



ECC Decision (22)02

Regulation to operate Autonomous Maritime Radio
Devices (AMRD) in CEPT

approved 1 July 2022

EXPLANATORY MEMORANDUM

1 INTRODUCTION

Autonomous Maritime Radio Devices (AMRD) reflect a new development in recent times. Due to rapid technological progress and cost-effective production, more and more of such applications in the maritime environment have been created and used in the field.

An AMRD is defined as a mobile station operating at sea and transmitting independently of a ship station or a coast station. AMRD are grouped and identified as AMRD Group A that enhance the safety of navigation, and as AMRD Group B that do not enhance the safety of navigation.

The World Radiocommunication Conference 2019 (WRC-19) concluded on regulations of the use of AMRD in order to enhance safety of navigation and to ensure the integrity of the global maritime distress and safety system (GMDSS), which is the only system for distress, urgency, and safety communication for general shipping.

This ECC Decision gives guidance for the harmonised operation of AMRD Group A and Group B including the usage of frequencies, identification, and registration.

2 BACKGROUND

The relevant term for AMRD is “safety of navigation” which is derived from the International Convention for the Safety of Life at Sea (SOLAS) [7], as amended. Within SOLAS, Chapter V is titled “Safety of navigation” and contains all relevant regulations. Concerning SOLAS the International Maritime Organization (IMO) is the responsible organisation. The criterion for distinguishing the two categories of AMRD is their impact on the safety of navigation. Any signal or information originated by an AMRD, which reaches the navigator, may influence the safety of navigation. This includes AIS (symbols to be shown on radar and on the electronic chart display and information system (ECDIS), if equipped) and VHF (working channels, Channel 16 and Channel 70). In any case, the navigator interprets the information and needs to decide how to proceed. In a positive case, the safety of navigation will be enhanced. However, in other cases, AMRD which deliver signals or information which do not concern the vessel and can distract or mislead the navigator and degrade the safety of navigation.

IMO considered a list of applications for AMRD Group A and Group B and as a result, the following were identified for Group A operation only:

- Man overboard devices using VHF DSC (Class M);
- Mobile Aids to Navigation (Mobile AtoN).

A man overboard (MOB) using VHF DSC (Class M) device is personal radio equipment (PRE) which alerts via digital selective calling (DSC) and is tracked by the Automatic Identification System (AIS). A Mobile AtoN is defined as a non-fixed or un-moored AtoN. The use of Mobile AtoN should be strictly controlled and authorised by a competent authority.

The IMO identified all other applications of AMRD, including MOB without DSC, fishnet marker, diver locating device, etc. as AMRD Group B. The IMO suggested further that legacy AMRD, categorised as Group B but using the VHF channels AIS 1 and AIS 2, should no longer be placed on the market.

WRC-19 concluded that only AMRD Group A are permitted to use RR Appendix 18 frequencies which are allocated for DSC (Channel 70, 156.525 MHz) and for the AIS (AIS 1, 161.975 MHz) and (AIS 2, 162.025 MHz).

WRC-19 concluded further that AMRD Group B may only use the frequency 160.900 MHz (Channel 2006). AMRD Group B are limited to a transmitter e.i.r.p. of 100 mW and an antenna height not exceeding 1 m above the surface of the sea.

The ECC supports the capabilities of AMRD and has an interest in harmonising the operation of AMRD Group A and Group B according to the rules published in the Radio Regulations 2020 [6]. Based on different options of identification and registration, the development of this ECC Decision was initiated.

ECC identified a need of harmonised action and recognised that:

- relevant footnotes of RR Appendix 18 have to be considered and might be implemented in different ways;
- decisions on registration of different applications of AMRD need to be considered by the ECC;
- this ECC Decision takes into account that existing AMRD which have been manufactured and delivered before WRC-19 cannot be addressed immediately; however, a time limit for tolerating the use of AIS 1 and AIS 2 by legacy AMRD that are not in accordance with Recommendation ITU-R M.2135 [1], needs to be decided and published.

