

**UK SEARCH AND RESCUE
LAND SEARCH AND RESCUE CHANNELS**

**IMPLEMENTATION AND CONTROL
OF THE UNITED KINGDOM VHF HIGH BAND
LAND SEARCH AND RESCUE RADIO CHANNELS**

FEBRUARY, 2007

FOREWORD

The UK Search and Rescue (SAR) Operators Group has prepared this Document through its SAR Communications Working Group in consultation with ACPO, ACPO(S), MCA and Ofcom. The Document gives information concerning the management and use of land SAR radio channels.

This Document replaces all previous Implementation and Control documents.

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List of Acronyms used in the Document:

ACPO	- Association of Chief Police Officers
ACPOS	- Association of Chief Police Officers in Scotland
ALSAR	- Association of Lowland Search and Rescue
ARCC	- Aeronautical Rescue Co-ordination Centre
ASA	- Ambulance Service Association
BCRC	- British Cave Rescue Council
CFOA	- Chief Fire Officers Association
CTCSS	- Continuous Tone-Controlled Squelch System
CRS	- Coastguard Rescue Service
CWG	- Communications Working Group (of the UK SAR Operators Group)
dBW	- Decibel (deciBel) Watts
DTMF	- Dual-tone, Multi-frequency
erp	- Effective Radiated Power
FFSK	- Fast Frequency Shift Keying
FM	- Frequency Modulation
GPS	- Global Positioning System
HMCG	- Her Majesty's Coast Guard
kHz	- KiloHertz
MCA	- Maritime and Coastguard Agency
MHz	- Megahertz
MoD	- Ministry of Defence
MRCC	- Maritime Rescue Co-ordination Centre
MR-EW	- Mountain Rescue England and Wales
MRC of S	- Mountain Rescue Committee of Scotland
MRTs	- Mountain Rescue Teams
Ofcom	- Office of Communications
PITO	- Police Information Technology Organisation
RAF	- Royal Air Force
RNLI	- Royal National Lifeboat Institution
R/T	- Radio Telephony
RTTE	- Radio and Telecommunications Terminal Equipment
SAR	- Search and Rescue
SE	- Scottish Executive – (Change and Corporate Services)
TDC	- Team Default Channel - now called Team Working Channel (TWC)
TWC	- Team Working Channel
UK	- United Kingdom
VHF	- Very High Frequency

LAND SEARCH AND RESCUE RADIO CHANNELS

IMPLEMENTATION AND CONTROL

1. INTRODUCTION

1.1 In the United Kingdom (UK), the Police Services are responsible for the preservation and protection of life on land. This responsibility regularly involves search and rescue (SAR) in rural and remote areas and the Police Services are assisted in this particular role by Ministry of Defence (MoD), Maritime & The Coastguard Rescue Service and civilian SAR teams from the following organisations :

The Mountain Rescue England and Wales (MR-EW)

The Mountain Rescue Committee of Scotland (MRC of S)

The British Cave Rescue Council (BCRC)

The Association of Lowland Search and Rescue (ALSAR)

The Coastguard Rescue Service (CRS)

Any other persons or organisations as determined from time to time

1.2 To assist in ensuring effective SAR response, co-ordination and planning, United Kingdom Search and Rescue (UK SAR) has been provided with dedicated VHF radio channels for land SAR and their purpose and conditions of use are described and identified in this document and its Annexes.

1.3 It is imperative that the use of these VHF Channels for UK land SAR (land SAR channels) be controlled in such a manner that operational efficiency is maximised, interference risks are minimised and users are readily identifiable. The following paragraphs outline a procedural framework by which this will be achieved.

1.4 The UK land SAR channels are to be used in accordance with the National Band Plan (Annex E). It is essential that Channel 62a be monitored continuously by all land SAR party mobiles, base stations and airborne units engaged on land SAR incidents and training.

2. THE SAR COMMUNICATIONS WORKING GROUP (CWG) OF THE UK SAR OPERATORS GROUP

2.1 The relationship between all elements of search and rescue (aeronautical, land and maritime) and their various Government Departments was restructured in June 2000 and resulted in the establishment of the UK SAR Strategic Committee. The structure, membership and terms of reference for the UK SAR Strategic Committee and its UK SAR Operators Group are set out in the publication '*Search and Rescue Framework for the United Kingdom of Great Britain and Northern Ireland* (Copies of which can be obtained from the Maritime and Coastguard Agency at:

http://www.mcga.gov.uk/c4mca/mcga-uk_sar_framework_document.pdf).

