



*Transmittal Note*

1/9/06

**SUPPLEMENT TO**

**ANNEX 10 — AERONAUTICAL TELECOMMUNICATIONS**

**VOLUME III**

**(PART I — DIGITAL DATA COMMUNICATION SYSTEMS;  
PART II — VOICE COMMUNICATION SYSTEMS)**

**(First Edition)**

1. The attached Supplement supersedes all previous Supplements to Annex 10, Volume III, and includes differences notified by Contracting States up to 1 September 2006 with respect to all amendments up to and including Amendment 80.
  2. This Supplement should be inserted at the end of Annex 10, Volume III (First Edition). Additional differences and revised comments received from Contracting States will be issued at intervals as amendments to this Supplement.
-



**SUPPLEMENT TO  
ANNEX 10 — AERONAUTICAL TELECOMMUNICATIONS**

**Volume III  
(Part I — Digital data communication systems;  
Part II — Voice communication systems)**

**(First Edition)**

Differences between the national regulations and practices of Contracting States and the corresponding International Standards and Recommended Practices contained in Annex 10, Volume III, as notified to ICAO in accordance with Article 38 of the *Convention on International Civil Aviation* and the Council's resolution of 21 November 1950.

SEPTEMBER 2006

---

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**RECORD OF AMENDMENTS TO SUPPLEMENT**

<i>No.</i>	<i>Date</i>	<i>Entered by</i>	<i>No.</i>	<i>Date</i>	<i>Entered by</i>

**AMENDMENTS TO ANNEX 10, VOLUME III, ADOPTED OR APPROVED BY THE COUNCIL  
SUBSEQUENT TO THE FIRST EDITION ISSUED JULY 1995**

<i>No.</i>	<i>Date of adoption or approval</i>	<i>Date applicable</i>	<i>No.</i>	<i>Date of adoption or approval</i>	<i>Date applicable</i>
71	12/3/96	7/11/96	80	25/2/05	24/11/05
72	12/3/97	6/11/97			
73	19/3/98	5/11/98			
74	18/3/99	4/11/99			
75	13/3/00	2/11/00			
76	12/3/01	1/11/01			
77	27/2/02	28/11/02			
78	5/3/03	27/11/03			
79	23/2/04	25/11/04			

**1. Contracting States which have notified ICAO of differences**

The Contracting States listed below have notified ICAO of differences which exist between their national regulations and practices and the International Standards and Recommended Practices of Annex 10, Volume III (First Edition) up to and including Amendment 80, or have commented on implementation.

The page numbers shown for each State and the dates of publication of those pages correspond to the actual pages in this Supplement.

<i>State</i>	<i>Date of notification</i>	<i>Pages in Supplement</i>	<i>Date of publication</i>
Australia	20/10/05	1-2	1/9/06
Canada	24/10/05	1	1/9/06
China (Hong Kong SAR)	24/10/05	1	1/9/06
France	14/11/05	1	1/9/06
Germany	20/10/05	1	1/9/06
New Zealand	27/11/05	1	1/9/06
Norway	19/8/05	1	1/9/06
Sweden	24/10/05	1	1/9/06
United Kingdom	28/4/06	1-2	1/9/06

**2. Contracting States which have notified ICAO that no differences exist**

<i>State</i>	<i>Date of notification</i>	<i>State</i>	<i>Date of notification</i>
Argentina	14/11/05	Romania	20/10/05
Austria	14/6/05	Saudi Arabia	24/8/05
Azerbaijan	26/8/05	Singapore	5/7/05
Belgium	27/10/05	Slovakia	4/11/05
Bolivia	2/6/05	Slovenia	30/6/05
Chile	14/10/05	South Africa	13/5/05
China	13/6/05	Switzerland	29/7/05
Denmark	22/6/05	The former Yugoslav Republic of Macedonia	4/7/05
Egypt	13/7/05	Tunisia	18/7/05
Gambia	8/6/05	Turkey	5/7/05
Greece	5/10/05	United Arab Emirates	24/5/05
India	27/7/06	United States	4/8/06
Iran (Islamic Republic of)	30/7/05	Uruguay	4/4/06
Ireland	24/10/05	Uzbekistan	11/10/05
Lithuania	16/8/05	Venezuela	12/7/05
Malaysia	16/6/05		
Republic of Moldova	12/9/05		

