
PLENARY MEETING

**Addendum 1 to
Document 6231(Add.9)-E
3 September 2019
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Member States of the Inter-American Telecommunication Commission (CITEL)

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.9.1

1.9 to consider, based on the results of ITU-R studies:

1.9.1 regulatory actions within the frequency band 156-162.05 MHz for autonomous maritime radio devices to protect the GMDSS and automatic identifications system (AIS), in accordance with Resolution **362 (WRC-15)**;

INTRODUCTION

The need to recognize and identify free-floating objects such as fishing nets, towed unpowered ships and barges, derelict ships, floating ice, wave-gliders and drifting buoys, for safety of navigation or other purposes, is resulting in a growing number of autonomous maritime radio devices (AMRDs) using automatic identification system (AIS) technology on the market, and their number continues to increase.

AIS is a proven technology for global maritime safety applications, providing identification, safety of navigation, aids to navigation, and locating functions. The use of AMRDs on AIS frequencies could have an adverse impact on the safety applications of AIS by overloading the capacity of the system, and occupying maritime mobile service identities that should be reserved for ship stations and aids to navigation.

As an example, some fishing net indicators may be beneficial to the safety of ship stations. However, the increasing unregulated use of these indicator devices brings some negative effects to maritime safety, mainly in the following aspects:

- A large number of such devices cause a high density of visible objects in a specific vessel traffic service (VTS) area. This creates difficulties for the recognition of vessels, the assessment of navigation conditions, and the organization of vessel traffic. This increases the workload of vessel traffic services and may decrease their efficiency, compromising safety of the VTS area.
- Random and autonomous transmissions of such devices are harmful to the effectiveness and efficiency of the overall AIS network. This could reduce the effectiveness of receiving messages from AIS search and rescue transponders and result in delayed emergency responses.

Given the foreseen need for future new applications or devices, the maritime community overall would benefit from harmonized technical and operational specifications for AMRDs.

This agenda item addresses AMRDs operating within the frequency band 156-162.05 MHz, and whether regulatory action is required to protect global maritime distress and safety system (GMDSS) and AIS from their operations.

BACKGROUND

RESOLUTION 362 (WRC-15) “*Autonomous maritime radio devices (AMRD) operating in the frequency band 156-162.05 MHz*”, prescribes a study process for WP5B in four parts: 1) to determine the spectrum needs for the devices, 2) to categorize the various kinds of devices, 3) to conduct sharing and compatibility studies to ensure that no undue constraints are placed on the GMDSS and the AIS, and 4) to conduct studies to determine potential regulatory actions and appropriate frequencies within the band 156-162.05 MHz.

The term AMRD is not part of the Database of ITU Terms and Definitions and needs clarification for a wider audience. At the May 2017 meeting of WP 5B, it concluded on the final definition of AMRDs and provides it to IMO and IALA:

“An AMRD is a mobile station; operating at sea and transmitting independently of a ship station or a coast station. Two groups of AMRDs are identified:

Group A: AMRDs that enhance the safety of navigation,

Group B: AMRDs that do not enhance the safety of navigation (AMRDs which deliver signals or information which do not concern the vessel can distract or mislead the navigator and degrade the safety of navigation).”

The devices discussed may use AIS technology or digital selective calling (DSC) technology. Combinations of the technologies mentioned above can be found in equipment already available on the market.

The ITU Bureau sent a circular letter to all administrations including a questionnaire on the distribution and applications of AMRDs. The objective of the questionnaire was to get a clear overview of these devices and to compile and categorize existing AMRDs being used in different countries. Responses were submitted to ITU-R Working Party 5B (WP 5B), the responsible group for this Agenda Item.

The information was consolidated to give a general description of the applications. The applications described included uses such as diver emergency, buoy, fishnet indicators, object trackers, racing marks, and oceanographic meteorological sensors. Some AMRDs are deployed at sea, while others are carried by divers or used in the vicinity of a vessel. Although the intended use of AMRDs is at sea including coastal areas, AMRDs may be brought onto land or may be washed ashore by accident.

The result shows that some devices are using AIS technology on channels AIS1 and AIS2. Other technologies, such as digital selective calling (DSC), or a combination of technologies were also noted. Different transmitting power and intervals, message formats and unregulated maritime mobile service identities (MMSI) are used by many of these AMRDs. In addition to Radio Regulations (RR) Appendix 18 channels 6/16/70, AIS 1, AIS 2, and other frequency bands outside the maritime mobile service, some AMRDs operate on 121.5 MHz or 406 MHz.

