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**APT SURVEY REPORT ON**

**MARITIME VHF BAND USAGE AND CONSIDERATION OF NEW APPLICATIONS IN THE REGION OF APT**

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**Pattaya, Thailand**

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**No. APT/AWG/REP-49**

**APT SURVEY REPORT On MARITIME VHF BAND USAGE AND**

**CONSIDERATION OF NEW APPLICATIONS IN THE REGION OF APT**

# Introduction

ITU-R WP5B are studying on maritime services of VHF band, one of which is to consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radio communication in accordance with Resolution 360 (WRC 12).

In the AWG-13 meeting held in Da Nang, Vietnam in September, 2012, Task Group Aeronautical and Maritime under the Working Group Service and Application approved the following proposals for the benefit of improving the relevant studies carried out by APT Members:

1. To collect the information on maritime VHF band usage and consideration of possible new applications in the region of APT by distributing a Questionnaire;
2. To encourage APT Members to response to the questionnaire at time;
3. To encourage APT Members to contribute to the further meeting to enrich the studies of maritime services.

This report is based on the questionnaire that is designed for administration as well as operators and other partners to provide the information concerning the maritime services. Ten questions were made in the questionnaire. The feedback or answers from APT members are collected and analyzed as a basis for the further study on VHF band usage within APT region.

# Summary of the questionnaire

The questionnaire includes four parts and was made of ten questions. The information about the current use situation of AIS1 and AIS2, the gap analysis of new AIS, the current use of VHF band and the relevant research for potential candidate of additional channel(s) was encouraged to share in the questionnaire.

During the AWG-14 meeting and AWG-15 meeting held in Bangkok, Thailand, AWG-16 meeting held in Pattaya, Thailand, six administrations responded the questionnaire, they are: Australia, China, Japan, Korea, Philippines and Viet Nam. The detailed response could be found in the following input contributions:

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| AWG-14 | http://www.apt.int/2013-AWG14-DOCS-INP | |
| Australia | AWG-14-INP-18 | |
| China | | AWG-14-INP-47 |
| Japan | AWG-14-INP-39 | |
| Korea | AWG-14-INP-71 | |
| Philippines | AWG-14-INP-13 | |
| Viet Nam | AWG-14-INP-90 | |

The Task Group Aeronautical and Maritime under the Working Group Service and Application wish the information collected in this survey report can be helpful for APT member’s relevant study.

# Administration/Institution/Company Information and Profile

**Australia**

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**China**

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**Japan**

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| --- | --- |
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**Korea (Republic of)**

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**Philippines**

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**Viet Nam**

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| --- | --- |
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# Questionnaire results

1. **Questions on the current use of AIS1 and AIS2**
2. What are the current allocations of AIS1 and AIS2 in your country/region?

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| Australia | AIS is allocated to two channels, centred on 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2), on a primary basis (since WRC-12). |
| China | The frequencies AIS1 and AIS2 are currently allocated primarily as MARITIME MOBILE service, and secondarily as Land mobile service. Actually AIS1 and AIS2 are dedicatedly used by general AIS and AIS-SART nowadays. |
| Japan | Only for the AIS (include AIS-SART) purpose. |
| Korea (Republic of) | Maritime Mobile for AIS |
| Philippines | The current allocations for AIS1 and AIS2 in the Philippines are 161.975 MHz and 162.025 MHz, respectively. |
| Viet Nam | The frequencies 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) are allocated to FS, MS on primary basis and MSS with the ITU footnote 5.227A. |

