Unless otherwise specified all fields are binary. All numbers expressed are in decimal notation. Negative numbers are expressed using 2's complement.

3.1 Messages 1, 2, 3: Position reports

The position report should be output periodically by mobile stations.

TABLE 45

Parameter	Number of bits	Description
Message ID	6	Identifier for this Message 1, 2 or 3
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	Unique identifier such as MMSI number
Navigational status	4	0 = under way using engine, 1 = at anchor, 2 = not under command, 3 = restricted manoeuvrability, 4 = constrained by her draught, 5 = moored, 6 = aground, 7 = engaged in fishing, 8 = under way sailing, 9 = reserved for future amendment of navigational status for ships carrying DG, HS, or MP, or IMO hazard or pollutant category C, high speed craft (HSC), 10 = reserved for future amendment of navigational status for ships carrying dangerous goods (DG), harmful substances (HS) or marine pollutants (MP), or IMO hazard or pollutant category A, wing in grand (WIG); 11-13 = reserved for future use, 14 = AIS-SART (active), 15 = not defined = default (also used by AIS-SART under test)
Rate of turn ROT_{AIS}	8	0 to +126 = turning right at up to 708° per min or higher 0 to –126 = turning left at up to 708° per min or higher Values between 0 and 708° per min coded by $ROT_{AIS} = 4.733 \, SQRT(ROT_{sensor})$ degrees per min where ROT_{sensor} is the Rate of Turn as input by an external Rate of Turn Indicator (TI). ROT_{AIS} is rounded to the nearest integer value. +127 = turning right at more than 5º per 30 s (No TI available) –127 = turning left at more than 5º per 30 s (No TI available) –128 (80 hex) indicates no turn information available (default). ROT data should not be derived from COG information.
SOG	10	Speed over ground in 1/10 knot steps (0-102.2 knots) 1 023 = not available, 1 022 = 102.2 knots or higher
Position accuracy	1	The position accuracy (PA) flag should be determined in accordance with Table 47 1 = high (≤10 m) 0 = low (>10 m) 0 = default
Longitude	28	Longitude in 1/10 000 min (±180º, East = positive (as per 2's complement), West = negative (as per 2's complement). 181= (6791AC0$_h$) = not available = default)

TABLE 45 (*end*)

Parameter	Number of bits	Description
Latitude	27	Latitude in 1/10 000 min (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement). 91° (3412140h) = not available = default)
COG	12	Course over ground in 1/10 = (0-3599). 3600 (E10$_h$) = not available = default. 3 601-4 095 should not be used
True heading	9	Degrees (0-359) (511 indicates not available = default)
Time stamp	6	UTC second when the report was generated by the electronic position system (EPFS) (0-59, or 60 if time stamp is not available, which should also be the default value, or 61 if positioning system is in manual input mode, or 62 if electronic position fixing system operates in estimated (dead reckoning) mode, or 63 if the positioning system is inoperative)
special manoeuvre indicator	2	0 = not available = default 1 = not engaged in special manoeuvre 2 = engaged in special manoeuvre (i.e.: regional passing arrangement on Inland Waterway)
Spare	3	Not used. Should be set to zero. Reserved for future use.
RAIM-flag	1	Receiver autonomous integrity monitoring (RAIM) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use. See Table 47
Communication state	19	See Table 46
Number of bits	168	

TABLE 46

Message ID	Communication state
1	SOTDMA communication state as described in § 3.3.7.2.1, Annex 2
2	SOTDMA communication state as described in § 3.3.7.2.1, Annex 2
3	ITDMA communication state as described in § 3.3.7.3.2, Annex 2

TABLE 47

Determination of position accuracy information

Accuracy status from RAIM (for 95% of position fixes)[1]	RAIM flag	Differential correction status[2]	Resulting value of PA flag
No RAIM process available	0	Uncorrected	0 = low (>10 m)
EXPECTED RAIM error is < 10m	1		1 = high (<10 m)
EXPECTED RAIM error is > 10m	1		0 = low (>10 m)
No RAIM process available	0	Corrected	1 = high (<10 m)
EXPECTED RAIM error is < 10m	1		1 = high (<10 m)
EXPECTED RAIM error is > 10m	1		0 = low (>10 m)

[1] The connected GNSS receiver indicates the availability of a RAIM process by a valid GBS sentence of IEC 61162-1; in this case the RAIM-flag should be set to "1". The threshold for evaluation of the RAIM information is 10 m. The RAIM expected error is calculated based on the GBS parameters "expected error in latitude" and "expected error in longitude" using the following formula:

$$\text{EXPECTED RAIM error} = \sqrt{(\text{expected error in latitude})^2 + (\text{expected error in longitude})^2}$$

[2] The quality indicator in the position sentences of IEC 61162-1 received from the connected GNSS receiver indicates the correction status.