It can be concluded from the survey that AMRDs lack harmonized technical standards and frequency bands. The types of applications of AMRDs also vary, and AMRDs could be used in

areas where they could cause interference to the land mobile service if these devices operate within the same frequency bands.

DISCUSSION

AMRD Group A

AMRD Group A are defined as a mobile station; operating at sea and transmitting independently of a ship station or a coast station that enhances the safety of navigation.

WP 5B has concluded that Group A devices should remain subject to International Maritime Organization (IMO) International Convention for the Safety of Life at Sea (SOLAS) regulations for the communication of information to navigators on board vessels. To enhance the safety of navigation, AMRD Group A provides information about hazard areas, such as an aid to navigation, and distress situations, such as a man overboard incident. AMRD Group A are currently using AIS and DSC technology on the frequencies 161.975 MHz (AIS 1), 162.025 MHz (AIS 2) and 156.525 MHz (ch70). Their operation should continue to be accommodated on these frequencies in Appendix 18 of the Radio Regulations (RR) that are appropriate for aids to navigation. No additional spectrum requirement for this category of devices has been identified.

AMRD Group A applications include man overboard class M devices and mobile aids to navigation. Recommendations ITU-R M.1371, and M.493, have been updated to reflect the technical characteristics of AMRD Group A corresponding to the technology used by the devices.

AMRD Group B

AMRD Group B include other maritime applications such as diver radio, oceanographic research, and fish net indicator. Under the existing definition, AMRD Group B do not provide information that enhances the navigation of vessels, and their usage may distract or mislead the navigator thus degrading the safety of navigation.

The spectrum requirements for AMRD Group B include one 25 kHz channel for AIS technology. AMRD Group B should be operated on other designated frequencies within RR Appendix 18 that are not currently used for navigational purposes.

MOD IAP/6231A9A1/1

APPENDIX 18 (REV.WRC-195)

**Table of transmitting frequencies in the
VHF maritime mobile band**

(See Article 52)

Notes referring to the Table

Specific notes

- 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, including Man Overboard \(MOB\) class M and mobile aids to navigation. These devices are characterized in the most recent version of Recommendation ITU-R M.1371 or ITU-R M.493. \(WRC-0719\)](#)

Reasons: These frequencies are used for maritime safety applications and should therefore continue to be identified in Appendix 18.

MOD IAP/6231A9A1/2

APPENDIX 18 (REV.WRC-195)

**Table of transmitting frequencies in the
VHF maritime mobile band**

(See Article 52)

NOTE A – For assistance in understanding the Table, see Notes *a)* to *zz)* below. (WRC-15)

NOTE B – The Table below defines the channel numbering for maritime VHF communications based on 25 kHz channel spacing and use of several duplex channels. The channel numbering and the conversion of two-frequency channels for single-frequency operation shall be in accordance with Recommendation ITU-R M.1084-5 Annex 4, Tables 1 and 3. The Table below also describes the harmonized channels where the digital technologies defined in the most recent version of Recommendation ITU-R M.1842 could be deployed. (WRC-15)

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
60	<i>m)</i>	156.025	160.625		x	x	x
01	<i>m)</i>	156.050	160.650		x	x	x
61	<i>m)</i>	156.075	160.675		x	x	x
02	<i>m)</i>	156.100	160.700		x	x	x
62	<i>m)</i>	156.125	160.725		x	x	x
03	<i>m)</i>	156.150	160.750		x	x	x
63	<i>m)</i>	156.175	160.775		x	x	x
04	<i>m)</i>	156.200	160.800		x	x	x
64	<i>m)</i>	156.225	160.825		x	x	x