**3. Contracting States from which no information has been received**

Afghanistan	Georgia	Nigeria
Albania	Ghana	Oman
Algeria	Grenada	Pakistan
Andorra	Guatemala	Palau
Angola	Guinea	Panama
Antigua and Barbuda	Guinea-Bissau	Papua New Guinea
Armenia	Guyana	Paraguay
Bahamas	Haiti	Peru
Bahrain	Honduras	Philippines
Bangladesh	Hungary	Poland
Barbados	Iceland	Portugal
Belarus	Indonesia	Qatar
Belize	Iraq	Republic of Korea
Benin	Israel	Russian Federation
Bhutan	Italy	Rwanda
Bosnia and Herzegovina	Jamaica	Saint Kitts and Nevis
Botswana	Japan	Saint Lucia
Brazil	Jordan	Saint Vincent and the Grenadines
Brunei Darussalam	Kazakhstan	Samoa
Bulgaria	Kenya	San Marino
Burkina Faso	Kiribati	Sao Tome and Principe
Burundi	Kuwait	Senegal
Cambodia	Kyrgyzstan	Serbia
Cameroon	Lao People's Democratic Republic	Seychelles
Cape Verde	Latvia	Sierra Leone
Central African Republic	Lebanon	Solomon Islands
Chad	Lesotho	Somalia
Colombia	Liberia	Spain
Comoros	Libyan Arab Jamahiriya	Sri Lanka
Congo	Luxembourg	Sudan
Cook Islands	Madagascar	Suriname
Costa Rica	Malawi	Swaziland
Côte d'Ivoire	Maldives	Syrian Arab Republic
Croatia	Mali	Tajikistan
Cuba	Malta	Thailand
Cyprus	Marshall Islands	Timor-Leste
Czech Republic	Mauritania	Togo
Democratic People's Republic of Korea	Mauritius	Tonga
Democratic Republic of the Congo	Mexico	Trinidad and Tobago
Djibouti	Micronesia (Federated States of)	Turkmenistan
Dominican Republic	Monaco	Uganda
Ecuador	Mongolia	Ukraine
El Salvador	Morocco	United Republic of Tanzania
Equatorial Guinea	Mozambique	Vanuatu
Eritrea	Myanmar	Viet Nam
Estonia	Namibia	Yemen
Ethiopia	Nauru	Zambia
Fiji	Nepal	Zimbabwe
Finland	Netherlands	
Gabon	Nicaragua	
	Niger	

**4. Paragraphs with respect to which differences have been notified**

<i>Paragraph</i>	<i>Differences notified by</i>	<i>Paragraph</i>	<i>Differences notified by</i>
<b>Part II</b>			
Chapter 2		2.3.3.1	Australia Germany United Kingdom
2.1.1.3	Australia	2.3.3.2	Australia Germany United Kingdom
2.1.1.4	Australia	2.3.3.3	Australia United Kingdom
2.2.1.2	United Kingdom	2.3.3.4	Australia
2.2.2.2	United Kingdom	2.4.1.1.1	Australia
2.2.2.3	United Kingdom	2.4.1.1.2	Australia
2.3.1.1	Australia	2.4.1.2.1	Australia
2.3.1.2	Australia United Kingdom	2.4.1.4.1	Australia
2.3.1.3	Australia United Kingdom	2.4.1.4.2	Australia
2.3.1.4	United Kingdom	2.4.1.4.4	Australia
2.3.2.1	Australia United Kingdom	2.4.1.4.6	Australia
2.3.2.2.1	Australia United Kingdom	2.4.1.4.7	Australia
2.3.2.3	Australia United Kingdom	2.4.1.5.1	Australia
2.3.2.4	Australia United Kingdom	2.4.1.5.2	Australia
2.3.2.5	Australia United Kingdom	2.4.1.6.1	Australia
2.3.2.6	Australia United Kingdom	2.4.1.6.2	Australia
2.3.2.7	Australia	2.4.1.7.1	Australia
2.3.2.8.1	Australia United Kingdom	2.4.1.7.2	Australia
2.3.2.8.2	Australia United Kingdom	2.4.1.8.1	Australia
2.3.2.8.3	Australia	2.4.1.8.2	Australia
2.3.2.8.4	Australia United Kingdom		
2.3.2.8.4.1	Australia United Kingdom	Chapter 5	
2.3.3	Canada China (Hong Kong SAR) New Zealand Norway Sweden	General	Australia
		5.1.1	New Zealand
		5.1.3	New Zealand
		5.1.4	New Zealand Sweden
		5.1.5	New Zealand Sweden
		5.1.9	France Norway
		5.2.1.8	New Zealand Norway Sweden





**PART II****CHAPTER 2**

2.1.1.3 Australia's frequency band for airborne equipment is 118 to 136 MHz.

*Remarks.* Australian legislation is under review.