3.2 Message 4: Base station report

Message 11: UTC and date response

Should be used for reporting UTC time and date and, at the same time, position. A base station should use Message 4 in its periodical transmissions. A mobile station should output Message 11 only in response to interrogation by Message 10.

Message 11 is only transmitted as a result of a UTC request message (Message 10). The UTC and date response should be transmitted on the channel, where the UTC request message was received.

TABLE 48

Parameter	Number of bits	Description
Message ID	6	Identifier for this Message 4 or 11 4 = UTC and position report from base station 11 = UTC and position response from mobile station
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
UTC year	14	1-9999; 0 = UTC year not available = default
UTC month	4	1-12; 0 = UTC month not available = default; 13-15 not used
UTC day	5	1-31; 0 = UTC day not available = default
UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used

TABLE 48 (*end*)

Parameter	Number of bits	Description
UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 not used
UTC second	6	0-59; 60 = UTC second not available = default; 61-63 not used
Position accuracy	1	1 = high (≤10 m) 0 = low (>10 m) 0 = default The PA flag should be determined in accordance with Table 47
Longitude	28	Longitude in 1/10 000 min (±180º, East = positive (as per 2's complement), West = negative (as per 2's complement); 181= (6791AC0$_h$) = not available = default)
Latitude	27	Latitude in 1/10 000 min (±90º, North = positive (as per 2's complement), South = negative (as per 2's complement); 91 = (3412140$_h$) = not available = default)
Type of electronic position fixing device	4	Use of differential corrections is defined by field position accuracy above: 0 = undefined (default) 1 = global positioning system (GPS) 2 = GNSS (GLONASS) 3 = combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = integrated navigation system 7 = surveyed 8 = Galileo 9-14 = not used 15 = internal GNSS
Transmission control for long-range broadcast message	1	0 = default – Class-A AIS station stops transmission of Message 27 within an AIS base station coverage area. 1 = Request Class-A station to transmit Message 27 within an AIS base station coverage area.
Spare	9	Not used. Should be set to zero. Reserved for future use
RAIM-flag	1	RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use see Table 47
Communication state	19	SOTDMA communication state as described in § 3.3.7.2.1, Annex 2
Number of bits	168	

3.3 Message 5: Ship static and voyage related data

Should only be used by Class A shipborne and SAR aircraft AIS stations when reporting static or voyage related data.

TABLE 49

Parameter	Number of bits	Description
Message ID	6	Identifier for this Message 5
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
AIS version indicator	2	0 = station compliant with Recommendation ITU-R M.1371-1 1 = station compliant with Recommendation ITU-R M.1371-3 2-3 = station compliant with future editions
IMO number	30	1-999999999; 0 = not available = default – Not applicable to SAR aircraft
Call sign	42	7 = 6 bit ASCII characters, @@@@@@@ = not available = default
Name	120	Maximum 20 characters 6 bit ASCII, as defined in Table 44 "@@@@@@@@@@@@@@@@@@@@" = not available = default. For SAR aircraft, it should be set to "SAR AIRCRAFT NNNNNNN" where NNNNNNN equals the aircraft registration number
Type of ship and cargo type	8	0 = not available or no ship = default 1-99 = as defined in § 3.3.2 100-199 = reserved, for regional use 200-255 = reserved, for future use Not applicable to SAR aircraft
Overall dimension/ reference for position	30	Reference point for reported position. Also indicates the dimension of ship (m) (see Fig. 42 and § 3.3.3) For SAR aircraft, the use of this field may be decided by the responsible administration. If used it should indicate the maximum dimensions of the craft. As default should A = B = C = D be set to "0"
Type of electronic position fixing device	4	0 = undefined (default) 1 = GPS 2 = GLONASS 3 = combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = integrated navigation system 7 = surveyed 8 = Galileo, 9-14 = not used 15 = internal GNSS

TABLE 49 (*end*)