The SAR Communications Working Group (CWG) is a standing committee of the UK SAR Operators Group. Further information may be found on the UK SAR Web Site – <http://www.uk-sar.org.uk>

2.2 The CWG is responsible for exercising administrative control over the use of the UK land SAR channels.

2.3 The membership of the CWG consists of representatives from the following bodies:

- (i) Association of Chief Police Officers of England and Wales (ACPO)
- (ii) Association of Chief Police Officers in Scotland (ACPOS)
- (iii) Maritime and Coastguard Agency (MCA)
- (iv) Ministry of Defence (MoD)
- (v) Mountain Rescue England and Wales (MR-EW)
- (vi) Mountain Rescue Committee of Scotland (MRC of S)
- (vii) Scottish Executive (Change and Corporate Services)
- (viii) Ambulance Service Association (ASA)
- (ix) Chief Fire Officers Association (CFOA)
- (x) Office of Communications (Ofcom)
- (xi) Police Information Technology Organisation (PITO)
- (xii) Royal National Lifeboat Institution (RNLI)

Other organisations or experts may be invited to attend from time to time.

2.4 The CWG will administer the use of the land SAR channels in consultation with the frequency regulatory bodies. This will require that the CWG ensures that only applications from bona-fide SAR organisations are approved to use the land SAR channels. The CWG will issue call signs to SAR teams and will decide what action, if any, is to be taken in the event of interference or misuse of the land SAR channels.

2.5 Terms of Reference of the CWG :

2.5.1 To consider any matters referred to it by the UK SAR Operators Group. The CWG may also respond to any enquiries made by competent operators.

2.5.2 To review developments in communications and their application to maritime, aeronautical and land search and rescue.

2.5.3 To make recommendations and develop policies for implementation by land SAR operators.

2.5.4 To develop policies and procedures to enhance land SAR communications.

2.5.5 To encourage harmonisation and maintain the integrity of UK SAR communications.

- 2.5.6 To establish criteria for considering applications for UK land SAR channel utilisation
- 2.5.7 To provide a process for call sign approval and co-ordination.
- 2.5.8 To maintain records and publish information on approved users and their call signs.
- 2.5.9 To make recommendations and develop draft policies to improve maritime, aeronautical and land SAR communications.
- 2.5.10 To make recommendations to UKSAR Operators Group regarding a more integrated and cross discipline SAR communications plan for UKSAR.

3. RADIO REGULATORY CONTROL

- 3.1 Ofcom is the responsible licensing and radio regulatory authority. Control of channels used for SAR will be carried out by the MCA, Scottish Executive and Ofcom as appropriate (see Annexes). Use of all SAR channels is monitored and misuse will be reported to the relevant authority.

4. RADIO EQUIPMENT

- 4.1 All equipment, however supplied, must conform to the technical parameters defined in Annexes A, B, C and D.
- 4.2 The responsibility for ensuring that equipment conforms to current specifications rests with the user though Ofcom and MCA may request checks.

5. OPERATIONAL USE OF LAND SEARCH AND RESCUE CHANNELS

- 5.1 Use of the land SAR channels is considered to be an essential requirement for land SAR operations involving Mountain Rescue teams, SAR helicopters (MoD and MCA), Emergency Service helicopters, fixed-wing SAR aircraft, the Police, Ambulance Service and HM Coastguard (HMCG).
- 5.2 Cave Rescue Teams may utilise the UK land SAR channels, primarily for operating above ground.
- 5.3 HMCG uses VHF Channel Ø (Zero) as a primary SAR channel where VHF Channel 16 (International maritime distress, calling and safety channel) is not appropriate.
- 5.4 Land SAR channels will be utilised to provide intercommunication between all SAR operators and Emergency Services engaged in land SAR operations.
- 5.5 Radio procedure on these channels should conform with that provided in the UK SAR, Land SAR, Communications Manual, Section 14. This can be found on the UK SAR website - www.uk-sar.org.uk, under 'Workgroups', then 'Communications'.

5.6 So that some organisation and structure is maintained, it is essential that Standard Operating Procedures be followed and these are provided on the same website and section as described on sub-para 5.5.

