

# **THE SIERRA LEONE CIVIL AVIATION REGULATIONS**



## **PART 10E - AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION**

**DECEMBER 2022**

## **PREAMBLE**

WHEREAS, The Director-General shall have power to perform such acts, including the conduct of investigations, to issue and amend orders, rules, regulations and procedures pursuant to and in accordance with the Civil Aviation Act, 2019.

WHEREAS, the Director- General shall have power to publish all reports, orders, decisions, rules, and regulations issued under Civil Aviation Act, 2019 in such form and manner as may be best adapted for public information and use;

NOW THEREBY, The Director General under the powers given by Article 17(1) and 17(2)(a) of the Civil Aviation Act, 2019 issue the following regulations which supersedes previous regulations on Aeronautical Radio Frequency Spectrum Utilization.

### **1. SHORT TITLE**

This regulation may be cited as Sierra Leone Civil Aviation Regulation “SLCAR Part 10E- Aeronautical Radio Frequency Spectrum Utilization”

### **2. EFFECTIVE DATE**

This Regulation shall come into force as of 21<sup>st</sup> December 2022.



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Director General

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## GENERAL

In transposing ICAO Annex 10 Vol V to develop these regulations, Amendments 1-89 have been considered.

### 1. DEFINITIONS

When the following terms are used in this regulation, they have the following meanings:

- a) **Alternative means of communication.** A means of communication provided with equal status, and in addition to the primary means.
- b) **Double channel simplex.** Simplex using two frequency channels, one in each direction.
- c) **Duplex.** A method in which telecommunication between two stations can take place in both directions simultaneously.
- d) **Frequency channel.** A continuous portion of the frequency spectrum appropriate for a transmission utilizing a specified class of emission.
- e) **Offset frequency simplex.** A variation of single channel simplex wherein telecommunication between two stations is effected by using in each direction frequencies that are intentionally slightly different but contained within a portion of the spectrum allotted for the operation.
- f) **Operational control communications.** Communications required for the exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of a flight.
- g) **Primary means of communication.** The means of communication to be adopted normally by aircraft and ground stations as a first choice where alternative means of communication exist.
- h) **Simplex.** A method in which telecommunication between two stations takes place in one direction at a time.
- i) **Single channel simplex.** Simplex using the same frequency channel in each direction.
- j) **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.

### 2. DISTRESS FREQUENCIES

#### 2.1 Frequencies for emergency locator transmitters (ELTs) for search and rescue

2.1.1 All emergency locator transmitters carried in compliance with Standards of SLCAR Part 6 A, B and C shall operate on both 406 MHz and 121.500 MHz.

#### 2.2 Search and Rescue frequencies

2.2.1 Where there is a requirement for the use of high frequencies for search and rescue scene of action coordination purposes, the frequencies 3 023 kHz and 5 680 kHz shall be employed.

**2.2.2** Where specific frequencies are required for communication between rescue coordination centres and aircraft engaged in search and rescue operations, they shall be selected regionally from the appropriate aeronautical mobile frequency bands in light of the nature of the provisions made for the establishment of search and rescue aircraft.

### **3. UTILIZATION OF FREQUENCIES BELOW 30 MHZ**

#### **3.1 Method of operations**

**3.1.1** In the aeronautical mobile service, single channel simplex shall be used in radiotelephone communications utilizing radio frequencies below 30 MHz in the bands allocated exclusively to the aeronautical mobile (R) service.

**3.1.2** Assignment of single sideband channels

**3.1.2.1** Single sideband channels shall be assigned in accordance with SLCAR (Aeronautical Telecommunications – Communication systems) Part 10C Sub Part II

**3.1.2.2** For the operational use of the channels concerned, administrations shall take into account the provisions of 27/19 of Appendix 27 of the ITU Radio Regulations.

**3.1.2.3** The use of aeronautical mobile (R) frequencies below 30 MHz for international operations shall be coordinated as specified in Appendix 27 of the ITU Radio Regulations as follows:

a) 27/19 The International Civil Aviation Organization (ICAO) co-ordinates radio communications of the aeronautical mobile (R) service with international aeronautical operations and this Organization shall be consulted in all appropriate cases in the operational use of the frequencies in the Plan.