3 REQUIREMENT FOR AN ECC DECISION

The ECC recognises that there is a compelling need for clear advice to manufacturers, retailers, and users on the usage of frequencies by AMRD to guarantee the safety of navigation and to ensure the integrity of the GMDSS.

The ECC recognises that there is a compelling need for clear advice to manufacturers, retailers, and users on the usage of frequencies by AMRD to guarantee the safety of navigation and to ensure the integrity of the AIS.

The ECC is of the view that the usage of frequencies by AMRD should take place in CEPT countries in accordance with the Radio Regulations.

ECC DECISION OF 1 JULY 2022 ON REGULATION TO OPERATE AUTONOMOUS MARITIME RADIO DEVICES (AMRD) IN CEPT (ECC DECISION (22)02)

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that WRC-19 amended the ITU Radio Regulations (RR) [6] Appendix 18 “Table of transmitting frequencies in the VHF maritime mobile band”;
- b) that RR Appendix 18 footnote f) allows for operation of AMRD Group A on the frequencies 156.525 MHz (Channel 70), 161.975 MHz (Channel AIS 1) and 162.025 MHz (Channel AIS 2);
- c) that RR Appendix 18 footnote r) allows for operation of AMRD Group B on the frequency 160.900 MHz (Channel 2006);
- d) that, for AMRD Group B, RR Appendix 18 footnote r) limits the transmitter e.i.r.p. to 100 mW and the antenna height to 1 m above the surface of the sea;
- e) that the administration may consider individual registration of AMRD Group A MOB using VHF DSC (Class M) and AMRD Group B, which may use further identification on an individual equipment level by additional information transmitted, as defined by Recommendation ITU-R M.2135 [1];
- f) that Recommendation ITU-R M.2135 “Technical characteristics of autonomous maritime radio devices operating in the frequency band 156-162.05 MHz” [1] describes the technical characteristics of AMRD;
- g) that the Maritime Safety Committee (MSC) #101 (June 2019) of the IMO decided that the only AMRD that enhance safety of navigation are Mobile Aids to Navigation [5] (MAtoN) and Man overboard (MOB) devices using VHF DSC (Class M);
- h) that Recommendation ITU-R M.1371 “Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band” [3] describes AIS;
- i) that Recommendation ITU-R M.493 “Digital selective-calling system for use in the maritime mobile service” [2] describes MOB using VHF DSC (Class M);
- j) that Recommendation ITU-R M.585 “Assignment and use of identities in the maritime mobile service” [4] describes the use of identities for AMRD Group A (MAtoN and MOB using VHF DSC (Class M)) and AMRD Group B;
- k) that in EU/EFTA countries the radio equipment that is under the scope of this ECC Decision shall comply with the RE Directive. Conformity with the essential requirements of the RE Directive may be demonstrated by compliance with the applicable harmonised European standard(s), cited in the Official Journal (OJ) of the European Union, or by using the other conformity assessment procedures set out in the RE Directive;

DECIDES

1. that the **purpose of this ECC Decision** is to:
 - harmonise the use of the frequency ranges for AMRD equipment operating in the VHF maritime mobile band,
 - enhance the safety of navigation and to ensure the integrity of the GMDSS and AIS,
 - ensure the efficient and effective usage of spectrum,
 - establish a common time limit for tolerating the use of AIS 1 and AIS 2 by AMRD that are not in accordance with Recommendation ITU-R M.2135 [1];