2.1.1.4 Antenna polarization is not specified for airborne component.

*Remarks.* Australian legislation is under review. In practice, equipment will be compliant, as it would not otherwise function.

2.3.1.1 Standards for the 25 kHz and 8.33 kHz channel spacings are not specified for airborne equipment.

2.3.1.3

2.3.2.1 *Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international operations are required to conform to the rules of the country in which they are operating.

2.3.1.2 No Standards are specified for effective radiated power for airborne equipment.

*Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international operations are required to conform to the rules of the country in which they are operating.

2.3.2.2.1\* No Standards are specified for receiver sensitivity for airborne equipment.

2.3.2.3

2.3.2.4

2.3.2.5

2.3.2.6\*

2.3.2.7\*

*Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international operations are required to conform to the rules of the country in which they are operating.

2.3.2.8.1 No Standards are specified for interference immunity for VDL technology for airborne equipment.

*Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international operations are required to conform to the rules of the country in which they are operating.

2.3.2.8.2 No Standards are specified for the receiving function of installations intended to be used in independent operations of services applying DSB-AM and VDL technology

2.3.2.8.3

2.3.2.8.4

2.3.2.8.4.1

*Remarks.* Legislation under development will propose compliance.

\* Recommended Practice

- 2.3.3.1 Australian legislation does not specify FM immunity requirements for VHF communications  
 2.3.3.2 receiving systems.  
 2.3.3.3  
 2.3.3.4\*  
*Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international operations are required to conform to the rules of the country in which they are operating.
- 2.4.1.1.1 Standards presently available for airborne equipment do not conform to the Annex Standards.  
 1.5 to 30 MHz wider frequency band specific IAQ RTCA DO-163.  
*Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international operations are required to conform to the rules of the country in which they are operating.
- 2.4.1.1.2 Standards presently available for airborne equipment do not conform to the Annex Standards.  
 2.4.1.2.1  
 2.4.1.4.1 *Remarks.* Australian legislation is under review. In practice, Australian aircraft engaged in international  
 2.4.1.4.2 operations are required to conform to the rules of the country in which they are operating.  
 2.4.1.4.4\*  
 2.4.1.4.6  
 2.4.1.4.7  
 2.4.1.5.1  
 2.4.1.5.2  
 2.4.1.6.1  
 2.4.1.6.2  
 2.4.1.7.1  
 2.4.1.7.2  
 2.4.1.8.1  
 2.4.1.8.2

## CHAPTER 5

- General Australia permits the use in aircraft of portable hand-held ELTs that do not fully meet the technical characteristics specified in the Annex. Fixed installation ELTs in aircraft meet the current Annex Standards. Legislation under development will require compliance with Amendment 78 to Annex 10 requiring 406 MHz capability after 1 January 2005.

---

\* Recommended Practice

**PART II**

**CHAPTER 2**

- 2.3.3      Receivers are not required to meet this Standard in Canada because the frequency requirements are engineered using a system of prediction techniques, coordination procedures and controls of FM station operating parameters, to eliminate interference problems and ensure that aviation operations can be conducted safely without the need for this requirement.
-



**PART II****CHAPTER 2**

- 2.3.3 VHF communication receivers, required to be carried by Hong Kong registered aircraft over 5 700 kg maximum total weight authorized for the purposes of operations under Instrument Flight Rules in accordance with the applicable airworthiness and operational regulations, must be of a type approved as complying with the improved FM broadcast immunity standard.

*Remarks:* Hong Kong registered aircraft of 5 700 kg maximum total weight authorized or less may continue to be operated under Instrument Flight Rules with non-immune VHF communications receivers provided that the receivers are identified so as to alert flight crew to the potential risk of interference.

---



**PART II**

**CHAPTER 5**

5.1.9 g) France does not yet have information on the colour of the aircraft in its ELT register.





**PART II****CHAPTER 2**

- 2.3.3.1      The requirement for operators to install VHF communication receivers in aircraft by 1 January 1998 which meet the FM immunity requirements spelled out in this paragraph will only be applied to new receivers. Old VHF COM equipment not meeting the new immunity criteria after 1 January 1998 will not have to be modified solely to meet the new FM immunity requirements.
- 2.3.3.2

The FM interferences produced in old VHF COM receivers, if any, are negligible (unless further studies prove otherwise), and in any case the forthcoming 8.33 kHz receivers will provide the new FM immunity.