6. AUTHORITY

6.1 This Document is issued by the SAR Communications Working Group on behalf of the UK SAR Operators Group

ANNEX A

TECHNICAL PARAMETERS - LAND SAR VHF CHANNELS

1. Frequencies

Channel No	Frequency	Purpose
24a	157.200 MHz	Casualty/Land SAR party winching
24b	161.800 MHz	Team Working Channel
62a	156.125 MHz	Common, inter-agency & helicopters
62b	160.725 MHz	Land SAR Team Working Channel
63a	156.175 MHz	Land SAR Team Working Channel
63b	160.775 MHz	Land SAR Team Working Channel
64a	156.225 MHz	Land SAR Team Working Channel
64b	160.825 MHz	Land SAR Team Working Channel
85a	157.275 MHz	Land SAR Team Working Channel
85b	161.875 MHz	Land SAR Team Working Channel

2. General Use

- 2.1 These channels are available for Land SAR use throughout the United Kingdom and in accordance with the National Band Plan (Annex E)

3. Bandwidth and Modulation

- 3.1 These channels are to be operated with a 25kHz bandwidth and Frequency Modulation - Emission Code (EC) G3E

4. Transmit Power

- 4.1 All hand-portable equipment is subject to a maximum erp of 5 Watts (7dBW). The **upper** erp limit for mobile and base stations (subject to approval) will be 25 Watts (14dBW). **Operators should use the minimum power setting consistent with adequate communication – this applies particularly during major or multiple incidents.**

5. Frequency Pairing

- 5.1 As set out in the National Band Plan (Annex E)

6. Equipment Conformity

- 6.1 It is a condition of licensing that all equipment operated in UK/SE frequency bands conforms to the Radio and Telecommunications Terminal Equipment (RTTE) Directive (99/5/EC), and meets the minimum requirements as specified in the appropriate UK

interface requirement document. More details can be found on the Ofcom website at: www.ofcom.org.uk.

- 6.2 Separate approval is required from the Civil Aviation Authority (CAA) for aircraft radio equipment installations in civil aircraft

7. Conditions of Use

- 7.1 These frequencies are assigned for use in the United Kingdom by the MCA where further queries in respect to use should be directed (see 7.8).
- 7.2 Dual-tone, multi-frequency (DTMF) is available to be adopted as the need arises.
- 7.3 Short duration data-burst, for GPS positioning and text messaging, may be used on all Land SAR VHF channels with the exception of Channel 24a.
- 7.4 The Continuous Tone-Controlled Squelch System (CTCSS) must not be used on Channels 62a, 24a or 53a. From 31st December, 2009, CTCSS tone 218.1 Hz is to be nationally applied and used with the eight TWCs. No other tone may be used. This common CTCSS tone will allow interoperability, reduce general interference and effectively mute the data-burst. The CTCSS national implementation date of 31st December, 2009 has been chosen as it coincides with the need of all Land SAR radios to be reprogrammed anyway, because of the need for Channel 53a bandwidth settings to be changes from 25 kHz to 12.5 kHz.
- 7.5 Until 31st December, 2009, the CTCSS tine 218.1 Hz may be used on the TWCs as required in England and Wales, provided that it can easily be removed (both receive and transmit) either by reprogramming and duplicating each TWC; one version with CTCSS and one without, or with a feature that disables CTCSS for the duration of that incident. Therefore, during a large-scale incident, if a CTCSS-equipped team shares a TWC with another team that has not incorporated CTCSS in its radios, the team using CTCSS must quickly disable the feature. 'No CTCSS' will be the default position. If teams fail to establish contact on an allocated, shared TWC, initial contact and arrangements for the TWC must then be made using Channel 62a.
- 7.6 Registration of the locations of all base-stations in the United Kingdom must be authorised by the MCA and their location notified to the local Ofcom Enforcement Officer as well as the Ofcom Head Office. Details are available at <http://www.ofcom.org.uk/about/csg/offices/>
- 7.7 Call signs collated and agreed for use in United Kingdom by the CWG will be notified to the MCA for inclusion in the appropriate licence schedule. The official list of call signs will be published on the UKSAR website - - www.uk-sar.org.uk
- 7.8 In cases of serious and/or long-term interference, it may be necessary for additional constraints to be applied. Reports of interference will be investigated by Ofcom, and following their report, the solution should be agreed by the CWG.
- 7.9 Any queries concerning the use of the frequencies listed above should be addressed as follows:

Maritime and Coastguard Agency
Spring Place
105 Commercial Road
Southampton
SO15 1EG

ANNEX B

TECHNICAL PARAMETERS - LAND SAR VHF CHANNELS, ENGLAND & WALES

1. Frequencies (managed by MCA)

1.1 Frequencies (Simplex)

Channel No	Frequency
53a	158.650 MHz
91	155.350 MHz
92	147.475 MHz
96	147.350 MHz
96d	146.025 MHz