1. What are the carriage requirements of general AIS in your country/region?

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| Australia | AIS is required to be carried on Australian cargo ships over 300 GT on international voyages, over 500 GT on non-international voyages and passenger ships of any size, as per SOLAS chapter V, Regulation 19.2.4.  For non-SOLAS vessels, the National Standard for Commercial Vessels (NSCV) Part C7C (Navigation Equipment) 2008, requires either an AIS Class-A or AIS Class-B to be carried depending on vessel type, length and operational area. However, this is not required for existing vessels, but new vessels or vessels coming into survey for the first time. Legislation enforcing AIS varies between Australian states and territories. However, many ports are now mandating that all commercial vessels carry at least an AIS Class-B transceiver. |
| China | AIS class A shipborne equipment is mandated for all SOLAS ships according to the international conventions. In most area, AIS class A or class B is the carriage equipment for national ships according to the national regulations. The administration encourages the AIS class B being used by small ships such as fishery ships and entertainment ships. So till now there is a wide-spread use of AIS in China not only for the ships at sea, but also for a large amount of ships moving at inner rivers and lakes for safety. A rough survey shows the number of general AIS equipped on the ships all around China has been more than 110 thousands till the end of 2012, and it will be larger based on the annual increasing rate of about 20% in recent 2~3 years. |
| Japan | All ships of 300 gross tonnage and upwards engaged on international voyages and cargo ships and passenger ships of 500 gross tonnage and upwards not engaged on international voyages should be fitted with AIS. |
| Korea (Republic of) | According to the domestic regulations, all ships of 300 gross tonnage and upwards engaged on international voyages, all ships of 500 gross tonnage and upwards not engaged on international voyages, all passenger ships of 2 gross tonnage and upwards, all oil-tankers and tugboats of 50 gross tonnage and upwards. |
| Philippines | AIS is only required to ships engaged in international trade. Although, there were some local/domestic ships which were equipped with AIS, such equipment has not been made mandatory for domestic plying vessels.  The carriage requirements of general AIS for international vessels are the following:   1. Passenger Ships – irrespective of size 2. Cargo Ships – 300 Gross Tons and Upwards 3. Tankers – 300 Gross Tons and Upwards 4. Other Ships – 300 Gross Tons and Upwards |
| Viet Nam | No national requirements. |

1. What are the average occupancy rates of frequencies AIS1 and AIS2 as of 2012 in your country/region?

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| Australia | The Australian Maritime Safety Authority is planning to carry out a comprehensive VDL loading study in 2013, since the only study done was in August 2008, with a study1 on a receiver network as follows:  Sydney, Australia (South Head)  Perth, Australia (DSTO Stirling)  Great Barrier Island, New Zealand  Auckland, New Zealand (Devonport)  Melbourne, Australia (DST Fishermens Bend)  1 T. Cooper and T.J. Surendonk, “Preliminary Observations on Data Collected by the DSTO AIS Network,” Defence Science and Technology Organisation, DSTO-CR-2008-0477, Aug. 2008.  The report provides a preliminary baseline of AIS activity, by reviewing the data collected by the DSTO AIS Network during an observation period(s) in August 2008. The findings include the following:  *1. Average VDL usage is less than 3% in all locations, and while a peak of just below 9% was seen in the Sydney area, this is likely due to good radio signal propagation conditions.*  *2. Average VDL usage by AIS-B is 0.02% or less, with a peak of 0.3%.*  *3. When repeaters come into view due to good radio propagation conditions, repeated messages can account for more than 50% of the total VDL load.*  *These results suggest that there is sufficient space on the VDL to allow some growth of AIS-B and that some consideration should be given to the impact of additional repeaters in the national network of AIS base stations.*  *In total, approximately 9 million messages were received, consisting of 5 million from Sydney, 2 million from Stirling, 0.3 million from Great Barrier Island, 0.7 million from*  *Auckland, and 1 million from Melbourne. Repeaters do have an impact on the VDL, for Sydney and Stirling repeated messages can make up a total of 4-5% of the total messages received.*  The new study about to be conducted will take into account a significant increase of seaborne traffic, a coastal AIS base station/receiver network of some 89 stations including additional repeaters, increased use of virtual and synthetic AIS aids to navigation, significantly increased seaborne traffic in the NW and NE of Australia, from significantly increased offshore oil and gas exploration/exploitation. |
| China | A preliminary study carried in the middle of 2012 showed the occupancy rate of AIS1 and AIS2 frequencies was in average about 30% in some of the busiest area such as Shanghai port and Bohai Bay. In rush hours, the occupancy might reach up to 40%. Obviously, this could be the justification of the additional channel requirements for new AIS applications. |
| Japan | The average slot occupancy rate in Tokyo Bay is approximately 27%. |
| Korea (Republic of) | Generally 30~40% in main ports, when measured at base station |
| Philippines | There are 108 international vessels assigned with AIS frequencies, 28 for domestic vessels, and 2 for Vessel Traffic Management System (Coastal)***.*** |
| Viet Nam | No information. |

1. **Questions on the gap analysis of New AIS**
2. What kind of application-specific messages of AIS are currently used in your country/region?

