**Options in expanding MMSIs**

**AIS**

Extract from ITU-R M.1371-5 Table 46 draft revision

**Messages 1, 2, 3: Position reports**

| **Parameter** | **Number of bits** | **Description** |
| --- | --- | --- |
| Source ID | 30 | Number Identity (in the MMS) of the source of the message (see Article **19** of the RR and Recommendation ITU R M.585) |

MMSIs are encoded from 000 000 000 to 999 999 999 onto 30 bits.

230 = 1 073 741 824, which includes 73 741 825 unused identities above the identity 999 999 999.

The question is to practically use these unused AIS MMSI bits from 1,000,000,000 to 1,073,741,824 without affecting the bits below 1,000,000,000.

**DSC**

DSC is a synchronous system using characters composed from a ten bit error-detecting . The first seven bits of the ten-bit code of Table A1-1 are information bits. 27 = 128. An MMSI number is composed of 5 of these ten-bit characters. Bits 00 through 99 represent the pair of numeric digits 00 to 99. Bits 100 through 127 are used for telemetry, but are unused in the case of MMSIs.

Table A-2 of ITU-R M.493-16

**Packing table for decimal numbers into ten-bit characters**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **The digits for the** | | | | | | | | | | |
| **Thousands of millions D2** | **Hundreds of millions D1** | **Tens of millions D2** | **Millions D1** | **Hundreds of thousands D2** | **Tens of thousands D1** | **Thousands D2** | **Hundreds D1** | **Tens D2** | **Units D1** | |
| Character 5 | | Character 4 | | Character 3 | | Character 2 | | Character 1 | | |
| *NOTE 1 – Character 1 is the last character transmitted.*  *The digit sequence D2-D1 varies from 00 to 99 inclusive in each character (character 1 to 5 inclusive). The character that represents a particular two-decimal figure is transmitted as the symbol number (see Table A1‑1) that is identical to that particular two‑decimal figure.*  *When the number consists of an odd number of decimal digits, a zero shall be added in front of the most significant position to provide an integral number of ten-bit characters*. | | | | | | | | | | |

The question is how to practically use these unused five pairs of DSC MMSI bits 100 to 127 without affecting those from 11 to 99.

**Current MMSI format**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| General Format of Ship station MMSI | 0 or 2-7 | **M** | **I** | **D** | **X** | **X** | **X** | **X** | **X** |
| General Format of Coast Station MMSI | 0 | 0 | **M** | **I** | **D** | **X** | **X** | **X** | **X** |
| General Format of Aircraft MMSI | 1 | 1 | 1 | **M** | **I** | **D** | **X** | **X** | **X** |
| General Format of AIS AtoN MMSI | 9 | 9 | **M** | **I** | **D** | **X** | **X** | **X** | **X** |
| General format for ﻿craft associated with a parent ship MMSI | 9 | 8 | **M** | **I** | **D** | **X** | **X** | **X** | **X** |
| General Format of VHF Portable MMSI | 8 | **M** | **I** | **D** | **X** | **X** | **X** | **X** | **X** |
| General Format of Devices using a freeform number identity | 9 | 7 | x | **M** | **I** | **D** | **X** | **X** | **X** |
|  | MID = The territory  or geographical area of the administration | | | | | |  |  |  |
|  | X = 0 throgh 9 | |  |  |  |  |  |  |  |
|  | Craft associated with a parent ship is not used in USA | | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Ship Station** |  |  |  |  |  |  |  |  |  |
| Group Ship Station | 0 | **M** | **I** | **D** | **X** | **X** | **X** | **X** | **X** |
| Individual Ship Station | 2 - 7 | **M** | **I** | **D** | **X** | **X** | **X** | **X** | **X** |
|  |  |  |  |  |  |  |  |  |  |
| **Coast stations** |  |  |  |  |  |  |  |  |  |
| Reserved MMSI | 0 | 0 | **M** | **I** | **D** | 0 | 0 | 0 | 0 |
| Coast stations including **group coast station** | 0 | 0 | **M** | **I** | **D** | 1 | **X** | **X** | **X** |
| Port stations (harbour radio stations) | 0 | 0 | **M** | **I** | **D** | 2 | **X** | **X** | **X** |
| Pilot stations | 0 | 0 | **M** | **I** | **D** | 3 | **X** | **X** | **X** |
| AIS repeater stations | 0 | 0 | **M** | **I** | **D** | 4 | **X** | **X** | **X** |
| AIS base stations (VDL controlling stations) | 0 | 0 | **M** | **I** | **D** | 5 | **X** | **X** | **X** |
| Reserved MMSI | 0 | 0 | 9 | 9 | 9 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |  |  |  |
| **Aircraft** |  |  |  |  |  |  |  |  |  |
| Fixed-wing aircraft | 1 | 1 | 1 | **M** | **I** | **D** | 1 | **X** | **X** |
| Helicopters | 1 | 1 | 1 | **M** | **I** | **D** | 5 | **X** | **X** |
|  |  |  |  |  |  |  |  |  |  |
| **AIS AtoN** |  |  |  |  |  |  |  |  |  |
| Physical AIS AtoN | 9 | 9 | **M** | **I** | **D** | 1 | **X** | **X** | **X** |
| Virtual AIS AtoN | 9 | 9 | **M** | **I** | **D** | 6 | **X** | **X** | **X** |
| Mobile AtoN | 9 | 9 | **M** | **I** | **D** | 8 | **X** | **X** | **X** |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Devices using a freeform number identity** |  |  |  |  |  |  |  |  |  |
| AIS-SART | 9 | 7 | 0 | **M** | **I** | **D** | 0 | 0 | 0 |
| MOB device which is classified as AMRD Group A | 9 | 7 | 2 | **M** | **I** | **D** | 0 | 0 | 0 |
| EPIRB-AIS | 9 | 7 | 4 | **M** | **I** | **D** | 0 | 0 | 0 |
|  | AMRD Group A should operate on Channel 70 (DSC), AIS 1 and AIS 2 | | | | | |  |  |  |
|  | AMRD Group B should operate on Channel 2006. | | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| General format of AMRD Group B devices | 9 | 7 | 9 | Y | Y | Y | Y | Y | Y |
|  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| MMSI Xn digit | Possible expansion |
| 1 | None |
| 2 | 7 (A through G) |
| 3 | 3 (A through C) |
| 4 | 7 (A through G) |
| 5 | 4 (A through D) |
| 6 | 1 (A) |
| 7 | 8 (A through H) |
| 8 | 2 (A and B) |
| 9 | 5 (A through E) |