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| **US Radiocommunications Sector**  **Fact Sheet** | |
| **Working Party:** WP 5B | **Document No:** USWP5B34-04 |
| **Reference:** Document 5B/216 Annex 10 Recommendation ITU-R M.2092-1 | **Date:** 17 March 2025 |
| **Document Title:** Preliminary Draft Revision of Recommendation ITU-R M.2092-1, Technical characteristics for a VHF data exchange system in the VHF maritime mobile band | |
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| **Purpose/Objective:**  The purpose of this document is to provide some minor editorial corrections and clarifications for Recommendation ITU-R M.2092-1. | |
| **Abstract:**  ITU WP5B has opened Recommendation ITU-R M.2092-1 for revision. The USCG has identified the need to make some minor editorial corrections and clarifications to this recommendation because of the ongoing work within IEC and IALA. | |

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| **Radiocommunication Study Groups** |  |
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| Source:  Document 5B/216 Annex 10  Reference**:** Recommendation ITU-R M.2092-1 | **Document: USWP5B34-XX** |
| **17 March 2025** |
| **English only** |
| United States of America | |
| Preliminary Draft Revision of Recommendation ITU-R M.2092-1  Technical characteristics for a VHF data exchange system  in the VHF maritime mobile band | |

# 1 Introduction

Working Party 5B has opened Recommendation ITU-R M.2092-1 for revision. After a review of the current draft document, some minor editorial corrections and clarifications were identified. This contribution proposes some revisions to Document 5B/216 Annex 10.

# 2 Summary of changes

Modified Annex 2, § 1.2.3.5 to used consistent language when referring to padding.

Modified Annex 3, table 20 to refer to slot reservations, not slot allocations.

Added the missing “not” to Annex 3, § 6.1.

Modified table 26 to be consistent with how the repeat indicator work and clarified the “Data count” description.

Modified Annex 3, § 7.4 and § 7.6 to add a reference in the message description and removed the superfluous text.

Modified tables 27, 28, 29, 30, 32 to clarify the “Data count” and to remove the “ASM identifier” and add it to the first 16 bits of the “Application data”.

Modified table 43, field number 7 description to remove the “reserved for future use” and provide a proper reference for the Digital signature.

Modified Annex 5, § 3.1.6 and § 3.1.8 to remove the reference back to Annex 4, which were not totally correct.

Modified Annex 5, § 3.5.4 to allow for additional Link IDs to be used on the RAC.

Modified table 64 to added two new messages to support short data message with a variable length payload.

Modified table 65 to update the M.2092 version number.

Modified table 71

* to clarify the Media Access Priority description.
* to clarify the Random selection interval description that this is only an example.
* to add a new field for the Additional Link ID on RAC.

Modified table 75, field 6 to clarify the Session ID description.

Added a new § 3.10.20 and § 3.10.21 to Annex 5 which describes the new Variable length uplink short data messages.

# 3 Attachments

The following attachment contains the proposed changes to Annex 10 of the chairman’s report. All track changes from Annex 10 have been accepted, and only the new proposed changes are shown in track changes. Note that only the relevant sections have been included in this proposal.

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| Source: Document 5B/TEMP/51  Subject: Recommendation [ITU-R M.2092-1](https://www.itu.int/rec/R-REC-M.2092/en) | **Annex 10 to Document 5B/216-E** |
| **27 November 2024** |
| **English only** |
| Annex 10 to Working Party 5B Chair’s Report | |
| PRELIMINARY DRAFT REVISION OF RECOMMENDATION ITU-R M.2092-1 | |
| Technical characteristics for a VHF data exchange system in the VHF maritime mobile band | |

(2015-20-202X)

Summary of revisions

TBD

Scope

This Recommendation provides the technical characteristics of a VHF data exchange system (VDES) which integrates the functions of VHF data exchange (VDE) comprising both terrestrial and satellite components, application specific messages (ASM) and the automatic identification system (AIS) operating in the frequency bands listed in Appendix **18** of the Radio Regulations (RR).