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| Australia | Australia is preparing to commence trials of AIS application-specific messages in selected areas around the Australian coast, using the AIS base stations of both the Australian Maritime Safety Authority and selected port authorities, who are members of the Australian AIS Network.  The trial will include the use of AIS application-specific messages for weather, security level, port closure signal, tidal applications, search and rescue, and possible use for under-keel management systems |
| China | The safety related messages transmitted through Message 12 and Message 14 are generally used in China for applications such as AIS-SART or in case of failure of buoy equipment. The administration is doing some experiments of using AIS application-specific message (ASM message 6 and message 8) transmitting meteorological and hydrographic data in the area of Bohai Bay through hidden coding. The experiments are valid to some certain ships in the limited area. The standard of hidden coding will be opened to industry and public after the experiments are accomplished and be verified mature. The administration is planning to promote this kind of ASM applications in recent years according to the outcomes of the experiments. |
| Japan | The Japan Coast Guard uses the message 6 “Addressed binary message” defined by ITU-R M.1371-4 in order to send weather information from its shore based stations. The message consists of text with 6 bits ASCII code. |
| Korea (Republic of) | Mainly position report (message 1,2,3) and base station report (message 4) |
| Philippines | 1. The AIS was used to provide automatically to appropriately equipped shore stations other ships and aircraft, information relating to:    * Ship’s identity    * Type, position, course, speed of the vessel    * Navigational status and other related information. 2. AIS can receive automatically safety related information from similarly fitted ships; can monitor and track ships; and exchange data with shore-based facilities***.*** |
| Viet Nam | Not available. |

1. Is there any other kind of data exchange application rather than general functions of AIS being available currently in your country/region?

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| Australia | AMSA is aware of the development of e-navigation test beds in the region. |
| China | There is no any kind of data exchange application system rather than AIS formally operating in China now. Some local administrations are doing some experiments in the rivers and lake areas for narrow bandwidth VHF data transmitting. According to China maritime radio communication plan, the frequency bands 157.150-157.325 and 161.750-161.925 MHz (corresponding to Appendix 18 channels: 23, 83, 24, 84, 25, 85, 26 and 86) are designated for digitally modulated emissions from 1 January 2017. |
| Japan | There is no data exchange application rather than AIS in VHF band in Japan. |
| Korea (Republic of) | None |
| Philippines | None |
| Viet Nam | Not available. |

1. Is there any other kind of data exchange application rather than general functions of AIS being planned in the future in your country/region? Which year those kind of new applications are planned in?

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| Australia | AMSA is monitoring developments in international e-navigation test beds in operation which may yield useful results which can be applied in our region. |
| China | Being not only equipment of the general functions for example as aids to navigation, but also a kind of important ways of communications today, AIS is of great perspective. The administration will arrange the new application of elementary shipping port visa services by AIS technology as a short term planning to accomplish the long distance shipping electric visa treatment. The system is planning to trial operation in 2013. As a long term planning, a large scale maritime basic information network with macro resources including vessel, personnel, cargo, port, environment and other relevant information and powerful communications functions will be constructed by new systems using AIS technology, forming an integrated information exchange platform naming Maritime Internet of Things. |
| Japan | There is no specific plan to use a data exchange application in VHF band at this time, however, Japan will consider the application in the future. |
| Korea (Republic of) | Generally Yes |
| Philippines | The Commission has not conducted any research nor study for future data exchange application of AIS; hence we could not comment on the subject in question. |
| Viet Nam | Not available. |

1. What are the standards or recommendations used for the new data exchange applications using AIS technology in your country/region?