1.2 Frequencies (Duplex)

Subject to local co-ordination, channels 91 and 92 can be configured to operate as a duplex channel, as follows:

Channel No	Duplex Frequencies	
94	Base Transmit: 155.350 MHz,	Base Receive: 147.475 MHz

2. Geographical Restrictions

- 2.1 Channels 91, 92 and 94 must not be used in Northern Ireland, the Isle of Man and at fixed locations on the north-west coast of England and the coast of Wales. It is envisaged that these restrictions will be rescinded at some future date when the co-channel users have migrated to other radio systems and vacated the current assignments.
- 2.2 Channel 96 must not be used within 70km of Police HQ Ripley Butterley Hall Derbyshire NGR: SK 405 513. It is envisaged that these restrictions will be rescinded at some future date when Derbyshire Constabulary have migrated to other radio systems and vacated the current assignments.
- 2.3 Channel 96d shall only be used within 70km of Police HQ Ripley Butterley Hall Derbyshire NGR: SK 405 513. It is envisaged that this channel will be withdrawn at some future date when Derbyshire Constabulary have migrated to other radio systems and vacated the current assignments of channel 96.

3. Use of Channel 53a

- 3.1 Channel 53a is to be used as a reserve channel, primarily to substitute for Channels 62a or 24a, if either are badly affected by interference. For airborne use, the maximum authorised altitude for this channel will be 6,500 feet.

4. Transmit Power

- 4.1 A limit of 5 Watts erp (7dBW) will be placed on hand-portable radios and there will be a 25 Watts (14dBW) erp maximum for base and land mobile equipment.

5. Bandwidth and Modulation

- 5.1 Channel 53a (158.650 MHz) may be used with a bandwidth of 25 kHz until 31st December 2009. Channels 91, 92, 94 and 96 must be used with a bandwidth of 12.5 kHz. Frequency Modulation - Emission Code (EC) G3E.

6. Equipment Conformity:

- 6.1 It is a condition of licensing that all equipment operating on land SAR channels conforms to the Radio and Telecommunications Terminal Equipment (RTTE) Directive (99/5/EC), and meets the minimum requirements as specified in the appropriate UK interface document. Further details can be found on the Ofcom web site at www.ofcom.org.uk.
- 6.2 Separate approval is required from the Civil Aviation Authority (CAA) for aircraft radio equipment installations in civil aircraft.

7. Conditions of Use

- 7.1 Channels 91, 92, 94 and 96 only - options for sequential tone signalling are: Continuous Tone-Controlled Squelch Systems (CTCSS) and dual-tone, multi-frequency (DTMF). Both are available for adoption as the need arises. Electronic repeat, or connection of the common core system to the public switched telephone network, should not be adopted as part of the common core system, but may be considered in special circumstances.

8. Relays

- 8.1 Where teams require extended communications beyond normal range of equipment in use and when topography or costs do not justify the establishment of fixed, portable repeaters may be utilised.

ANNEX C

TECHNICAL PARAMETERS AND USE IN SCOTLAND

1. Frequencies

Channel	Frequency	Purpose
53a	158.6500 MHz	Reserve, primarily for 62a/24a
91	155.3500 MHz	Simplex (see Ch 94)
92	147.4750 MHz	Duplex (see Ch 94 & Ch 95)
93	152.8500 MHz	Simplex (see Ch 95)
94	Ch 91 paired with Ch 92	Duplex (92 is mobile transmit)
95	Ch 92 paired with Ch 93	Duplex. (92 is mobile transmit)
96	147.3500 MHz	Simplex.
98	168.3500 MHz	Simplex FFSK
99	174.0375 MHz	Simplex FFSK
100	Ch 98 paired with Ch 99	Duplex FFSK
101	70.8500 MHz	Link frequency used with 102
102	81.0000 MHz	Link frequency used with 101
105	86.3125 MHz	Simplex – Rebroadcast feeder

2. General Channel Use and Regional Restrictions in Scotland

- 2.1 **Channel 53a** can be used in Scotland subject to the technical parameters in (3) below.
- 2.2 **Channel 91** can only be used in the Lothian & Borders and Central Police Force areas.
- 2.3 **Channel 92** can be used in Northern, Grampian, Fife, Central, Tayside and Lothian & Borders Police Force areas subject to the technical parameters in (3) below.
- 2.4 **Channel 93** can be used in Northern, Grampian, Fife and Tayside Police Force areas subject to the technical parameters in (3) below.
- 2.5 **Channel 94** can be used in Lothian & Borders and Central Police Force areas and subject to the technical parameters in (3) below.
- 2.6 **Channel 95** can be used in Northern, Grampian, Tayside, Fife and Central Police Force areas subject to the technical parameters in (3) below.
- 2.7 **Channels 100** is to be used as a duplex data channel for GPS tracking information.