*(There are no changes prior to this section)*

**Annex 2**

**1.2.3.5 Data payload with** **cyclic redundancy check**

Input data is processed most significant bit (MSB) first.

The data payload with its appended cyclic redundancy check (CRC) (refer to § 1.2.5) is interleaved (refer to Table 4) encoded (refer to § 1.2.4.1), scrambled (refer to § 1.2.6) and bit mapped (refer to § 1.2.9).

Unused payload data is padded as specified in the appropriate section.

*(There are no changes prior to this section)*

**Annex 3**

**4.5.8.4 Multiple incremental time division multiple access communication state**

The communication state provides the information used by the slot allocation algorithm in the MITDMA concept.

The MITDMA communication state is structured as shown in Table 20.

Table 20

**Multiple incremental time division multiple access communication state parameters**

| **Parameter** | **Number of bits** | **Description** | **Minimum** | **Maximum** |
| --- | --- | --- | --- | --- |
| Transmit block counter | 4 | A decrementing counter used to indicate how many transmissions are left to transmit within the chain.  A value of 1 indicates this is the last transmission within the chain.  A value of 0 indicates a recurring transmission. | 0 | 15 |
| Block Identifier | 4 | An increasing counter used to identify the block of data within the transmit chain uniquely. This identifier also maps to the acknowledgment for addressed messages.  A value of 0 indicates this is the first transmission within the chain and corresponds to the bit 0 of the ACK mask. | 0 | 14 |
| Slot Increment 1 | 8 | Offset to the next slot to be used, referenced to the current transmission start slot.  A value of 0 indicates no additional slot reservations. | 20 | 255 |
| Number of Slots 1 | 2 | Indicates the number of consecutive slots, which are allocated, starting at the slot increment  A value of 0 indicates the 8 bits from Slot Increment 1 become the MSB for the Slot Increment 2. | 0 | 3 |
| Slot Increment 2 | 8 | Offset to the next slot to be used, referenced to the slot specified by slot increment 1 (or current transmission slot if the number of slots 1 is set to 0).  A value of 0 indicates no additional slot reservations. | 20 | 255 13500(1) |
| Number of Slots 2 | 2 | Indicates the number of consecutive slots, which are allocated, starting at the slot increment.  A value of 0 indicates no slot reservations. | 1 | 3 |
| Slot Increment 3 | 8 | Offset to the next slot to be used, referenced to the slot specified by Slot Increment 2.  A value of 0 indicates no additional slot reservations. | 20 | 255 |
| Number of Slots 3 | 2 | Indicates the number of consecutive slots, which are allocated, starting at the slot increment.  A value of 0 indicates no slot reservations. | 1 | 3 |
| Total bits | 38 |  |  |  |
| (1) When combining Slot Increment 1 and Slot Increment 2 as a 16-bit field. This value should not exceed 6 frames. The combining of these values should only be done for recurring period broadcast transmissions. | | | | |

*(There are no changes prior to this section)*

**Annex 3**

**6.1 Definition of transmission packet**

A transmission packet is an internal representation of some information which can ultimately be communicated to external systems. The transmission packet is dimensioned so that it conforms to the rules of data transfer. Transmission packets are fixed block sizes on slot boundaries with a maximum of 3 consecutive slots. When data does not completely fill the block, then padding bits with the value of 0 should be added to complete the required block size.

*(There are no changes prior to this section)*

**Annex 3**

**7.3 Message 0: broadcast automatic identification system application specific message**

ASM Message 0 may contain encapsulated AIS Messages 6, 8, 12, 14, 21, 25 or 26. Acknowledgement is not supported for addressed messages. This message type is for terrestrial use only.

The encapsulated message may or may not be transmitted on AIS1 or AIS2 channels.