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| Australia | Unknown at this stage. Australia will be guided by studies at the ITU-R, but the expected Recommendation to be used is Recommendation ITU-R M.1842. |
| China | Till now in China all developments or experiments for any new applications using AIS technology are based on the Recommendation ITU-R M.1371-4 except some certain detailed coding methods, such as way of hidden coding to transmit some fixed-length message, or the way of transmitting Chinese characters.As mentioned above, the coding method will be opened after the experiments are verified. |
| Japan | No standard or recommendation is used in Japan for the new data exchange applications using AIS technology |
| Korea (Republic of) | Recommendation ITU-R M.1371 or Recommendation ITU-R M.1842. |
| Philippines | We cannot comment on this since at the moment we have no plans for a new data exchange application using AIS technology***.*** |
| Viet Nam | Follow Recommendation ITU-R M.1842 |

1. **Question on the current use of VHF band**
2. Please give a brief description on the current use of VHF band in Appendix 18 in your country/region, especially on CH70, AIS1 and AIS2, 160.900MHz, CH27/28/87/88, VHF DATA band, etc.

**Australia**

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| Frequency | Australian  Allocation | Current application | Planned use | Recommendation | Remark |
| AIS1,AIS2 | MARITIME MOBILE Aeronautical mobile (OR) Mobile–satellite (Earth-to-space)  161.975 MHz  162.025 MHz | Ship-borne AIS  Coastal AIS base stations,  Coastal AIS repeaters,  AIS Aids to Navigation  AIS-Search and Rescue Transmitters  AIS-Man Overboard Systems (i.e. emergency use only)  AIS diver locating systems (non-routine operations) - **Note 1** | As for current. | No change. | These channels now have PRIMARY status in ITU Region 3 |
| CH75,CH76 | MARITIME MOBILE  Mobile-satellite (Earth-to-space)  (Single frequency) | Radiotelephony - Guard bands for CH16 and as permitted by RR 2012. | Satellite detection of AIS Class-A transmitters (long-range AIS broadcast Message 27) plus  On board navigation-related communications (limited to 1 W) | As planned |  |
| CH70 | MARITIME MOBILE (distress and calling)  (Single frequency) | Ship-ship/ship-shore Digital Selective Calling (DSC) - Distress, Urgency, Safety and Routine calling | DSC only | No change | **Note 2.** |
| CH16 | MARITIME MOBILE (distress and calling)  Single frequency | Radiotelephony - Distress, Urgency, Safety and Routine calling | Distress, Urgency, Safety and Routine calling | No change |  |
| VHF DATA band(CH23,CH83,CH24,CH84,CH25,CH85,CH26,CH86) | FIXED  MOBILE  (Two frequency) | Radiotelephony - Public correspondence (not used since coastal network closed down) | Maritime VHF Data Exchange System (VDES). | As agreed by ITU-R, IMO and Australian administration.  (Recommendation ITU-R M.1842) | Current coastal repeater channels are 80, 21, 81, 22 and 82.  **Note 3.** |

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| Frequency | Australian  Allocation | Current application | Planned use | Recommendation | Remark |
| CH27,  CH28 | FIXED  MOBILE  (Two frequency) | Radiotelephony - Public correspondence (not used since coastal network closed down) | Possible Maritime VHF Data Exchange System (VDES).  Satellite channels for VDES. | As agreed by ITU-R, IMO and Australian administration.  (Recommendation ITU-R M.1842) | **Note 3.** |
| CH87,  CH88 | FIXED  MOBILE  (Single frequency) | Public correspondence (not used since coastal network closed down) | Satellite channels for VDES. |  | **Note 3.** |
| 160.900MHz | No allocation.  (Single frequency) |  | As per RR 2012 Appendix **18** |  | **Note 1.** |
| Other channels | None identified. | None | Not applicable |  |  |

**Notes:**

1. The use of 160.900 MHz was trialled for a period under a Scientific Licence immediately prior to WRC-12 for the purpose of an AIS Diver locating system by one manufacturer. The Australian Administration (Australian Communications and Media Authority) may consider the use of this frequency for the purposes identified at WRC-12. The Appendix **18** channel centred on 160.900 MHz has not been included in the Australian maritime ship, maritime class or coast station licensing instruments.