Parameter	Number of bits	Description
ETA	20	Estimated time of arrival; MMDDHHMM UTC Bits 19-16: month; 1-12; 0 = not available = default Bits 15-11: day; 1-31; 0 = not available = default Bits 10-6: hour; 0-23; 24 = not available = default Bits 5-0: minute; 0-59; 60 = not available = default For SAR aircraft, the use of this field may be decided by the responsible administration
Maximum present static draught	8	In 1/10 m, 255 = draught 25.5 m or greater, 0 = not available = default; in accordance with IMO Resolution A.851 Not applicable to SAR aircraft, should be set to 0
Destination	120	Maximum 20 characters using 6-bit ASCII; @@@@@@@@@@@@@@@@@@@@ = not available For SAR aircraft, the use of this field may be decided by the responsible administration
DTE	1	Data terminal equipment (DTE) ready (0 = available, 1 = not available = default) (see § 3.3.1)
Spare	1	Spare. Not used. Should be set to zero. Reserved for future use
Number of bits	424	Occupies 2 slots

This message should be transmitted immediately after any parameter value has been changed.

3.3.1   The data terminal equipment indicator

The purpose of the data terminal equipment (DTE) indicator is to indicate to an application on the receiving side that, if set to available, the transmitting station conforms at least to the minimum keyboard and display requirements. On the transmitting side, the DTE indicator may also be set by an external application via the Presentation Interface. On the receiving side, the DTE indicator is only used as information provided to the application layer, that the transmitting station is available for communications.

3.3.2   Type of ship

TABLE 50

Identifiers to be used by ships to report their type	
Identifier No.	**Special craft**
50	Pilot vessel
51	Search and rescue vessels
52	Tugs
53	Port tenders
54	Vessels with anti-pollution facilities or equipment
55	Law enforcement vessels
56	Spare – for assignments to local vessels
57	Spare – for assignments to local vessels

TABLE 50 (*end*)

Identifiers to be used by ships to report their type			
Identifier No.	**Special craft**		
58	Medical transports (as defined in the 1949 Geneva Conventions and Additional Protocols)		
59	Ships and aircraft of States not parties to an armed conflict		
Other ships			
First digit[1]	**Second digit[1]**	**First digit[1]**	**Second digit[1]**
1 – Reserved for future use	0 – All ships of this type	–	0 – Fishing
2 – WIG	1 – Carrying DG, HS, or MP, IMO hazard or pollutant category X[2]	–	1 – Towing
3 – See right column	2 – Carrying DG, HS, or MP, IMO hazard or pollutant category Y[2]	3 – Vessel	2 – Towing and length of the tow exceeds 200 m or breadth exceeds 25 m
4 – HSC	3 – Carrying DG, HS, or MP, IMO hazard or pollutant category Z[2]	–	3 – Engaged in dredging or underwater operations
5 – See above	4 – Carrying DG, HS, or MP, IMO hazard or pollutant category OS[2]	–	4 – Engaged in diving operations
	5 – Reserved for future use	–	5 – Engaged in military operations
6 – Passenger ships	6 – Reserved for future use	–	6 – Sailing
7 – Cargo ships	7 – Reserved for future use	–	7 – Pleasure craft
8 – Tanker(s)	8 – Reserved for future use	–	8 – Reserved for future use
9 – Other types of ship	9 – No additional information	–	9 – Reserved for future use

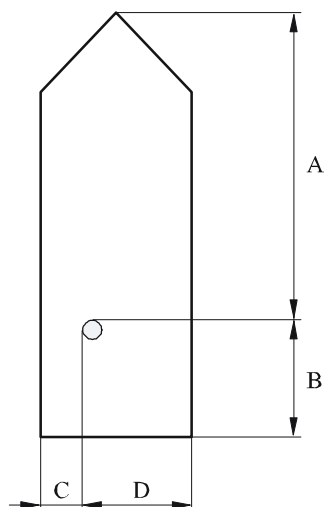DG: dangerous goods

HS: harmful substances

MP: marine pollutants

[1] The identifier should be constructed by selecting the appropriate first and second digits.

[2] NOTE 1 – The digits 1, 2, 3 and 4 reflecting categories X, Y, Z and OS formerly were categories A, B, C and D.

3.3.3   Reference point for reported position and overall dimensions of ship

FIGURE 41

	Number of bits	Bit fields	Distance (m)
A	9	Bit 21-Bit 29	0-511 511 = 511 m or greater
B	9	Bit 12-Bit 20	0-511 511 = 511 m or greater
C	6	Bit 6-Bit 11	0-63; 63 = 63 m or greater
D	6	Bit 0-Bit 5	0-63; 63 = 63 m or greater

The dimension A should be in the direction of the transmitted heading information (bow)
Reference point of reported position not available, but dimensions of ship are available: A = C = 0 and B ≠ 0 and D ≠ 0.
Neither reference point of reported position nor dimensions of ship available; A = B = C = D = 0 (= default).
For use in the message table, A = most significant field, D = least significant field.