If the encapsulation repeats a Message that was transmitted on AIS1 or AIS2 channel, the encapsulation and transmission of messages shall be performed as soon as possible, according to configuration, after receiving the relevant messages which are required to be retransmitted.

The communication state of the encapsulated message shall always be set to zero at encapsulation.

The receiving station shall output all received encapsulated AIS Messages at the PI immediately after reception. Scheduled broadcast message is defined in Table 26.

Table 26

**Broadcast automatic identification system application specific message**

| **Parameter** | **Number of bits** | **Description** |
| --- | --- | --- |
| Message ID | 4 | 0 – Selected AIS messages that are output at receiving mobile station PI by using VDM sentence with no communication state. |
| Retransmit flag | 1 | 0 (reserved for future use). |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. |
| Source ID | 32 | The Unique Identifier of the transmitting station as described in § 2.4, Annex 1. |
| Data count | 11 | Size of actual data in Application Data field in bits, excluding padding bits. range: from 1 to maximum data count. |
| Application data  (no FEC / FEC) | 1 slot: 296 / 200 2 slot: 808 / 584 3 slot: 1320 / 968 | Content is encapsulated AIS Messages that are channelled through ASM Channels. Receiver is expected to be ASM-capable mobile station where the ASM-box would relay the encapsulated AIS messages to local presentation interface. The encapsulated AIS Messages would then be output at the PI using VDM sentence. The arrangement would thus be compliant with existing nav presentations.  Application data as specified by the ASM Identifier.  The available length of the binary data is specified by the Link Id. |

**7.4 Message 1: Scheduled broadcast message**

This ASM message is used to broadcast data to all stations, and utilizes MITDMA communication state. Multiple messages, or periodically broadcasted messages may be chained together using the MITDMA communication state as described in § 4.5.7.2. Scheduled broadcast message is defined in Table 27.

Table 27

**Scheduled broadcast message**

| **Parameter** | **Number of bits** | **Description** | |
| --- | --- | --- | --- |
| Message ID | 4 | 1 – Broadcast message with MITDMA communication state. | |
| Retransmit flag | 1 | 0 – Indicates there will be no retransmission of data.  1 – Indicates there will be retransmission of data. | |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. | |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. | |
| Source ID | 32 | The Unique Identifier of the transmitting station as described in § 2.4, Annex 1. | |
| Data count | 11 | Size of actual data in Application Data field in bits, excluding padding bits. range: from 1 – Max data count. | |
| Application data (no FEC / FEC) | 1 slot: 256 / 160  2 slot: 768 / 544  3 slot: 1280 / 928 | ASM Identifier | The first 16 bits of the Application data are the ASM Identifier, which is described in § 6.2. When chaining multiple blocks using MITDMA, the ASM Identifier is only contained in the first transmission. |
| Application data as specified by the ASM Identifier. | The available length of the binary data is specified by the Link ID.  Unused payload data is padded with the value of 0. |
| Communication state | 38 | MITDMA communication state as described in § 6.4. | |
| Spare bits | 2 | Spare bits – reserved for the future. | |
|  | | | |

**7.5 Message 2: Broadcast message**

This ASM message is used to broadcast data to all stations and does not contain a communication state. These broadcast messages are used for non-periodic transmission of data, and access the link using RATDMA. Broadcast message is defined in Table 28.

Table 28

**Broadcast message**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Number of bits** | **Description** | |
| Message ID | 4 | 2 – Broadcast message with no communication state. | |
| Retransmit flag | 1 | 0 (reserved for future use). | |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. | |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. | |
| Source ID | 32 | The Unique Identifier of the transmitting station as described in § 2.4, Annex 1. | |
| Data count | 11 | Size of actual data in Application Data field in bits, excluding padding bits. range: from 1 – Max data count. | |
| Application data (no FEC / FEC) | 1 slot: 296 / 200  2 slot: 808 / 584  3 slot: 1320 / 968  SAT: N/A / 864 | ASM Identifier | The first 16 bits of the Application data are the ASM Identifier, which is described in § 6.2. |
| Application data as specified by the ASM Identifier. | The available length of the binary data is specified by the Link ID. |

**7.6 Message 3: Scheduled individual addressed message**

This ASM message is used to send data to an individual station, and utilizes MITDMA communication state. Multiple transmission of messages, or periodically transmissions of messages may be chained together using the MITDMA communication state as described in § 4.5.7.2.