2. that, for the purpose of this ECC Decision, the following **definitions** apply:
 - a) an AMRD is a mobile station; operating at sea and transmitting independently of a ship station or a coast station,
 - b) AMRD Group A enhance the safety of navigation,
 - c) AMRD Group B do not enhance the safety of navigation (AMRD which deliver signals or information which do not concern the navigation of the vessel or do not complement vessel traffic safety);
3. that CEPT **administrations shall**:
 - designate and make available Channels 70, AIS 1 and AIS 2 of RR Appendix 18 for AMRD Group A,
 - designate and make available Channel 2006 of RR Appendix 18 for AMRD Group B,
 - ensure that all AMRD comply with the conditions specified in Annex 1, Annex 2 and Annex 3,
 - allow for temporary carriage and temporary operation of AMRD by foreign visitors from other CEPT countries, for equipment in compliance with this ECC Decision;
4. that CEPT administrations shall ensure the integrity of GMDSS and AIS;
5. that this Decision **enters into force** on 1 July 2022;
6. that the preferred **date for implementation** of this Decision shall be 1 January 2023;
7. that CEPT administrations shall ensure that this Decision is brought to the attention of the relevant maritime authorities;
8. that CEPT administrations shall communicate the **national measures** implementing this Decision to the ECC Chairman and the Office when this ECC Decision is nationally implemented.

Note:

Please check the Office documentation database <https://docdb.cept.org/> for the up to date position on the implementation of this and other ECC Decisions.

ANNEX 1: CATEGORIES AND EXAMPLES OF AUTONOMOUS MARITIME RADIO DEVICES

A1.1 AMRD GROUP A

Mobile AtoN

A marine Aid to Navigation (AtoN) is a device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels. It is provided to help a mariner determine position and course, to warn of dangers or of obstructions, or to give advice about the location of a best or preferred route.

A Mobile Aid to Navigation (MAtoN) shall be defined as a non-fixed or un-moored AtoN but does not include a fixed or moored buoy that is adrift from station, temporary or otherwise.

The use of MAtoN should be strictly controlled, authorised by a competent authority, and only used when risk assessment has determined the requirement and benefit.

In any case a competent authority of an administration is responsible to permit the establishment of a MAtoN.

The AIS operation of MAtoN is described in Recommendation ITU-R M.1371 [3]. The identification code of a MAtoN is defined in Recommendation ITU-R M.585 [4].

MOB using VHF DSC (Class M)

A MOB using VHF DSC (Class M) device is personal radio equipment using VHF digital selective calling (DSC) for alerting and AIS for tracking.

A MOB using VHF DSC (Class M) device is fitted with an internal electronic position fixing device and a transceiver operating on VHF DSC Channel 70 and AIS.

A MOB using VHF DSC (Class M) device must be capable of operating as an open loop/all station device or as a closed loop/designated station device.

The DSC operation of MOB using VHF DSC (Class M) device is described in Recommendation ITU-R M.493 [2]. The AIS operation of MOB using VHF DSC (Class M) device is described in Recommendation ITU-R M.1371 [3]. The identification code of MOB using VHF DSC (Class M) device is defined in Recommendation ITU-R M.585 [4].

Monitoring of DSC and AIS frequencies

ITU Radio Regulations, Article 31, Section III "watchkeeping" [6] obligate coast stations and ship stations to monitor the GMDSS VHF DSC channel 70 (156.525 MHz). This regulation ensures that in any case the DSC alert of a MOB using VHF DSC (Class M) device will be received by the relevant ships in the vicinity and/or the responsible MRCC.

SOLAS, Chapter V, Regulation 19 [7] obligates to be fitted with AIS all ships of 300 gross tonnage and upwards engaged on international voyages and cargo ships of 500 gross tonnage and upwards not engaged on international voyages and passenger ships irrespective of size.

In practice many other vessels are equipped with AIS (e. g. fishing vessels and pleasure craft). The widespread use of AIS facilitates extensive monitoring of the VHF channels AIS 1 and AIS 2 (161.975 MHz and 162.025 MHz).

A1.2 AMRD GROUP B

Examples of applications

Several AMRD applications exist, which are not accepted by the IMO as AMRD Group A. Typical examples are MOB (not using VHF DSC (Class M)), personal tracking in windfarms, helicopter transit, offshore platform, fishnet marker or markers for divers, yacht races. Other applications are conceivable. Devices not in accordance with MOB using VHF DSC (Class M) are categorised as AMRD Group B because of a missing DSC alerting function. These devices use AIS technology, however, channel 2006 (160.900 MHz) is currently available and will require special receiving equipment.