**3.1.2.4** Where international operating requirements for HF communications cannot be satisfied by the Frequency Allotment Plan at Part 2 of Appendix 27 to the Radio Regulations, an appropriate frequency may be assigned as specified in Appendix 27 by the application of the following provisions:

a) 27/20 It is recognized that not all the sharing possibilities have been exhausted in the Allotment Plan contained in this Appendix. Therefore, in order to satisfy particular operational requirements which are not otherwise met by this Allotment Plan, Administrations may assign frequencies from the aeronautical mobile (R) bands in areas other than those to which they are allotted in this Plan. However, the use of the frequencies so assigned must not reduce the protection to the same frequencies in the areas where they are allotted by the Plan below that determined by the application of the procedure defined in Part I, Section II B of this Appendix.

b) 27/21 When necessary to satisfy the needs of international air operations Administrations may adapt the allotment procedure for the assignment of aeronautical mobile (R) frequencies, which assignments shall then be the subject of prior agreement between Administrations affected.

c) 27/22 The co-ordination described in No. 27/19 shall be effected where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of No. 27/21 are unsatisfactory.

**3.1.2.5** The use of classes of emission J7B and J9B shall be subject to the following provisions of Appendix 27:

- a) 27/12 For radiotelephone emissions, the audio frequencies will be limited to between 300 and 2 700 Hz and the occupied bandwidth of other authorized emissions will not exceed the upper limit of J3E emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than J3E are concerned, provided that the limits of unwanted emissions are met (see Nos. 27/73 and 27/74).
- b) 27/14 On account of the possibility of interference, a given channel shall not be used in the same allotment area for radiotelephony and data transmissions.
- c) 27/15 The use of channels derived from the frequencies indicated in 27/18 for the various classes of emissions other than J3E and H2B will be subject to special arrangements by the Administrations concerned and affected in order to avoid harmful interference which may result from the simultaneous use of the same channel for several classes of emission.

**3.1.3** Assignment of frequencies for aeronautical operational control communications

**3.1.3.1** Worldwide frequencies for aeronautical operational control communications are required to enable aircraft operating agencies to meet the obligations prescribed in SLCAR (Operations of Aircraft) Part 6A. Assignment of these frequencies shall be in accordance with the following provisions of Appendix 27:

- a) 27/9 A world-wide allotment area is one in which frequencies are allotted to provide long distance communications between an aeronautical station within that allotment area and aircraft operating anywhere in the world.
- b) 27/217 The world-wide frequency allotments appearing in the tables at No. 27/213 and Nos. 27/218 to 27/231, except for carrier (reference) frequencies 3 023 kHz and 5 680 kHz, are reserved for assignment by administrations to stations operating under authority granted by the administration concerned for the purpose of serving one or more aircraft operating agencies. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station anywhere in the world for exercising control over regularity of flight and for safety of aircraft. Worldwide frequencies are not to be assigned by administrations for MWARA, RDARA and VOLMET purposes. Where the operational area of an aircraft lies wholly within a RDARA or sub-RDARA boundary, frequencies allotted to those RDARAs and sub-RDARAs shall be used.

**3.2** NDB frequency management

**3.2.1** NDB frequency management shall take into account the following:

- a) the interference protection required at the edge of the rated coverage;
- b) the application of the figures shown for typical ADF equipment;
- c) the geographical spacings and the respective rated coverages;

- d) the possibility of interference from spurious radiation generated by non-aeronautical sources (e.g. electric power services, power line communication systems, industrial radiation, etc.).

**4. UTILIZATION OF FREQUENCIES ABOVE 30 MHZ**

**4.1 Utilization in the frequency band 117.975 – 137.000 MHz**

**4.1.1 General allotment of frequency band 117.975 – 137.000 MHz**

**4.1.1.1** The block allotment of the frequency band 117.975 – 137.000 MHz shall be as shown in Table 4-1.

**4.1.2 Frequency separation and limits of assignable frequencies**

**4.1.2.1** In the frequency band 117.975 – 137.000 MHz, the lowest assignable frequency shall be 118.000 MHz and the highest 136.975 MHz.