These transmissions require the destination station to return a message acknowledgment (Message 5). This addressed message supplies the return slot for the message acknowledgment. Scheduled addressed message is defined in Table 29.

Table 29

**Scheduled individual addressed message**

| **Parameter** | **Number of bits** | **Description** | |
| --- | --- | --- | --- |
| Message ID | 4 | 3 – Individually addressed message with MITDMA communication state. | |
| Retransmit flag | 1 | Indicates that this is a retransmission of data. | |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. | |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. | |
| Source ID | 32 | The Unique Identifier of the transmitting station, as described in § 2.4, Annex 1. | |
| Destination ID | 32 | The Unique Identifier of the receiving station, as described in § 2.4, Annex 1. | |
| Data count | 11 | Size of actual data in Application Data field in bits, excluding padding bits. range: from 1 – Max data count. | |
| Application data (no FEC / FEC) | 1 slot: 224 / 128  2 slot: 736 / 512  3 slot: 1248 / 896 | ASM Identifier | The first 16 bits of the Application data are the ASM Identifier, which is described in § 6.2. When chaining multiple blocks using MITDMA, the ASM Identifier is only contained in the first transmission. |
| Application data as specified by the ASM Identifier. | The available length of the binary data is specified by the Link ID.  Unused payload data is padded with the value of 0. |
| Communication state | 38 | MITDMA communication state as described in § 6.4. | |
| Spare bits | 2 | Spare Bits – reserved for the future. | |

**7.7 Message 4: Individual addressed message**

This ASM message is used to send data to an individual station and does not contain a communication state. This message is used for non-periodic transmission of data, and access the link using RATDMA.

These transmissions require the destination station to return a message acknowledgment (Message 5). The destination station will use RATDMA to send the message acknowledgment. Addressed message is defined in Table 30.

Table 30

**Individual addressed message**

| **Parameter** | **Number of bits** | **Description** | |
| --- | --- | --- | --- |
| Message ID | 4 | 4 – Individually addressed message with no communication state. | |
| Retransmit flag | 1 | Indicates that this is a retransmission of data. | |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. | |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. | |
| Source ID | 32 | The Unique Identifier of the transmitting station as described in § 2.4, Annex 1. | |
| Destination ID | 32 | The Unique Identifier of the receiving station as described in § 2.4, Annex 1. | |
| Data count | 11 | Size of actual data in Application Data field in bits, excluding padding bits. range: from 1 – Max: data count. | |
| Application data (no FEC / FEC) | 1 slot: 264 / 168  2 slot: 776 / 552  3 slot: 1288 / 936  SAT: N/A / 832 | ASM Identifier | The first 16 bits of the Application data are the ASM Identifier, which is described in § 6.2. |
| Application data as specified by the ASM Identifier. | The available length of the binary data is specified by the Link Id. |
|  | | | |

**7.8 Message 5: Acknowledgment message**

This ASM message is used to return message acknowledgments to one or more addressed messages. Note that this message should always use Link ID of 5 (3/4 coding rate). Acknowledgement message is defined in Table 31.

