -
Mozambique		*				000000000110- - - - - -
Myanmar		*				011100000100- - - - - -
Namibia	*					00100000000100- - - - - -
Nauru	*					11001000101000- - - - - -
Nepal		*				011100001010- - - - - -
Netherlands, Kingdom of the			*			010010000- - - - -
New Zealand			*			110010000- - - - -
Nicaragua		*				000011000000- - - - - -
Niger		*				000001100010- - - - - -
Nigeria		*				000001100100- - - - - -
Norway			*			010001111- - - - -
Oman	*					01110000110000- - - - - -
Pakistan			*			011101100- - - - -
Palau	*					01101000010000- - - - - -
Panama		*				000011000010- - - - - -
Papua New Guinea		*				100010011000- - - - - -
Paraguay		*				111010001000- - - - - -
Peru		*				111010001100- - - - - -
Philippines			*			011101011- - - - -
Poland			*			010010001- - - - -
Portugal			*			010010010- - - - -
Qatar	*					00000110101000- - - - - -
Republic of Korea			*			011100011- - - - -
Republic of Moldova	*					01010000010011- - - - - -
Romania			*			010010100- - - - -
Russian Federation					*	0001- - - - -
Rwanda		*				000001101110- - - - - -
Saint Lucia	*					11001000110000- - - - - -
Saint Vincent and the Grenadines	*					00001011110000- - - - - -

Samoa	*					10010000001000----- -
San Marino	*					01010000000000----- -
Sao Tome and Principe	*					00001001111000----- -
Saudi Arabia			*			011100010----- -
Senegal		*				000001110000----- -
Seychelles	*					00000111010000----- -
Sierra Leone	*					00000111011000----- -
Singapore			*			011101101----- -
Slovakia	*					01010000010111----- -
Slovenia	*					01010000011011----- -
Solomon Islands	*					10001001011100----- -
Somalia		*				000001111000----- -
South Africa			*			000000001----- -
Spain				*		001101----- -
Sri Lanka			*			011101110----- -
Sudan		*				000001111100----- -
Suriname		*				000011001000----- -
Swaziland	*					00000111101000----- -
Sweden			*			010010101----- -
Switzerland			*			010010110----- -
Syrian Arab Republic			*			011101111----- -
Tajikistan	*					01010001010100----- -
Thailand			*			100010000----- -
The former Yugoslav Republic of Macedonia	*					01010001001000----- -
Togo		*				000010001000----- -
Tonga	*					11001000110100----- -
Trinidad and Tobago		*				000011000110----- -
Tunisia			*			000000101----- -
Turkey			*			010010111----- -
Turkmenistan	*					01100000000110----- -
Uganda		*				000001101000----- -
Ukraine			*			010100001----- -
United Arab Emirates		*				100010010110----- -
United Kingdom				*		010000----- -
United Republic of Tanzania		*				000010000000----- -
United States					*	1010----- -
Uruguay		*				111010010000----- -
Uzbekistan	*					01010000011111----- -

						-
Vanuatu	*					1 1 0 0 1 0 0 1 0 0 0 0 0 0 - - - - - - - - -
Venezuela			*			0 0 0 0 1 1 0 1 1 - - - - - - - - - - - - - - -
Viet Nam			*			1 0 0 0 1 0 0 0 1 - - - - - - - - - - - - - - -
Yemen		*				1 0 0 0 1 0 0 1 0 0 0 0 - - - - - - - - - - -
Zambia		*				0 0 0 0 1 0 0 0 1 0 1 0 - - - - - - - - - - -
Zimbabwe	*					0 0 0 0 0 0 0 0 0 1 0 0 0 0 - - - - - - - - -
<b>Non-Contracting States</b>						
Yugoslavia			*			0 1 0 0 1 1 0 0 0 - - - - - - - - - - - - - - -
<b>Other allocations</b>						
ICAO (1)			*			1 1 1 1 0 0 0 0 0 - - - - - - - - - - - - - - -
ICAO (2)	*					1 0 0 0 1 0 0 1 1 0 0 1 0 0 - - - - - - - - -
ICAO (2)	*					1 1 1 1 0 0 0 0 1 0 0 1 0 0 - - - - - - - - -

Remarks:

- (1). ICAO or its designate administers this block for assigning temporary aircraft addresses if and when an immediate action is to be taken to avoid the assignment of an unauthorized 24-bit aircraft address. It is intended that the temporary address is to be relinquished as soon as practicable when the 24bit aircraft address is assigned by a State of Registry or common mark registering authority in conformance with the provisions in 4, 5 and 6 of this Appendix. The State concerned is then expected to inform ICAO or its designate regarding the release of the temporary address.
- (2). Block allocated for special use in the interest of flight safety.

Source: ICAO Annex 10 Vol III.