WRC-19 decided that AMRD Group B must be operated on VHF channel 2006 (160.900 MHz). Using this frequency separates AMRD Group B from other AIS applications to avoid interference.

Monitoring VHF channel 2006 (160.900 MHz)

This channel will not be monitored by general shipping or coast stations as part of GMDSS. This channel is designated for AMRD Group B applications. This channel may be monitored by e.g. fishermen, divers, operators of windfarms, etc. Suitable monitoring equipment for channel 2006 requires development.

ANNEX 2: RELEVANT FOOTNOTES OF APPENDIX 18, COMMENTS AND REQUIREMENTS CONCERNING AUTONOMOUS MARITIME RADIO DEVICES (RADIO REGULATIONS 2020) [6]

A2.1 FOOTNOTES AND COMMENTS

- f) The frequencies 156.300 MHz (channel 06), 156.525 MHz (channel 70), 156.800 MHz (channel 16), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) may also be used by aircraft stations for the purpose of search and rescue operations and other safety-related communication. The frequencies 156.525 MHz (channel 70), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) may also be used by autonomous maritime radio devices Group A that enhance the safety of navigation, using digital selective calling and/or AIS technology. Such use should be in accordance with the most recent version of Recommendation ITU-R M.2135. (WRC-19)

Comments:

This footnote deals with the most important VHF frequencies for general shipping. These frequencies are designated for safety-related communication and for collision avoidance. The operational procedures and the usage of the frequencies are well established in the RR and the relevant ITU Recommendations.

AMRD is a new type of station that use frequencies in the VHF maritime mobile band. Following the basic definition of the maritime mobile service given in RR 1.28, the operation of AMRD is not included in this service. In principle the listed frequencies in Appendix 18 are not intended to be used by AMRD.

WRC-19 [6] concluded to allow AMRD Group A to use the frequencies 156.525 MHz (channel 70), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2). This exception to the general rules of the maritime mobile service is restricted to Mobile AtoN and MOB using VHF DSC (Class M), which are the only AMRD accepted by the IMO as enhancing the safety of navigation.

- r) In the maritime mobile service, the frequency 160.9 MHz (channel 2006) is designated for autonomous maritime radio devices Group B that do not enhance the safety of navigation, using AIS technology, in accordance with the most recent version of Recommendation ITU-R M.2135. Autonomous maritime radio devices Group B are limited to a transmitter e.i.r.p. of 100 mW and an antenna height not exceeding 1 m above the surface of the sea.

In the maritime mobile service, this frequency may also be used for experimental use for future applications or systems (e.g. new AIS applications, man over board systems, etc.). If authorised by administrations for experimental use, the operation shall not cause harmful interference to, or claim protection from, stations operating in the fixed and mobile services, including the use of autonomous maritime radio devices Group B. (WRC-19)

Comments:

WRC-19 considered many different AMRD applications using AIS technology which are of interest for special users (e. g. offshore workers, fishermen, divers, windsurfers, etc.) but not for general shipping. To satisfy these special users in the maritime environment WRC-19 concluded to allocate the frequency 160.900 MHz (Channel 2006) for the use of AMRD Group B with restricted power and antenna height.

This footnote also provides a channel for experimental use for future applications or systems. Any use of Channel 2006 must not cause interference to other uses of radio and may not claim protection from them.

A2.2 REQUIREMENTS

The revisions concluded by WRC-19 are implemented in the ITU Radio Regulations, Edition 2020 [6] which entered into force on 1 January 2021. This means AMRD must comply with the ITU Radio Regulations, Edition 2020 after this date.

In CEPT countries, only AMRD Group A (mobile AtoN and MOB using VHF DSC (Class M)) are permitted to use the frequencies 156.525 MHz (channel 70), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2).