Table 31

**Acknowledgment message**

| **Parameter** | **Number of bits** | **Description** |
| --- | --- | --- |
| Message ID | 4 | 5 – Multiple acknowledgment message with no communication state. |
| Retransmit flag | 1 | 0 (reserved for future use). |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. |
| Source ID | 32 | The Unique Identifier of the transmitting station as described in § 2.4, Annex 1. |
| Destination ID | 32 | The Unique Identifier of the receiving station as described in § 2.4, Annex 1. |
| ACK/NACK mask | 16 | Specifies which MITDMA block identifiers failed. Bit map field with the LSB representing Block identifier 0, up to the 15th bit representing Block identifier 14.  “1” indicates a packet failed.  “0” indicates the packet was received ok.  The MSB (16th bit) is not used and should be set to “0”. |

Table 31 (*end*)

| **Parameter** | **Number of bits** | **Description** |
| --- | --- | --- |
| Coding rate adaption request | 2 | 0 (reserved for future use). |
| Channel quality indicator | 8 | Signal quality. |
| Zero padding (no FEC / FEC) | 1 slot: N/A / 153 | Padding bits are added as required to complete the block size. These bits are not available for future use. |

**7.9 Message 6: Geographical multicast message**

This ASM message is used to broadcast data to a group of stations as defined by the specified geographical area. The broadcast message does not contain a communication state. These broadcast messages are used for non-periodic transmission of data, and access the link using RATDMA. Geographical multicast message is defined in Table 32.

Table 32

**Geographical multicast message**

| **Parameter** | **Number of bits** | **Description** | |
| --- | --- | --- | --- |
| Message ID | 4 | 6 – Geographical addressed message with no communication state. | |
| Retransmit flag | 1 | Indicates that this is a retransmission of data. | |
| Repeat Indicator | 2 | Used by the repeater to indicate how many times a message has been repeated.  0 – 3; 0 = default; 3 = do not repeat any more. | |
| Session ID | 6 | The Session ID associates the VDL transmission with a specific PI transaction. | |
| Source ID | 32 | The Unique Identifier of the transmitting station as described in § 2.4, Annex 1. | |
| Longitude 1 | 18 | Longitude of area to which the group assignment applies; upper right corner (north-east); in 1/10 min  (±180°, East = positive, West = negative). | |
| Latitude 1 | 17 | Latitude of area to which the group assignment applies; upper right corner (north‑east); in 1/10 min (±90°, North = positive, South = negative). | |
| Longitude 2 | 18 | Longitude of area to which the group assignment applies; lower left corner (south-west); in 1/10 min (±180°, East = positive, West = negative). | |
| Latitude 2 | 17 | Latitude of area to which the group assignment applies; lower left corner (south‑west); in 1/10 min (±90°, North = positive, South = negative). | |
| Data Count | 11 | Size of actual data in Application Data field in bits, excluding padding bits. range: from 1 – Max data count. | |
| Spare bits | 2 | Spare bits – reserved for the future. | |
| Application data (no FEC / FEC) | 1 slot: 224 / 128  2 slot: 736 / 512  3 slot: 1248 / 896 | ASM Identifier | The first 16 bits of the Application data are the ASM Identifier, which is described in § 6.2. |
| Application data as specified by the ASM Identifier. | The available length of the binary data is specified by the Link Id. |
|  | | | |

*(There are no changes prior to this section)*

**Annex 4**

Table 43

**Bulletin board payload**

| **Field No.** | **Value  (dec)** | **Size  (bytes)** | **Function** | **Content** |
| --- | --- | --- | --- | --- |
| 1 | 0 to 232-1 | 4 | Start time for this version | UTC start time for this version of the bulletin board in number of seconds since 1 January 2000 00:00:00 UTC. |
| 2 | 0 to 216-1 | 2 | Validity of this version | Lifetime of this version in number of 1 minute frames.  Up to 45 days. |
| 3 | 0 to 255 | 1 | TDMA frame size | The size of TDMA frames in hexslots.  May have the following values: 3, 5, 15 (default).  Only 15 have to be supported. |
| 4 |  | Variable | Physical channel definitions | See physical channel definition in Table 47. |
| 5 | 0 to 255 | 1 | Modulation, coding and protocol versions supported | Set to zero.  May be used to in the future to define a mandatory base set and optional more capable versions. Network ID segmentation could be used to distinguish different network types.  ASM reception flag one of the parameters for satellite. |