2. Australia is a declared sea area A3 under SOLAS, Chapter IV, so there is no official coastal DSC network or MF DSC network. The use of these channels for a future VHF Data Exchange is dependent on outcome of ITU-R studies, outcome of WRC-15, and approval of the administration. Some ports and volunteer marine rescue units choose to fit VHF DSC transceivers, but these limited coast stations’ DSC capability are generally not advertised, nor have published watch-keeping times.

3. The use of these channels for a proposed VHF Data Exchange System (VDES) is subject to successful studies at the ITU-R, approval by IMO and the Australian Administration. A description of a proposed VDES system is contained in ITU-R Document 5B/106 (26 October 2012) and studies are on-going. Channel 83 does not appear to be a candidate channel for VDES at this stage.

**China**

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| Frequency | Allocation | Current application | Planned use | Recommendation | Remark |
| AIS1,AIS2 | MARITIME MOBILE/  Land mobile | AIS  AIS-SART | AIS  AIS-SART | ITU-R M.1371-4 |  |
| CH75,CH76 | MARITIME MOBILE | The guard band of CH16 | Satellite AIS  uplink | ITU-R M.1371-4 | ADD Mobile-satellite (Earth-to-space) as the secondary allocation after WRC-12 only for the reception of long-range AIS broadcast messages |
| CH70 | MARITIME MOBILE | DSC | DSC | ITU-R M.493-13  ITU-R M.541-9 | distress and calling via DSC |
| CH16 | MARITIME MOBILE | distress and calling via voice | distress and calling via voice | - |  |
| CH23,CH83,CH24,CH84,CH25,CH85,CH26,CH86 | MARITIME MOBILE/  Land Mobile | Duplex voice channel | Digital modulation Data transmitting | ITU-R M.1842-1 | 《Radio Regulation》 Appendix 18 footnoe B1),D1) |
| CH27,CH28 | MARITIME MOBILE/  Land Mobile | Duplex voice channel | Duplex/Simplex voice channel | ITU-R M.489-2  ITU-R M.1084-4 | 《Radio Regulation》Appendix 18 footnote YYY) |
| CH87,CH88 | MARITIME MOBILE/  Land Mobile | Simplex voice channel |  | ITU-R M.489-2  ITU-R M.1084-4 | 《Radio Regulation》 Appendix 18 footnote YYY) |
| 160.900MHz | MARITIME MOBILE/  Land Mobile | Not used by maritime services |  | - | 《Radio Regulation》 Appendix 18 footnote XXX) |
| Other channels | MOBILE/  MARITIME MOBILE/  Land Mobile | Duplex/Simplex voice channel | Duplex/Simplex voice channel | ITU-R M.489-2  ITU-R M.1084-4 |  |

**Japan**

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| Frequency | Allocation | Current application | Planned use | Recommendation | Remark |
| AIS1,AIS2 | Maritime  Mobile  Service | AIS  AIS-SART | AIS  AIS-SART |  |  |
| CH75,CH76 | Maritime  Mobile  Service | Not allocated | Long-range detection of AIS by satellite  Message 27 |  |  |
| CH70 | Maritime  Mobile  Service | Digital selective calling (DSC) for distress, safety and calling | DSC |  |  |
| CH16 | Maritime  Mobile  Service | distress, safety and calling (voice) | distress, safety and calling (voice) |  |  |
| VHF DATA band(CH80,CH21,CH81,CH22,CH82,CH23,CH83,CH24,CH84,CH25,CH85,CH26,CH86) | Maritime  Mobile  Service | Port operations  and ship movement (voice communication) | VDE |  | Japan uses CH80,  CH21,  CH81,  CH22 and CH82 in the same way. |
| CH27,CH87,CH28,CH88 | Maritime  Mobile  Service | CH27,CH28  Port operations  and ship movement (voice communication)  CH87,CH88  Port operations and ship movement for ship of international voyage |  |  |  |
| 160.900MHz |  | Not used |  |  |  |
| Other channels |  |  |  |  |  |