In CEPT countries, AMRD Group B must use the frequency 160.900 MHz (Channel 2006) and are limited to a transmitter e.i.r.p. of 100 mW and an antenna height not exceeding 1 m above the surface of the sea.

In CEPT countries, that currently permit the operation of legacy MOB devices on the frequencies 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) other than Class M, these devices may not be permitted after 31 December 2024.

In CEPT countries that have previously tolerated the operation of existing AMRD (other than MOB devices), on the frequencies 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2), these devices may not be permitted after 31 December 2024.

In CEPT countries, the operation of fishnet markers on the frequencies 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) is not permitted.

ANNEX 3: ASSIGNMENT AND USE OF IDENTITIES (EXTRACT FROM RECOMMENDATION ITU-R M.585)

This annex describes the use of identities in accordance with Recommendation ITU-R M.585 [4] and the registration of AMRD.

A3.1 IDENTITIES OF AMRD GROUP A

MAtaN

The MAtaN should use an identity:

9₁9₂M₃l₄D₅8₆X₇X₈X₉

The seventh digit may be used for national purposes, to define areas where the AIS AtoN are located or types of AIS AtoN to the discretion of the administration concerned.

MOB using VHF DSC (Class M)

The MOB using VHF DSC (Class M) that transmits DSC and AIS should use an identity:

9₁7₂2₃X₄X₅Y₆Y₇Y₈Y₉

Where:

- X₄X₅ = manufacturer ID 01 to 99;
- Y₆Y₇Y₈Y₉ = the sequence number 0000 to 9999
- When reaching 9999 the manufacturer should restart the sequence numbering at 0000.

A3.2 IDENTITIES OF AMRD GROUP B

All AMRD Group B devices

All AMRD Group B devices should use an identity:

9₁7₂9₃Y₄Y₅Y₆Y₇Y₈Y₉

(Y₄Y₅Y₆Y₇Y₈Y₉ = a non-sequential pseudorandom number, to be determined by the manufacturer using a time-varying seed that has a negligible chance of repeating, e. g. a random value that is generated for each use, such as a timestamp, a sequence number, or some combination of these.) Duplication of numbers is acceptable but should be avoided insofar as possible.

A3.3 COMMENTS CONCERNING REGISTRATION

AMRD Group A, which are MAtaN, are the responsibility of an administration, consequently in any case registration is mandatory, e. g. through licensing. MAtaN should be listed in the MARS data base.

For AMRD Group A MOB using VHF DSC (Class M), the limitation of six digits for manufacturer and device ID is insufficient for a unique per-device registration. However, a registration on national basis is possible if an administration wants to do so.

AMRD Group B operate on channel 2006, which is not monitored by general shipping. There is no risk of interference to safety related devices on board of vessels. Registration of AMRD Group B seems unnecessary, however a registration on national basis is possible if an administration wants to do so.

A3.4 CONCLUSIONS

In CEPT countries, AMRD Group A representing MAtoN should be registered in the MARS data base.

In CEPT countries, AMRD Group A representing MOB devices using VHF DSC (Class M) are not currently registered in the MARS data base but optionally in a national data base.

In CEPT countries, AMRD Group B are not registered in the MARS data base but could optionally be registered in a national data base.

ANNEX 4: LIST OF REFERENCES

- [1] Recommendation ITU-R M.2135 “Technical characteristics of autonomous maritime radio devices operating in the frequency band 156-162.05 MHz”
- [2] Recommendation ITU-R M.493 “Digital selective-calling system for use in the maritime mobile service“
- [3] Recommendation ITU-R M.1371 “Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band”
- [4] Recommendation ITU-R M.585 “Assignment and use of identities in the maritime mobile service”
- [5] IALA Recommendation R1016, Edition 1: “Mobile Marine Aids to Navigation (MAtoN)”
- [6] ITU Radio Regulations, Edition of 2020
- [7] IMO, SOLAS “International Convention for the Safety of Life at Sea, 1974”