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3.4   Message 6: Addressed binary message

The addressed binary message should be variable in length, based on the amount of binary data. The length should vary between 1 and 5 slots. See application identifiers in § 2.1, Annex 5.

TABLE 51

Parameter	Number of bits	Description		
Message ID	6	Identifier for Message 6; always 6		
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1, Annex 2; 0-3; default = 0; 3 = do not repeat any more		
Source ID	30	MMSI number of source station		
Sequence number	2	0-3; refer to § 5.3.1, Annex 2		
Destination ID	30	MMSI number of destination station		
Retransmit flag	1	Retransmit flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted		
Spare	1	Not used. Should be zero. Reserved for future use		
Binary data	Maximum 936	Application identifier	16 bits	Should be as described in § 2.1, Annex 5
		Application data	Maximum 920 bits	Application specific data
Maximum number of bits	Maximum 1 008	Occupies 1 to 5 slots subject to the length of sub-field message content. For Class B mobile AIS stations the length of the message should not exceed 2 slots		

Additional bit stuffing will be required for these message types. For details refer to transport layer, § 5.2.1, Annex 2.

Table 52 gives the number of binary data bytes (including application ID and application data), so that the whole message fits into a given number of slots. It is recommended that any application minimizes the use of slots by limiting the number of binary data bytes to the numbers given, if possible:

TABLE 52

Number of slots	Maximum binary data bytes
1	8
2	36
3	64
4	92
5	117

These numbers also take bit stuffing into account.

3.5 Message 7: Binary acknowledge

Message 13: Safety related acknowledge

Message 7 should be used as an acknowledgement of up to four Message 6 messages received (see § 5.3.1, Annex 2) and should be transmitted on the channel, where the addressed message to be acknowledged was received.

Message 13 should be used as an acknowledgement of up to four Message 12 messages received (see § 5.3.1, Annex 2) and should be transmitted on the channel, where the addressed message to be acknowledged was received.

These acknowledgements should be applicable only to the VHF data link (see § 5.3.1, Annex 2). Other means must be employed for acknowledging applications.

TABLE 53

Parameter	Number of bits	Description
Message ID	6	Identifier for Messages 7 or 13 7 = binary acknowledge 13 = safety related acknowledge
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI number of source of this acknowledge (ACK)
Spare	2	Not used. Should be set to zero. Reserved for future use
Destination ID1	30	MMSI number of first destination of this ACK
Sequence number for ID1	2	Sequence number of message to be acknowledged; 0-3

TABLE 53 (*end*)

Parameter	Number of bits	Description
Destination ID2	30	MMSI number of second destination of this ACK; should be omitted if no destination ID2
Sequence number for ID2	2	Sequence number of message to be acknowledged; 0-3; should be omitted if no destination ID2
Destination ID3	30	MMSI number of third destination of this ACK; should be omitted if no destination ID3
Sequence number for ID3	2	Sequence number of message to be acknowledged; 0-3; should be omitted if no destination ID3
Destination ID4	30	MMSI number of fourth destination of this ACK; should be omitted if no destination ID4
Sequence number for ID4	2	Sequence number of message to be acknowledged; 0-3. Should be omitted if there is no destination ID4
Number of bits	72-168	

3.6   Message 8: Binary broadcast message

This message will be variable in length, based on the amount of binary data. The length should vary between 1 and 5 slots.

TABLE 54

Parameter	Number of bits	Description		
Message ID	6	Identifier for Message 8; always 8		
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; default = 0; 3 = do not repeat any more		
Source ID	30	MMSI number of source station		
Spare	2	Not used. Should be set to zero. Reserved for future use		
Binary data	Maximum 968	Application identifier	16 bits	Should be as described in § 2.1, Annex 5
		Application data	Maximum 952 bits	Application specific data
Maximum number of bits	Maximum 1 008	Occupies 1 to 5 slots For Class B mobile AIS stations the length of the message should not exceed 2 slots		

Table 55 gives the number of binary data bytes (including application ID and application data), so that the whole message fits into a given number of slots. It is recommended that any application minimizes the use of slots by limiting the number of binary data bytes to the numbers given, if possible:

TABLE 55

Number of slots	Maximum binary data bytes
1	12
2	40
3	68
4	96
5	121

These numbers also take into account bit stuffing.

Additional bit stuffing will be required for this message type. For details refer to transport layer, § 5.2.1, Annex 2.

3.7   Message 9: Standard SAR aircraft position report

This message should be used as a standard position report for aircraft involved in SAR operations. Stations other than aircraft involved in SAR operations should not transmit this message. The default reporting interval for this message should be 10 s.