**4.1.2.2** The minimum separation between assignable frequencies in the aeronautical mobile (R) service shall be 8.33 kHz.

**4.1.2.3** Requirements for mandatory carriage of equipment specifically designed for 8.33 kHz channel spacing shall be made on the basis of regional air navigation agreements which specify the airspace of operation and the implementation time scales for the carriage of equipment, including the appropriate lead time.

**4.1.2.4** Requirements for mandatory carriage of equipment specifically designed for VDL Mode 2, VDL Mode 3 and VDL Mode 4 shall be made on the basis of regional air navigation agreements which specify the airspace of operation and the implementation timescales for the carriage of equipment, including the appropriate lead time.

**4.1.2.4.1** The agreement indicated in 4.1.2.4 shall provide at least two years’ notice of mandatory carriage of airborne systems.

**4.1.2.5** In regions where 25 kHz channel spacing (DSB-AM and VHF digital link (VDL)) and 8.33 kHz DSB-AM channel spacing are in operation, the publication of the assigned frequency or channel of operation shall conform to the channel contained in Table 4-1 (bis).

	Block allotment frequencies (MHz)	Worldwide utilization	Remarks
a)	118.000-121.450 inclusive	International and National Aeronautical Mobile Services	Specific international allotments will be determined in the light of regional agreement. National assignments are covered by the provisions in 4.1.4.8 and 4.1.4.9.
b)	121.500	Emergency frequency	See 4.1.3.1. In order to provide a guard band for the protection of the aeronautical emergency frequency, the nearest assignable frequencies on either side of 121.500 MHz are 121.450 MHz and 121.550 MHz.
c)	121.550-121.9917 inclusive	International and National Aerodrome Surface Communications	Reserved for ground movement, pre-flight checking, air traffic services clearances, and associated operations.
d)	122.000-123.050 inclusive	National Aeronautical Mobile Services	Reserved for national allotments. National assignments are covered by the provisions of 4.1.4.8 and 4.1.4.9.
e)	123.100	Auxiliary frequency SAR	See 4.1.3.4. In order to provide a guard band for the protection of the aeronautical auxiliary frequency, the

			nearest assignable frequencies on either side of 123.100 MHz are 123.050 MHz and 123.150 MHz.
f)	123.150-123.6917 inclusive	National Aeronautical Mobile Services	Reserved for national allotments, with the exception of 123.450 MHz which is also used as an air-to-air communications channel (see g)). National assignments are covered by the provisions of 4.1.4.8 and 4.1.4.9.
g)	123.450	Air-to-air communications	Designated for use as provided for in 4.1.3.2.
h)	123.700-129.6917 inclusive	International and National Aeronautical Mobile Services	Specific international allotments will be determined in light of regional agreement. National assignments are covered by the provisions in 4.1.4.8 and 4.1.4.9.
i)	129.700-130.8917 inclusive	National Aeronautical Mobile Services	Reserved for national allotments but may be used in whole or in part, subject to regional agreement, to meet the requirements mentioned in 4.1.6.1.3.
j)	130.900-136.875 inclusive	International and National Aeronautical Mobile Services	Specific international allotments will be determined in light of regional agreement. National assignments are covered by the provisions in 4.1.4.8 and 4.1.4.9.
k)	136.900-136.975 inclusive	International and National Aeronautical Mobile Services	Reserved for VHF air-ground data link communications.