**Korea (Republic of)**

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| Frequency | Allocation | Current application | Planned use | Recommendation | Remark |
| AIS1,AIS2 | Maritime Mobile | AIS1, AIS2, AIS-SART, AIS AtoN | TBD | ITU-R M.1371-4 |  |
| CH75,CH76 | Maritime Mobile | Navigation-related communications | TBD | ITU-R M.1371-4, ITU-R M.1842 |  |
| CH70 | Maritime Mobile | Digital selective calling for distress, safety and calling | TBD | ITU-R M.489-2,  ITU-R M.493-10,  ITU-R M.541-9,  ITU-R M.689-2 |  |
| CH16 | Maritime Mobile | distress, safety and calling | TBD | ITU-R M.489-2,  ITU-R M.493-10,  ITU-R M.541-9,  ITU-R M.689-2 |  |
| VHF DATA band(CH23,CH83,CH24,CH84,CH25,CH85,CH26,CH86) | Maritime Mobile | Coast radio stations including Harbour radio stations | TBD | ITU-R M.489-2,  ITU-R M.493-10,  ITU-R M.541-9,  ITU-R M.689-2 |  |
| CH27,CH87,CH28,CH88 | Maritime Mobile | Coast radio stations including Harbour radio stations | TBD | ITU-R M.489-2,  ITU-R M.493-10,  ITU-R M.541-9,  ITU-R M.689-2 |  |
| 160.900MHz | Maritime Mobile | TBD | TBD |  |  |
| Other channels |  |  |  |  |  |

**Philippines**

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| Frequency | Allocation | Current application | Planned use | Recommendation | Remark |
| AIS1,AIS2 | 161.975 MHz, 162.025 MHz | Safety related communication; search and rescue |  |  |  |
| CH75,CH76 | 156.775MHz, 156.825 MHz | Restricted to navigation related communications only |  |  |  |
| CH70 | 156.525 MHz | Exclusive for Digital Selective Calling for distress, safety and calling; safety related communications |  |  |  |
| CH16 | 156.800 MHz | Search and rescue operations and other safety related communications |  |  |  |
| VHF DATA Band (CH23,CH83,CH24,CH84,CH25,CH85,CH26,CH86) | |  |  |  |  |
| CH 23 | 157.150 MHz  161.750 MHz | Not yet assigned. |  |  |  |
| CH 83 | 157.175 MHz  161.775 MHz | Not yet assigned. |  |  |  |
| CH 24 | 157.200 MHz  161.800 MHz | Not yet assigned. |  |  |  |
| CH 84 | 157.225 MHz  161.825 MHz | Not yet assigned. |  |  |  |
| CH 25 | 157.250 MHz  161.850 MHz | Not yet assigned. |  |  |  |
| CH 85 | 157.275 MHz  161.875 MHz | Not yet assigned. |  |  |  |
| CH 26 | 157.300 MHz  161.900 MHz | Not yet assigned. |  |  |  |
| CH 86 | 157.325 MHz  161.925 MHz | Not yet assigned. |  |  |  |
| CH27,CH87,CH28,CH88 | |  |  |  |  |
| CH27 | 157.350 MHz  161.950 MHz | Transmit freq. from ship stations  Transmit freq. from ship stations |  |  |  |
| CH87 | 157.375 MHz | Transmit freq. from ship and coast stations |  |  |  |
| CH28 | 157.400 MHz  162.000 MHz | Transmit freq. from ship stations  Transmit freq. from ship stations |  |  |  |
| CH88 | 157.425 MHz | Transmit freq. from ship and coast stations |  |  |  |
| 160.900MHz |  | None |  |  |  |
| Other channels |  |  |  |  |  |

**Viet Nam**

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| Frequency | Allocation | Current application | Planned use | Recommendation | Remark |
| AIS1,AIS2 | FS, MS, MSS | AIS | As for current |  |  |
| CH75,CH76 | MMS | RadioTelephony | As for current |  |  |
| CH70 | MMS | DSC for Distress, safety and calling | DSC for Distress, safety and calling |  |  |
| CH16 | MMS | Distress, safety and calling | Distress, safety and calling |  |  |
| VHF DATA band(CH23,CH83,CH24,CH84,CH25,CH85,CH26,CH86) | FS, MS | RadioTelephony | As RR2012 AP18 |  |  |
| CH27,CH87,CH28,CH88 | FS, MS | RadioTelephony | As for current |  |  |
| 160.900MHz | FS, MS | Land mobile system | As for current |  |  |
| Other channels |  | As ITU regulations | As for current |  |  |

1. **Questions on the relevant research for potential candidate of additional channel(s)**
2. Is there any preconditional studies such as experiments or research of new products and recommendations carried out in your country/region?