Table 43 (*end*)

| **Field No.** | **Value  (dec)** | **Size  (bytes)** | **Function** | **Content** |
| --- | --- | --- | --- | --- |
| 6 |  | 9 | Control station service area | Parameter (longitude and latitude) defining the control station service area.  See Table 44 – control station service area. |
| 7 |  | 64 | Authentication and integrity sequence | See § 4.15 |

*(There are no changes prior to this section)*

**Annex 5**

**3.1.6 Short data message**

The short data message refers to the data transfer protocol used for transmission of the payload in a single burst.

**3.1.7 Data session**

A VDE-SAT data session is a managed data transfer using assigned resources. A data session is uniquely identified by a source, destination MMSI combination and Session ID.

A VDE-SAT data session starts with a start fragment and ends with the last transmitted fragment; the last fragment normally is the end fragment; however, retransmissions and applicable timeouts can make any retransmitted fragment the last fragment; a session can span over multiple, and changing DC assignments, and over multiple VDE-SAT sub-frames.

**3.1.8 Data fragment**

During a data session, the data may be broken into multiple data fragments to be transmitted in separate bursts. The data fragments refer to the start fragment, continuation fragment and end fragment VDE messages. See § 3.10.7 to § 3.10.9.

*(There are no changes prior to this section)*

**Annex 5**

**3.5.4 Random access channel**

The uplink RAC is used for resource request, paging response and short data messages. Link ID 20 should always be used by default. If the satellite also supports additional Link IDs (as indicated in the Media Access Control message), short data messages may be transmitted with the additional Link IDs.

*(There are no changes prior to this section)*

**Annex 5**

**3.9 VHF data exchange-satellite message summary**

Table 64

**VHF data exchange-satellite message summary**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type** | **Name** | **Description** | **Slot function** |
| 1 | Satellite Bulletin Board 1 | Satellite bulletin board fragment 1. | BBSC |
| 2 | Satellite Bulletin Board 2 | Satellite bulletin board fragment 2. | BBSC |
| 3 | Satellite Bulletin Board 3 | Satellite bulletin board fragment 3. | BBSC |
| 4 | Satellite Bulletin Board 4 | Satellite bulletin board fragment 4. | BBSC |
| 5 | Satellite Bulletin Board 5 | Satellite bulletin board fragment 5. | BBSC |
| 6 | Satellite Bulletin Board 6 | Satellite bulletin board fragment 6. | BBSC |
| 10 | Media access control | Changes random access selection interval, max ARQ retries. | BBSC, ASC |
| 11 | Paging | Pages a ship. | ASC |
| 12 | Resource allocation | Allocated LC resource to data session. | ASC |
| 13 | Uplink addressed message acknowledgement | Acknowledgement or negative-acknowledgement of uplink data fragments for addressed messages. | ASC |
| 14 | Downlink short data message (with ACK) | Short data message to ship that requires acknowledgement. | ASC |
| 16 | Downlink short data message (without ACK) | Short data message to ship with no acknowledgement. | ASC |
| 18 | End delivery notification to ship | Message from the application layer to acknowledge that the data was delivered to the end destination on the application layer. | ASC |
| 20 | Resource request | Request resource from ship. | RAC |
| 21 | Paging response | Paging response. | RAC |
| 22 | End Delivery Notification from ship | Message from the application layer to acknowledge that the data was delivered to the end destination on the application layer. | RAC |
| 33 | Uplink short data message (with ACK) | Short data message from ship with acknowledgement. | RAC |
| 23 | Uplink short data message (without ACK) | Short data message from ship with no acknowledgement. | RAC |
| 24, 25, 26, 27, 28 | Uplink short data message (without ACK) | 5 bytes of data to satellite pre-configured destinations. | RAC |
| 29 | Downlink addressed message acknowledgement | Selective acknowledgement of downlink data fragments. | DSCH |
| 30 | Start fragment | Start data fragment of data session. | DC |
| 31 | Continuation fragment | Middle data fragment of data session. | DC |
| 32 | End fragment | Last data fragment of data session. | DC |
| 34 | Uplink short data message Acknowledgement | Acknowledgement of uplink short data messages. | ASC |
| 35 | Padding byte | Byte used for padding. | BBSC, ASC, RAC, DSCH, DC |
| 36 | Downlink short data message Acknowledgement | Acknowledgement of downlink short data messages. | RAC |
| 37 | Variable length uplink short data message (with ACK) | Short data message from ship with acknowledgement with a variable length payload. | RAC |
| 38 | Variable length uplink short data message (without ACK) | Short data message from ship with no acknowledgement with a variable length payload. | RAC |