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence	
		From ship stations	From coast stations		Single frequency	Two frequency		
05	<i>m)</i>	156.250	160.850		x	x	x	
65	<i>m)</i>	156.275	160.875		x	x	x	
06	<i>f)</i>	156.300		x				
2006	<i>r)</i>	160.900- Group B Autonomous Maritime Radio Devices						
66	<i>m)</i>	156.325	160.925		x	x	x	
07	<i>m)</i>	156.350	160.950		x	x	x	
67	<i>h)</i>	156.375	156.375	x	x			
08		156.400		x				
68		156.425	156.425		x			
09	<i>i)</i>	156.450	156.450	x	x			
69		156.475	156.475	x	x			
10	<i>h), q)</i>	156.500	156.500	x	x			
70	<i>f), j)</i>	156.525	156.525	Digital selective calling for distress, safety and calling				
11	<i>q)</i>	156.550	156.550		x			
71		156.575	156.575		x			
12		156.600	156.600		x			
72	<i>i)</i>	156.625		x				
13	<i>k)</i>	156.650	156.650	x	x			
73	<i>h), i)</i>	156.675	156.675	x	x			
14		156.700	156.700		x			
74		156.725	156.725		x			
15	<i>g)</i>	156.750	156.750	x	x			
75	<i>n), s)</i>	156.775	156.775		x			
16	<i>f)</i>	156.800	156.800	DISTRESS, SAFETY AND CALLING				
76	<i>n), s)</i>	156.825	156.825		x			
17	<i>g)</i>	156.850	156.850	x	x			
77		156.875		x				
18	<i>m)</i>	156.900	161.500		x	x	x	
78	<i>m)</i>	156.925	161.525		x	x	x	
1078		156.925	156.925		x			
2078	<i>mm)</i>		161.525		x			
19	<i>m)</i>	156.950	161.550		x	x	x	
1019		156.950	156.950		x			
2019	<i>mm)</i>		161.550		x			
79	<i>m)</i>	156.975	161.575		x	x	x	
1079		156.975	156.975		x			
2079	<i>mm)</i>		161.575		x			
20	<i>m)</i>	157.000	161.600		x	x	x	
1020		157.000	157.000		x			
2020	<i>mm)</i>		161.600		x			
80	<i>y), wa)</i>	157.025	161.625		x	x	x	
21	<i>y), wa)</i>	157.050	161.650		x	x	x	
81	<i>y), wa)</i>	157.075	161.675		x	x	x	
22	<i>y), wa)</i>	157.100	161.700		x	x	x	
82	<i>x), y), wa)</i>	157.125	161.725		x	x	x	
23	<i>x), y), wa)</i>	157.150	161.750		x	x	x	
83	<i>x), y), wa)</i>	157.175	161.775		x	x	x	

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
24	w), ww), x), xx)	157.200	161.800		x	x	x
1024	w), ww), x), xx)	157.200					
2024	w), ww), x), xx)	161.800	161.800	x (digital only)			
84	w), ww), x), xx)	157.225	161.825		x	x	x
1084	w), ww), x), xx)	157.225					
2084	w), ww), x), xx)	161.825	161.825	x (digital only)			
25	w), ww), x), xx)	157.250	161.850		x	x	x
1025	w), ww), x), xx)	157.250					
2025	w), ww), x), xx)	161.850	161.850	x (digital only)			
85	w), ww), x), xx)	157.275	161.875		x	x	x
1085	w), ww), x), xx)	157.275					
2085	w), ww), x), xx)	161.875	161.875	x (digital only)			
26	w), ww), x)	157.300	161.900		x	x	x
1026	w), ww), x)	157.300					
2026	w), ww), x)		161.900				
86	w), ww), x)	157.325	161.925		x	x	x
1086	w), ww), x)	157.325					
2086	w), ww), x)		161.925				
27	z), zx)	157.350	161.950			x	x
1027	z), zz)	157.350	157.350		x		
2027*	z)	161.950	161.950				
87	z), zz)	157.375	157.375		x		
28	z), zx)	157.400	162.000			x	x
1028	z), zz)	157.400	157.400		x		
2028*	z)	162.000	162.000				
88	z), zz)	157.425	157.425		x		
AIS 1	f), l), p)	161.975	161.975				
AIS 2	f), l), p)	162.025	162.025				

* From 1 January 2019, channel 2027 will be designated ASM 1 and channel 2028 will be designated ASM 2.

Reasons: Since the channel designator 2006 is proposed for the Group B Autonomous Maritime Radio devices which are not intended for the safety of navigation, Appendix 18 has been updated.

MOD IAP/6231A9A1/3

APPENDIX 18 (REV.WRC-19~~5~~)

**Table of transmitting frequencies in the
VHF maritime mobile band**

(See Article 52)

Specific notes

- r) ~~Administrations may apply this frequency for the usage of autonomous maritime radio devices Group B using AIS-technology on a non-harmful interference basis limited to transmitter e.i.r.p. of 100 mW, and a height of the antenna not exceeding 1 m above the surface of the sea. In the maritime mobile service, this frequency is reserved for experimental use for future applications or systems (e.g. new AIS applications, man over board systems, etc.). If authorized 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. (WRC-19~~2~~)~~

Reasons: Note r) is the appropriate footnote to reflect the identification of frequency 160.900 MHz for Group B autonomous maritime radio devices.

SUP IAP/6231A9A1/4

RESOLUTION 362 (WRC-15)

**Autonomous maritime radio devices operating in
the frequency band 156-162.05 MHz**

Reasons: It is proposed to suppress Resolution 362 (WRC-15) since the studies have been completed and the identification of frequencies in Appendix 18 for AMRD has been made by WRC-19.