- 2.8 **Channels 101 and 102** can be used in Northern, Grampian, Tayside, Fife Central and Strathclyde Police areas only
- 2.9 **Channel 105** is the low band VHF Primary channel which will be retained for the purpose of a rebroadcast up/down feeder, linking the Base/Control radio with the rebroadcast unit. Cross-band (low band / high band) rebroadcast alleviates interference and receiver desensitising problems often experienced with same band (high band / high band) rebroadcast.
- 2.10 The Scottish Executive will advise on future availability of channels and conditions for use once the future of existing emergency service users of the band becomes clear. It is possible that current restrictions may eventually be relaxed.

3. Technical Parameters

- 3.1 Channels 53a may be used with 25kHz bandwidth until 31st December 2009.
- 3.2 Channel 93 (legacy equipment) can be used with 25kHz spec in Northern and Grampian Police areas until no later than 31 December 2009
Channel (new equipment in Northern and Grampian) plus all other permitted areas must use 12.5kHz spec.
- 3.3 Channel 94 (paired mode) should always use 12.5kHz spec.
- 3.4 Channel 95 (paired mode) should always use 12.5kHz spec.
- 3.5 Channels 91, 92, 98, 99, 100, 101, 102 and 105 must be used with a bandwidth not exceeding 12.5kHz.
- 3.6 Phase Modulation - ITU Emission Code 12K5G3EXN.
- 3.7 Channels 98, 99 (Ch 100) will use Fast Frequency Shift Keying (FFSK) as the data transfer medium

4. Use of Channel 53a

- 4.1 Channel 53a is to be used as a reserve channel, primarily to substitute for 62a or 24a if either is badly affected by outside interference. This will be reviewed and amended prior to the channel's reversion, on 31 Dec 2009, to 12½ kHz channel spacing. For airborne use, the maximum authorised altitude for this channel will be 6,500 feet.

5. Transmit Power

- 5.1 A limit of 5 Watts erp (7dBW) has been placed on hand portable radios and there will be a 25 Watts (14dBW) erp maximum for base and land mobile equipment.
- 5.2 These power limits do not apply for fixed stations which are subject to prior clearance procedures and will have a parameter set recorded against them.

6 Frequency pairing

- 6.1 The following channels / frequencies can be configured to operate as two-frequency duplex channels follows:

Channel 94

Base Transmit: (Ch 91) 155.3500 MHz. Base Receive: (Ch 92) 147.4750 MHz Subject to restrictions listed in 2.5 and 3.3 above.

Channel 95

Base Transmit: (Ch 93) 152.8599 MHz. Base Receive: (Ch 92) 147.4750 MHz subject to restrictions listed in 2.6 and 3.4 above

7. Equipment Conformity

- 7.1 It is a condition of licensing that all equipment conforms to the Radio and Telecommunications Terminal Equipment Directive (R&TTE) (99/5/EC) and meets the minimum requirements as specified in the appropriate UK interface document. Further details can be found on the Ofcom web site at www.ofcom.org.uk
- 7.2 Separate approval is required from the Civil Aviation Authority (CAA) for aircraft radio equipment installations in civil aircraft.

8. Conditions of Use

- 8.1 These frequencies are assigned for use in Scotland by the Scottish Executive (Change and Corporate Services) where further queries in respect to use should be directed (see address below)
- 8.2 Options for sequential tone signalling, Continuous Tone-Controlled Squelch Systems (CTCSS), dual tone multi-frequency (DTMF) and other data modes may be available for adoption, but only after agreement is sought from, and agreed to, by the CISD.
- 8.3 Where teams require extended communications beyond the normal range of equipment in use, or when topography or costs do not justify the establishment of fixed repeaters, portable repeaters or relays can be used.
- 8.4 Registration of the locations of all base-stations in Scotland authorised by the Communications Working Group (CWG) will be collated by the Scottish Executive as appropriate.
- 8.5 Call signs collated and agreed for use in Scotland by the CWG will be notified to the Scottish Executive for inclusion in the appropriate licence schedule. The official list of call signs is published on the UKSAR website - www.uk-sar.org.uk
- 8.6 In cases of serious and/or long-term interference, it may be necessary for additional constraints to be applied. These will be advised by the Scottish Executive after due notification.
- 8.7 Any queries concerning the use of the frequencies listed above in Scotland should be addressed as follows:

Scottish Executive
Change and Corporate Services (Emergency Systems)
W-Spur, Saughton House
Broomhouse Drive
EDINBURGH
EH11 3XD
Tel: 0131 244 5735
Fax: 0131 244 5736

Email: colin.dalziel@scotland.gsi.gov.uk

ANNEX D

OPERATIONAL AND TECHNICAL PARAMETERS FOR VHF CHANNELS Ø (Zero) AND 73

CONTROLLED BY THE MARITIME AND COASTGUARD AGENCY

1. Frequencies (Simplex)

Channel	Frequency
Ø	156.000 MHz
73	156.675 MHz

2. Maritime Use

2.1 VHF Channel Ø (Zero)

Channel Ø is the Primary Coastguard SAR Channel for use with Declared Facilities ¹, when use of VHF Channel 16 is not appropriate. Channel Ø be used for routine communications or for communications during SAR Operations when only Declared Facilities are involved. It is a private channel **for licensed users only** and is controlled by HM Coastguard. All applications to fit and use Channel Ø should be sent to HMCG for approval.

2.2 VHF Channel 73

The use of Channel 73 (and 10 and 67) by HMCG rests on footnote (h) to Appendix 18 of the International Radio Regulations. Within Coastguard, Channel 73 is the second alternative to Channel Ø (Channel 67 is the first alternative). In some parts of the coast, Channel 73 can also be used by HMCG for the broadcast of Maritime Safety Information every 3 hours. The channel is also used by the Royal Navy who have agreed to give preference to traffic on this channel concerned with SAR operations.

2.3 During joint operations involving Coastguard and land SAR units, VHF Channels Ø and 73 will be the primary communications channels.

¹ Declared Facility is a SAR facility which has been designated as being available for civil maritime SAR according to a specific standard or set criteria. Each authority declaring facilities is responsible for :

- Declaring the standard of capability and availability for each facility;
- Maintaining each facility to the declared standard;
- Informing HMCG when there is any change in the declared standard of availability for each facility;
- Informing HMCG of any reason for not making available any facility which has been requested by HMCG.

3. Inland Use for Ground-Air Communications

3.1 VHF Channel 73

HM Coastguard has agreed (see Conditions of Use, below) for VHF Channel 73 to be used by Land SAR Teams for communications with SAR Helicopters during coastal incidents. HMCG has also agreed for VHF Channel 73 to be used by Land SAR Teams when no other means of communications is available.

4. Geographical Restrictions

4.1 Use of Channel 73 should only be used on a non-interference basis in Kyle of Lochalsh, Loch Long, upper and lower Clyde and Isle of Arran.

5. Technical Parameters

5.1 Equipment Conformity

It is a condition of licensing that all equipment operated in UK/SE frequency bands conforms to the Radio and Telecommunications Terminal Equipment (RTTE) Directive (99/5/EC), and meet the relevant UK Interface Requirement. More details can be found on the website at : www.Ofcom.org.uk

Transmit Power :	Base Set and Vehicles	25W erp
	Hand Portables	5W erp

5.2 Separate approval is required from the Civil Aviation Authority (CAA) for aircraft radio equipment installations in civil aircraft.

6. Bandwidth Modulation

6.1 Emission Code (EC) G3E. Channel Spacing (CS) 25 kHz

7. Channel Ø Conditions of Use for Inland SAR purposes

7.1 SAR Helicopters in transit and those engaged on non-mountain rescue flying training normally monitor VHF Channel Ø. Deployed land SAR parties may exceptionally use VHF Channel Ø to call a SAR Helicopter, only when an unexpected mountain medical emergency develops and the helicopter cannot be contacted via a UK Land SAR channel. Air-ground communications thereafter should utilise the UK Land SAR Channel 62a. It is important that this procedure is only used in the circumstances described and should not circumvent the standard Police - ARCC² route for requesting SAR and Air Ambulance helicopter assistance.

7.2 VHF Channel 73 may be used by Land SAR Teams for communications during SAR operations, when no other means of communications are available.

7.3 VHF Channel 73 may be used during training exercises with SAR helicopters when no other means of communications are available. Airborne use of Channel 73 should always

be used at a minimal operational altitude, up to a maximum altitude of 6,500 feet where the terrain so dictates.

- 7.4 VHF Channels Ø and 73 must not be used for inland SAR operations when it is known the transmissions will interfere with maritime communications on those channels. Upon being informed by HMCG that interference is occurring, land SAR users are to vacate said channel immediately.