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| Australia | The Australian Maritime Safety Authority is aware of additional products, including commercial AIS diver locating devices (160.900 MHz and 161.975 MHz / 162.025 MHz) and man overboard (MOB) devices in emergency mode (161.975 MHz and 162.025), which are already underway. |
| China | Some industry enterprises who participated in the above-mentioned data transmitting experiments led by administrations developed some prototypes. Some of them are developing MOB products using AIS technology. Some of them are searching ways of transmitting Chinese characters by binary coding through ASM. But these kinds of transmitting are restricted or limited by area at this stage because the experiments were carried out in AIS1 and AIS2 frequency bands.  Actually, there is no experiment related to research of using additional channels. There is not any certificated shipborne product or mature data transmitting system officially running in China now. Except some local or departmental guide, there is not any national coordinated standard or recommendation officially issued in China related to this field till now |
| Japan | The Japan Coast Guard and the Ocean Policy Research Foundation held the Workshop on International Standardization of Next Generation AIS in December 2012. The Executive Summary is attached. |
| Korea (Republic of) | Man Overboard, Advanced AIS technology (A-SOTDMA), VHF data wideband system for the exchange of data and electronic mail in the maritime mobile service. |
| Philippines | No answe*r* |
| Viet Nam | Not available. |

1. Is there any plan of research for potential candidate of additional channel(s) for new applications using AIS technology in your country/region?

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| Australia | The Australian Administration will examine local use of the VHF marine channels, including consideration of additional channels for AIS and VDES, as a result of the WRC-12.  With the on-going development test beds in operation or planned internationally, AMSA will be examining the feasibility of trials of potential candidate channels for e-navigation and the modernisation of the GMDSS. |
| China | The Ministry of Transport (MOT) of People’s Republic of China is begin to study the possibility of additional channel(s) for new applications using AIS technology, which includes the justification of additional channel(s) requirements, the consideration of candidate of channel(s), the possible relevant sharing and compatibility studies, essential experiments, developing national reports and recommendations, etc. The progress of the national research is planned to be coordinated with ITU-R.  According to the preliminary results of national studies and the newest outcome of the 10thITU-R WP5B meeting, we are considering the candidate of additional channel(s), based on the following principles:   1. modifications should not be required to existing AIS equipment on board existing vessels, but rather allowed for new applications using AIS technology to evolve, supported by communication primarily on the new frequencies identifed by WRC-12, while protecting the integrity of the original operational purpose of AIS as the primary function on the existing AIS frequencies (corresponding to the draft position of IMO); 2. additional channel(s) should be adequate for supporting new applications using AIS technology if “non-critical communications” are moved to the new channels; 3. the least affection should be brought to the existing services using frequencies listed in the Appendix 18;   any new allocation to the frequency bands listed in the Appendix 18 should be based on issued recommendations or mature studies, including new reports on gap analysis, sharing and compatibility, trial systems, experiments and tests, application plans, or be based on recommendations on system architecture, characteristics, performance or managing requirements, etc.  WRC-12 identifed Channel 27,28,87 and 88 be used for possible testing of future AIS applications without causing harmful interference to, or claiming protection from, existing applications and stations. A rough survey shows the use of Ch87 and 88 are decreasing to less than 10%, after the formal designation of AIS1 and AIS2, because most of the shipborne equipment has not been migrated from duplex voice using. Our expertise is of the preliminary opinion that Ch87 and 88 might be the suitable candidate of additional channels for the next step studies of new applications using AIS technology. |
| Japan | There is a plan to continue a study based on the result of the above mentioned Workshop. |
| Korea (Republic of) | TBD |
| Philippines | No answer . |
| Viet Nam | Not available. |