**3.10 VHF data exchange-satellite message descriptions**

**3.10.1 Satellite bulletin board**

Table 65

**Satellite bulletin board (Fragment 1)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field  No.** | **Size  (bytes)** | **Function** | **Content** |
| 1 | 1 | Type | Bulletin Board start fragment 1, network info.  Type = 1. |
| 2 | 1 | Satellite ID | 0-255. |
| 3 | 1 | Primary Network ID | 0-255. |
| 4 | 1 | Roaming Network ID | 0-255. |
| 5 | 2 | SBB Version | Version number of this Bulletin Board.  All valid versions are stored in the ship terminal. |
| 6 | 4 | Start time | UTC start time for this version of the Bulletin Board in number of seconds since 1 January 2000, 00:00:00 UTC. |
| 7 | 2 | Validity duration | Lifetime of this version in number of 1-minute frames.  Up to 45 days. |
| 8 | 1 | Service capabilities | 4 MSB Bitmap.  Recommendation [ITU-R M.2092](https://www.itu.int/rec/R-REC-M.2092) version compatibility; 1 = M.2092-1;  1 = M.2092-2.  4 LSB service capabilities bitmap.  Bit3: Reserved for future use. Default = 0.  Bit2: Reserved for future use. Default = 0.  Bit1: Reserved for future use. Default = 0.  Bit0: Reserved for future use. Default = 0. |
| 9 | 2 | SBB backup frequency | As defined in Recommendation [ITU-R M.1084](https://www.itu.int/rec/R-REC-M.1084). |
| 10 | 2 | Max uplink msg size | Maximum message uplink size allowed in kilo Bytes [kB]. |
| 11 | 1 | Reserved for future use | Default 0. |
| 12 | 2 | Total message size of all fragments including overflow | SBB total size in bytes. |

*(There are no changes prior to this section)*

**Annex 5**

**3.10.2 Media access control**

Table 71

Media access control

| Field  No. | Size  (bytes) | Function | Content |
| --- | --- | --- | --- |
| 1 | 1 | Type | Type = 10. |
| 2 | 2 | Payload size | Fixed of fields 3 to 12.  Payload size = 11. |
| 3 | 1 | Satellite ID | 0-255. |
| 4 | 1 | Primary Network ID | 0-255. |
| 5 | 1 | Roaming Network ID | 0-255. |
| 6 | 1 | Media Access Priority | 0: All accesses allowed.  1: All accesses except short data message allowed.  2: Only short data messages allowed. 255: No accesses allowed; system busy. |