² ARCC - The RAF Aeronautical Rescue Co-ordination Centre (ARCC) tasks and co-ordinates SAR helicopters, Nimrods and RAF MRTs for land SAR incidents after considering requests from, or placed through, the police.

ANNEX E

NATIONAL LAND SAR BAND PLAN

For **Major Incidents**, see statements at conclusion of Band Plan.

Channel	Frequency	Allocation / Use:	Remarks
62a	156.125MHz (FM, 25kHz)	Simplex R/T. Common, inter-agency and ground to helicopter channel.	To be referred to as Channel 62a . It is mandatory that this channel be constantly monitored by all land SAR parties, mobiles, base stations and airborne units engaged on land SAR incidents. Not to be used as a TWC. Maximum authorised operating ceiling is 6,500 feet
24a	157.200MHz (FM, 25kHz)	Simplex R/T. To be used, at the discretion of the SAR helicopter crew, for communicating briefly with casualty party or Land SAR party winching.	Helicopters and ground parties are to revert to Ch 62a as soon as each winching transaction is complete. Helicopter crews should first decide whether or not the traffic levels on Channel 62a are consistent with safe, uninterrupted communication with casualty / Land SAR parties. No repeaters/rebroadcast units to be used on this channel. Maximum authorised operating ceiling is 6,500 feet
53a	158.650MHz (FM, 25kHz)	Simplex R/T Reserve common channel.	To be referred to as Channel 53a . Used as a reserve common channel. Will revert to 12½kHz band-spacing in 2009. Maximum authorised operating ceiling is 6,500 feet
63a	156.175MHz (FM, 25kHz)	Simplex R/T Team Default Channel Now called Team Working Channel (TWC)	Land SAR Team Working Channel (TWC). Allocated as a default, on a no-ownership basis and distributed so as to avoid interference with other land SAR users. Operationally, may be shared by two or more teams. For Major Incidents – see below – ‘Statements’.
64a	156.225MHz (FM, 25kHz)	Simplex R/T / TWC Team Default Channel	Conditions as 63a, above
24b	161.800MHz (FM, 25kHz)	Simplex R/T / TWC Team Default Channel	Conditions as 63a, above
62b	160.725MHz (FM, 25kHz)	Simplex R/T / TWC Team Default Channel	Conditions as 63a, above
63b	160.775MHz (FM, 25kHz)	Simplex R/T / TWC Team Default Channel	Conditions as 63a, above
64b	160.825MHz (FM, 25kHz)	Simplex R/T / TWC Team Default Channel	Conditions as 63a, above
85a	157.275MHz (FM, 25kHz)	Simplex R/T Team Default Channel	Conditions as 63a, above
85b	161.875MHz (FM, 25kHz)	Simplex R/T Team Default Channel	Conditions as 63a, above

91 (94)	155.3500MHz (FM, 12½kHz)	Duplex R/T Regional restrictions apply	May be used as Simplex R/T or paired with another suitable channel if Channel 92 is regionally restricted.
92 (94)	147.4750MHz (FM, 12½kHz)	Duplex R/T Regional restrictions apply	May be used as Simplex R/T or paired with another suitable channel if Channel 91 is regionally restricted.
93	152.8500MHz (FM, 25kHz)	Simplex R/T Regional restrictions apply	Allocate as required. If not used as repeater pair, could be used for line searches and stretcher-lowering
94 made up of 91 & 92	155.350MHz 147.475MHz	Duplex R/T unless regional restrictions apply	This channel number has been assigned for the channel 91 & 92 combination - repeater pair.
95 made up of 92 & 93	147.4750MHz 152.8500MHz	Duplex R/T Regional restrictions apply	This channel number has been assigned for the 92 & 93 channel combination - repeater pair – Scotland. See Annex C for conditions on Ch 93 in Scotland.