**Table 4-1 (bis). Channelling/frequency pairing**

Frequency(Megahertz)	Time slot*	Channel Spacing (Kilohertz)	Channel
118.0000		25	118.000
118.0000	A	25	118.001
118.0000	B	25	118.002
118.0000	C	25	118.003
118.0000	D	25	118.004
118.0000		8.33	118.005
118.0083		8.33	118.010
118.0167		8.33	118.015
118.0250	A	25	118.021
118.0250	B	25	118.022
118.0250	C	25	118.023
118.0250	D	25	118.024
118.0250		25	118.025
118.0250		8.33	118.030
118.0333		8.33	118.035
118.0417		8.33	118.040
118.0500		25	118.050
118.0500	A	25	118.051
118.0500	B	25	118.052
118.0500	C	25	118.053
118.0500	D	25	118.054
118.0500		8.33	118.055
118.0583		8.33	118.060
118.0667		8.33	118.065
118.0750	A	25	118.071
118.0750	B	25	118.072
118.0750	C	25	118.073



118.0750	D	25	118.074
118.0750		25	118.075
118.0750		8.33	118.080
118.0833		8.33	118.085
118.0917		8.33	118.090
118.1000		25	118.100
* Time slot indication is for VDL Mode 3 channels. (Ref. SLCAR Aeronautical Telecommunications – Communication Systems) Part 10 C Sub part I for characteristics of VDL Mode 3 operation)			

#### **4.1.3 Frequencies used for particular functions**

##### **4.1.3.1 Emergency channel**

**4.1.3.1.1** The emergency channel (121.500 MHz) shall be used only for genuine emergency purposes, as broadly outlined in the following:

- a) to provide a clear channel between aircraft in distress or emergency and a ground station when the normal channels are being utilized for other aircraft;
- b) to provide a VHF communication channel between aircraft and aerodromes, not normally used by international air services, in case of an emergency condition arising;
- c) to provide a common VHF communication channel between aircraft, either civil or military, and between such aircraft and surface services, involved in common search and rescue operations, prior to changing when necessary to the appropriate frequency;
- d) to provide air-ground communication with aircraft when airborne equipment failure prevents the use of the regular channels;
- e) to provide a channel for the operation of emergency locator transmitters (ELTs), and for communication between survival craft and aircraft engaged in search and rescue operations;
- f) to provide a common VHF channel for communication between civil aircraft and intercepting aircraft or intercept control units and between civil or intercepting aircraft and air traffic services units in the event of interception of the civil aircraft.

**4.1.3.1.2** The frequency 121.500 MHz shall be provided at:

- a) all area control centres and flight information centres;
- b) aerodrome control towers and approach control offices serving international aerodromes and international alternate aerodromes; and
- c) any additional location designated by the appropriate ATS authority, where the provision of that frequency is considered necessary to ensure immediate reception of distress calls or to serve the purposes specified in 4.1.3.1.1.

**4.1.3.1.3** The frequency 121.500 MHz shall be available to intercept control units where considered necessary for the purpose specified in 4.1.3.1.1 f).

**4.1.3.1.4** The emergency channel shall be guarded continuously during the hours of service of the units at which it is installed.

**4.1.3.1.5** The emergency channel shall be guarded on a single channel simplex operation basis.

**4.1.3.1.6** The emergency channel (121.500 MHz) shall be available only with the characteristics as contained in SLCAR (Aeronautical Telecommunications – Communication Systems) Part 10C Sub Part II.

#### **4.1.3.2 Air-to-air communications channel**

**4.1.3.2.1** An air-to-air VHF communications channel on the frequency of 123.450 MHz shall be designated to enable aircraft engaged in flights over remote and oceanic areas out of range of VHF ground stations to exchange necessary operational information and to facilitate the resolution of operational problems.

**4.1.3.2.2** In remote and oceanic areas out of range of VHF ground stations, the air-to-air VHF communications channel on the frequency 123.450 MHz shall be available only with the characteristics as contained in SLCAR (Aeronautical Telecommunications – Communication Systems) Part 10C Sub Part II.

#### **4.1.3.3 Common signalling channels for VDL**

**4.1.3.3.1** Common signalling channel VDL Mode 2. The frequency 136.975 MHz is reserved on a worldwide basis to provide a common signalling channel (CSC) to the VHF digital link Mode 2 (VDL Mode 2). This CSC uses the Mode 2 VDL modulation scheme and carrier sense multiple access (CSMA).