Table 71 (*end*)

| Field  No. | Size  (bytes) | Function | Content |
| --- | --- | --- | --- |
| 7 | 1 | Random selection interval | In multiple of 15 slots.  e.g. = 12 (12 × 15 = 180 slots).  For transmitting a message on the RAC, the ship terminal determines a transmission start slot offset relative to the next RAC slot in time by calculating a uniformly distributed random number from the discrete set 0, …, random selection interval × 15 (Default 0, 5, 10, …, 180). The transmission shall start in the RAC slot defined by that random number.  Note: the transmission needs to stay entirely inside the reserved slots for RAC, therefore, the random transmission start slot offset may map the start of transmission to RAC slots beyond the current VDE-SAT sub‑frame’s RAC interval into future VDE-SAT sub‑frame’s RAC intervals. |
| 8 | 1 | RAC Message access limit | Maximum number of allowed messages sent by a ship terminal on the Random Access Channel during a 15-minute interval.  Default: 3. |
| 9 | 1 | Network status | 0: Operational.  1: Reduced availability.  2: Network down. |
| 10 | 1 | ARQ/timeout limits | 4 MSB Number of fragment retries.  Default: 3 retries for a fragment.  4 LSB: Timeout timer setting.  Reserved for future use. Default = 0. |
| 11 | 2 | Bulletin Version number | Maps to SBB version number. |
| 12 | 1 | Additional Link ID on RAC | Additional Link IDs supported by the satellite on RAC, in addition to Link ID 20. Bits are set to enable a Link ID.  Bit 0: Link ID 21  Bit 1: Link ID 22  Bit 2: Link ID 23  Bit 3: Link ID 24  Bit 4 to 7: Reserved for future use.  Default: 0 (No additional Link ID supported by the satellite) |

*(There are no changes prior to this section)*

**Annex 5**

**3.10.6 Resource allocation**

Table 75

**Resource allocation**

| **Field  no** | **Size (bytes)** | **Function** | **Content** |
| --- | --- | --- | --- |
| 1 | 1 | Type | Type = 12. |
| 2 | 2 | Payload size | Size of fields 3 to 22.  Payload size = 32. |
| 3 | 4 | Ship Station ID 1 | The Unique Identifier of the ship station, as described in § 2.4, Annex 1.  0 for broadcast. |
| 4 | 1 | Logical Channel 1 | Logical Channel assigned for data transmission. Only applies to data slots. LC of 255 indicates no resource. |
| 5 | 1 | Link ID 1 | Link ID that should be used in Logical Channel 1. Transmission direction can be inferred from link ID. |
| 6 | 1 | Session ID 1 | Assigned session ID. |
| 7 | 1 | Uplink link CQI 1 | Received Channel Quality Indicator as defined in § 1.2.8,  Annex 2. |

*(There are no changes prior to this section)*

**Annex 5**

### **3.10.20 Variable length uplink short data message (with acknowledgement)**

Table 91

Variable length uplink short data message (with acknowledgement)

| Field  no. | Size  (bytes) | Function | Content |
| --- | --- | --- | --- |
| 1 | 1 | Type | Type = 37 |
| 2 | 4 | Ship Station ID | The Unique Identifier of the source station, as described in § 2.4, Annex 1. |
| 3 | 4 | Destination Station ID | The Unique Identifier of the destination station, as described in § 2.4, Annex 1. |
| 4 | 2 | Length | Total size in bytes, variable. |
| 5 | Variable | Payload |  |

Note: Only to be used when the satellite supports an additional Link ID on RAC.

### **3.10.21 Variable length uplink short data message (without acknowledgement)**

Table 92

Variable length uplink short data message (without acknowledgement)

| Field  no. | Size  (bytes) | Function | Content |
| --- | --- | --- | --- |
| 1 | 1 | Type | Type = 38 |
| 2 | 4 | Ship Station ID | The Unique Identifier of the source station, as described in § 2.4, Annex 1. |
| 3 | 4 | Destination Station ID | The Unique Identifier of the destination station, as described in § 2.4, Annex 1. |
| 4 | 2 | Length | Total size in bytes, variable. |
| 5 | Variable | Payload |  |

Note: Only to be used when the satellite supports an additional Link ID on RAC.