96	147.3500MHz (FM, 12½kHz) (FM, 25kHz in Scotland)	Simplex R/T. Rebroadcast up/down link	This channel has been assigned for use as a rebroadcast feeder link channel (up-down channel). See Annex C for conditions in that apply in Scotland. Geographic restrictions apply - see Annex B
96d	146.0250MHz (FM, 12½kHz)	Simplex R/T. Rebroadcast up/down link	This channel has been assigned for use as a rebroadcast feeder link channel (up-down channel). Geographic restrictions apply - see Annex B
97			Reserved - Not yet allocated
98 (100)	168.350MHz (FM, 12½kHz)	Scotland. GPS Tracking Data	Data transfer medium is FFSK
99 (100)	174.0375MHz (FM, 12½kHz)	Scotland GPS Tracking Data	Data transfer medium is FFSK
100	168.350MHz 174.0375MHz	Duplex Data GPS Tracking Data	This channel pairing (98 & 99) is for the provision of GPS tracking information from portable/mobiles to Base/Control

101	70.8500MHz	Link frequency	Scotland only (used in conjunction with 102)
102	81.0000MHz	Link frequency	Scotland only (used in conjunction with 101)
105	86.3125MHz (FM, 12½kHz)	Low Band SAR Channel	This has been allocated in Scotland as a feeder link for cross-band rebroadcasting.
106	86.3250MHz (FM, 12½kHz)	Low Band Channel	(not in Scotland)

Ø (Zero)	156.0000MHz (FM, 25kHz)	Simplex R/T Emergency Use	(1) Remote land SAR parties with medical emergency, for initial contact with transiting SAR helicopters. (2) For making operational contact with HMCG. (3) Under HMCG control, for HMCG<>land SAR communications
73	156.6750MHz (FM, 25kHz)	Simplex R/T Ground / Air Overflow Channel. Coastal Ground to Air at HMCG's behest.	Can exceptionally be used as an overflow channel for winching if Channels 62a, 24a and 53a are too busy. Channel 73 may be used by land SAR agencies under direct control of CG MRCCs.. This channel can be used by SAR airborne units for coastal SAR communications and for HMCG<>land SAR communication.

Statements:

- 1. Major Incidents** – During major incidents, the incident communication controller(s) can allocate channels as necessary, paying due regard to the advantages of maintaining the local area Team Working Channel arrangement and adjusting the working channels of incoming teams from other regions as necessary. TWCs can be shared by two or more teams. All the RAF MRTs have agreed to use Ch 85a as their shared TWC; this should carefully be borne in mind when considering whether the channel should be re-assigned. Incident controllers must keep all airborne units on Channel 62a except when individual helicopters are winching casualties or Land SAR parties. Channels 62a and 24a must not be used as TWCs. If serious outside interference affects either Channel 62a or 24a, Channel 53a (until 31st Dec 2009) can be temporarily substituted, but beware of the confusion this is likely to cause.
- 2.** Land SAR marine band channels, with the exception of 24a, may be used in conjunction with VHF to UHF / mmO2 Airwave Gateways.
- 3.** Channels 53a, 93 and 96 (in Scotland) will change to 12.5 kHz bandwidth on 31st December, 2009.

4. Even if TWCs are available to SAR or Emergency Services helicopters or their crew members, the TWCs should not be used by Land SAR team members to contact them as to do so would remove the universal helicopter communications access provided by Channel 62a.

ANNEX F

PROCEDURES FOR DEALING WITH APPLICATIONS FOR ACCESS TO THE LAND SAR CHANNELS

1. Where applications are from Approved Users of the land SAR Channels :

- 1.1 Submission of completed application form to the Chairman of the CWG.
- 1.2 The applicant retains existing CALL SIGN.
- 1.3 Copy of the application is sent to the MCA / Ofcom to verify the technical details.
- 1.4 If the MCA / Ofcom agrees then executive approval is granted.
- 1.5 The Chairman will inform the applicant of the success or otherwise of the application.
- 1.6 The Chairman will report the granting of executive approval at the next meeting of the Communications Working Group so that there is a formal record in the minutes.

2. Where an application is from a unit that has NOT received approval for access to the land SAR Channels :

- 2.1 Submission of completed application form and supporting documents to the Chairman.
- 2.2 On receipt of such an application the Chairman will forward copies to:-
 - 2.2.1 ACPO comment or ACPO(S) comment
 - 2.2.2 The MCA / Ofcom / Scottish Executive for verification of technical details.
 - 2.2.3 The Mountain Rescue England and Wales (MR-EW), Mountain Rescue Committee of Scotland (MRC of S), British Cave Rescue Council (BCRC), Association of Lowland Search and Rescue (ALSAR), as appropriate, for comment
 - 2.2.4 Any other recognised body that could offer a valid opinion.
- 2.3 The Chairman to receive comments and / or reports.
- 2.4 Full consideration at the next meeting of the Communications Working Group.
- 2.5 The Chairman will inform the applicant of the results of the Working Group's deliberations.
- 2.6 The MCA and the Chairman will maintain lists of approved users.
- 2.7 The list of Approved Users and call signs will be published in the Directory of the MR-EW.