**4.1.3.3.2** Common signalling channels VDL Mode 4. In areas where VDL Mode 4 is implemented, the frequencies 136.925 MHz and 113.250 MHz shall be provided as common signalling channels (CSCs) to the VHF digital link Mode 4 (VDL Mode 4). These CSCs use the VDL Mode 4 modulation scheme.

#### **4.1.3.4 Auxiliary frequencies for search and rescue operations**

**4.1.3.4.1** Where a requirement is established for the use of a frequency auxiliary to 121.500 MHz, as described in 4.1.3.1.1 c), the frequency 123.100 MHz shall be used.

**4.1.3.4.2** The auxiliary search and rescue channel (123.100 MHz) shall be available only with the characteristics as contained in SLCAR Part 10C Sub Part II.

#### **4.1.4 Provisions concerning the deployment of VHF frequencies and the avoidance of harmful interference**

**4.1.4.1** The geographical separation between facilities operating on the same frequency shall, except where there is an operational requirement for the use of common frequencies for groups of facilities, be such that the protected service volume of one facility is separated from the protected service volume of another facility by a distance not less than that required to provide a desired to undesired signal ratio of 20 dB or by a separation distance not less than the sum of the distances to the associated radio horizon of each service volume, whichever is smaller.

**4.1.4.2** For areas where frequency assignment congestion is severe or is anticipated to become severe, the geographical separation between facilities operating on the same frequency shall, except where there is an operational requirement for the use of common frequencies for groups of facilities, be such that the protected service volume of one facility is separated from the protected service volume of another facility by a distance not less than that required to provide a desired to undesired signal ratio of 14 dB or by a separation distance not less than the sum of the distances to the associated radio horizon of each service

volume, whichever is smaller. This provision shall be implemented on the basis of a regional air navigation agreement.

**4.1.4.3** The geographical separation between facilities operating on adjacent channels shall be such that points at the edge of the protected service volume of each facility are separated by a distance sufficient to ensure operations free from harmful interference.

**4.1.4.4** The protection height shall be a height above a specified datum associated with a particular facility, such that below it harmful interference is improbable.

**4.1.4.5** The protection height to be applied to functions or to specific facilities shall be determined regionally, taking into consideration the following factors:

- a) the nature of the service to be provided;
- b) the air traffic pattern involved;
- c) the distribution of communication traffic;
- d) the availability of frequency channels in airborne equipment;
- e) probable future developments.

**4.1.4.6** Where the protected service volume is less than operationally desirable, separation between facilities operating on the same frequency shall not be less than that necessary to ensure that an aircraft at the upper edge of the operational service volume of one facility does not come above the radio horizon with respect to emissions belonging to the service of adjacent facilities.

**4.1.4.7** The geographical separation between VHF VOLMET stations shall be determined regionally and shall be such that operations free from harmful interference are secured throughout the protected service volume of each VOLMET station.

**4.1.4.8** In the frequency band 117.975 – 137.000 MHz, the frequencies used for National Aeronautical Mobile Services, unless worldwide or regionally allotted to this specific purpose, shall be so deployed that no harmful interference is caused to facilities in the International Aeronautical Mobile Services.

**4.1.4.9** The problem of inter-State interference shall be resolved by consultation between Sierra Leone and the state concerned.

**4.1.4.10** The communication coverage provided by a VHF ground transmitter shall, in order to avoid harmful interference to other stations, be kept to the minimum consistent with the operational requirement for the function.

#### **4.1.5 Method of operation**

**4.1.5.1** Single channel simplex operation shall be used in the frequency band 117.975-137.000 MHz at all stations providing service for aircraft engaged in international air navigation.

**4.1.5.2** In addition to the above, the ground-to-air voice channel associated with an ICAO standard radio navigation aid may be used, subject to regional agreement, for broadcast or communication purposes or both.