---



**PART II****CHAPTER 2**

2.3.3 Not a mandatory requirement.

**CHAPTER 5**

5.1.1 ELT installed prior to 1 April 1997 shall meet the requirements of TSO C91 or TSO C91a and when they become unserviceable they shall be replaced with an ELT meeting the requirements of C19a or TSO C126.

*Remarks:* CAR 91 A15 (f).

5.1.3 Not implemented.

5.1.4

5.1.5

5.2.1.8 ELT installed prior to 1 April 1997 shall meet the requirements of TSO C91 or TSO C91a and when they become unserviceable they shall be replaced with an ELT meeting the requirements of C19a or TSO C126.

*Remarks:* CAR 91 A15 (f).

---



## **PART II**

### **CHAPTER 2**

- 2.3.3            The requirement for operators to install VHF communication receivers in aircraft by 1 January 1998, that meet FM immunity requirement according to this paragraph, will only be applied to new receivers. Old VHF COM receivers not meeting the new FM immunity criterion after 1 January 1998 do not have to be modified to meet the new requirements.

### **CHAPTER 5**

- 5.1.9 b)        Norway does not comply with this paragraph.
- 5.1.9 c)        Norway does not comply with this paragraph.
- 5.2.1.8        Norway does not comply with this paragraph. The requirement will only be applicable to new equipment. Old equipment does not have to be modified solely to meet the requirement.
-



**PART II**

**CHAPTER 2**

2.3.3                      Not applied below FL 245.

**CHAPTER 5**

5.1.4                      Only aircraft operated in accordance with JAR-OPS comply.

5.1.5

5.2.1.8                    Not applied.

---





**PART II****CHAPTER 2**

- 2.2.1.2\* The UK interprets “On a high percentage of occasions” to be the 95 percentile value and thus requires the effective radiated power to be such as to provide a field strength of at least 188 microvolts per metre (minus 101 dBW/m<sup>2</sup>).
- 2.2.2.2 The UK specifies receiver sensitivity in terms of the minimum level of input signal (dBm), modulated 30 per cent by a sinewave of 1 kHz, applied to the receiver which is required to produce a SINAD ratio of 12 dB at the audio output measured with a psophometric filter.
- 2.2.2.3 CAP 670 COM 02 Appendix includes both 25 kHz and 8.33 kHz channel spacings specified in values of kHz and not percentage of the assigned frequency.
- 2.3.1.2 The UK does not specify the effective radiated power but provides for classes of transmitter grouped into two classifications of 16 watts and 4 watts minimum output power, having an estimated radio-line-of-sight distance of 200 nm and 100 nm, respectively. A recommendation that the output power be limited to 25 watts to reduce interference is also made.
- 2.3.1.3 The UK does not specify the adjacent channel power but defines a spectral mask for the transmitter occupied spectrum.
- 2.3.1.4 The UK specifies the modulation as “not less than 70 per cent” when modulated by a 1 000 Hz audio frequency signal.
- 2.3.2.1 The UK does not define the frequency stability of receiver.
- 2.3.2.2.1\* The UK specifies the sensitivity in terms of a radio frequency input signal not exceeding 10 microvolts (-93 dBm), with 30 per cent modulation at 1 000 Hz to produce a signal plus noise to noise ratio of 6 dBm with an audio output power not less than 10 dB below the declared output power.
- 2.3.2.3 The UK does not state the effective acceptance bandwidth but defines the effective bandwidth relative to the selected channel frequency of the receiver at the 6 dB and 60 dB points.
- 2.3.2.4
- 2.3.2.5 The specification the UK applies only states the adjacent channel rejection for 8.33 kHz channel spacing. For 8.33 kHz channel spacing an adjacent channel rejection of 45 dB is specified at the first upper and lower adjacent channels for defined desired and interfering signals.
- 2.3.2.6\* The UK does not specify the adjacent channel rejection for 25 kHz, 50 kHz or 100 kHz channel spacing.
- 2.3.2.8.1 Not yet implemented.
- 2.3.2.8.2
- 2.3.2.8.4
- 2.3.2.8.4.1

\* Recommended Practice

- 2.3.3.1 The UK requires that for aircraft (including helicopters) of 5 700 kg MTWA or less non-immune
  - 2.3.3.2 VHF Comm receivers may be permitted and the aircraft permitted to operate under IFR provided
  - 2.3.3.3 that crews are alerted to potential sources of interference.
- 

\* Recommended Practice

1/9/06