**4.1.6** Plan of assignable VHF radio frequencies for use in the international aeronautical mobile service

**4.1.6.1** The frequencies in the frequency band 117.975-137.000 MHz for use in the aeronautical mobile (R) service shall be selected from the lists in 4.1.6.1.1.

**4.1.6.1.1** List of assignable frequencies:

List A — assignable frequencies in regions or areas where 25 kHz frequency assignments are deployed:

118.000 – 121.450 MHz in 25 kHz steps

121.550 – 123.050 MHz in 25 kHz steps

123.150 – 136.975 MHz in 25 kHz steps

List B — assignable frequencies in regions or areas where 8.33 kHz frequency assignments are deployed:

118.000 – 121.450 MHz in 8.33 kHz steps

121.550 – 123.050 MHz in 8.33 kHz steps

123.150 – 136.475 MHz in 8.33 kHz steps

**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.

## **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:

a) Band 108-111.975 MHz:

1) ILS in accordance with 4.2.2 and SLCAR Part 10A; 3.7.3.5,

2) VOR provided that:

i) no harmful adjacent channel interference is caused to ILS;

ii) only frequencies ending in either even tenths or even tenths plus a twentieth of a megahertz are used.

3) GNSS ground-based augmentation system (GBAS) in accordance with SLCAR (Aeronautical Telecommunications – Radio Navigational Aid) Part 10A, provided that no harmful interference is caused to ILS and VOR.

b) Band 111.975 – 117.975 MHz:

1) VOR;

2) GNSS ground-based augmentation system (GBAS) in accordance with SLCAR (Aeronautical Telecommunications – Radio Navigational Aid) Part 10A, provided that no harmful interference is caused to VOR.

**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** 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 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.

See 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.

**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 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) 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) 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.

**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 SLCAR Part 10A, 3.3.5.7 all existing VORs within interference range of a facility utilizing 50 kHz channel spacing shall be modified to comply with the provisions of SLCAR (Aeronautical Telecommunications – Radio Navigational Aid) Part 10A.

**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.

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

**4.3.1** DME operating channels bearing the suffix “X” or “Y” in Table A, of the SLCAR Part 10A shall be chosen on a general basis without restriction.

**4.3.2** DME channels bearing the suffix “W” or “Z” in Table A, of the SLCAR Part 10A 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
- 2) 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
- 2) a date prescribed by the Council giving a period of two years or more following approval of the regional agreement concerned.

**4.3.3** For regional assignment planning, the channels for DME associated with MLS shall be selected from Table 4-2.

**Table 4-2**

<i>Group</i>	<i>DME channels</i>	<i>Associated paired VHF channels</i>	<i>Remarks</i>	<i>Assignment procedure</i>
1	EVEN 18X to 56X	ILS 100 kHz spacings	Would normally be used if a single DME is paired with ILS and is part of MLS	for general use (see 4.3.1)
2	EVEN 18Y to 56Y	ILS 50 kHz spacings		
3	EVEN 80Y to 118Y	VOR 50 kHz spacings Odd tenths of a MHz		
4	ODD 17Y to 55Y	VOR 50 kHz spacings		
5	ODD 81Y to 119Y	VOR 50 kHz spacings Even tenths of a MHz		
6	EVEN 18W to 56W	No associated paired VHF channel		for later use (see 4.3.2)
7	EVEN 18Z to 56Z	No associated paired VHF channel		
8	EVEN 80Z to 118Z	No associated paired VHF channel		
9	ODD 17Z to 55Z	No associated paired VHF channel		
10	ODD 81Z to 119Z	No associated paired VHF channel		

Note.— DME channels in Groups 1 and 2 may be used in association with ILS and/or MLS. DME channels in Groups 3, 4 and 5 may be used in association with VOR or MLS.

**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 SLCAR (Aeronautical Telecommunications – Radio Navigational Aids) Part 10A. 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.

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

**4.4.1** The MLS channels shall be selected from Table A of SLCAR (Aeronautical Telecommunications – Radio Navigational Aids) Part 10A.

**4.4.2** For regional planning purposes, MLS channels shall be selected in accordance with the conditions specified in 4.3.3 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.