TABLE 56

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 9; always 9
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
Altitude (GNSS)	12	Altitude (derived from GNSS or barometric (see altitude sensor parameter below)) (m) (0-4 094 m) 4 095 = not available, 4 094 = 4 094 m or higher
SOG	10	Speed over ground in knot steps (0-1 022 knots) 1 023 = not available, 1 022 = 1 022 knots or higher
Position accuracy	1	1 = high (≤10 m) 0 = low (>10 m) 0 = default The PA flag should be determined in accordance with Table 47
Longitude	28	Longitude in 1/10 000 min (±180º, East = positive (as per 2's complement), West = negative (as per 2's complement); 181= (6791AC0$_h$) = not available = default)
Latitude	27	Latitude in 1/10 000 min (±90º, North = positive (as per 2's complement), South = negative (as per 2's complement); 91= (3412140h) = not available = default)

TABLE 56 (*end*)

Parameter	Number of bits	Description
COG	12	Course over ground in 1/10 = (0-3 599). 3 600 (E10$_h$) = not available = default; 3 601-4 095 should not be used
Time stamp	6	UTC second when the report was generated by the EPFS (0-59 or 60 if time stamp is not available, which should also be the default value or 61 if positioning system is in manual input mode or 62 if electronic position fixing system operates in estimated (dead reckoning) mode or 63 if the positioning system is inoperative)
Altitude sensor	1	0 = GNSS 1 = barometric source
Spare	7	Not used. Should be set to zero. Reserved for future use
DTE	1	Data terminal ready (0 = available 1 = not available = default) (see § 3.3.1)
Spare	3	Not used. Should be set to zero. Reserved for future use
Assigned mode flag	1	0 = Station operating in autonomous and continuous mode = default 1 = Station operating in assigned mode
RAIM-flag	1	RAIM flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use see Table 47
Communication state selector flag	1	0 = SOTDMA communication state follows 1 = ITDMA communication state follows
Communication state	19	SOTDMA communication state (see § 3.3.7.2.1, Annex 2), if communication state selector flag is set to 0, or ITDMA communication state (see § 3.3.7.3.2, Annex 2), if communication state selector flag is set to 1
Number of bits	168	

3.8   Message 10: UTC and date inquiry

This message should be used when a station is requesting UTC and date from another station.

TABLE 57

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 10; always 10
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI number of station which inquires UTC
Spare	2	Not used. Should be set to zero. Reserved for future use
Destination ID	30	MMSI number of station which is inquired
Spare	2	Not used. Should be set to zero. Reserved for future use
Number of bits	72	

3.9 Message 11: UTC/date response

For Message 11 refer to description of Message 4.

3.10 Message 12: Addressed safety related message

The addressed safety related message could be variable in length, based on the amount of safety related text. The length should vary between 1 and 5 slots.

TABLE 58

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 12; always 12
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI number of station which is the source of the message.
Sequence number	2	0-3; see § 5.3.1, Annex 2
Destination ID	30	MMSI number of station which is the destination of the message
Retransmit flag	1	Retransmit flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted
Spare	1	Not used. Should be zero. Reserved for future use
Safety related text	Maximum 936	6-bit ASCII as defined in Table 44
Maximum number of bits	Maximum 1 008	Occupies 1 to 5 slots subject to the length of text For Class B mobile AIS stations the length of the message should not exceed 2 slots

Additional bit stuffing will be required for this message type. For details refer to transport layer, § 5.2.1, Annex 2.

Table 59 gives the number of 6-bit-ASCII characters, so that the whole message fits into a given number of slots. It is recommended that any application minimizes the use of slots by limiting the number of characters to the numbers given, if possible:

TABLE 59

Number of slots	Maximum 6-bit ASCII characters
1	10
2	48
3	85
4	122
5	156

These numbers also take bit stuffing into account.

3.11   Message 13: Safety related acknowledge

For Message 13 refer to description of Message 7.

3.12   Message 14: Safety related broadcast message

The safety related broadcast message could be variable in length, based on the amount of safety related text. The length should vary between 1 and 5 slots.

TABLE 60

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 14; always 14.
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI number of source station of message
Spare	2	Not used. Should be set to zero. Reserved for future use
Safety related text	Maximum 968	6-bit ASCII as defined in Table 44
Maximum number of bits	Maximum 1 008	Occupies 1 to 5 slots subject to the length of text. For Class B mobile AIS stations the length of the message should not exceed 2 slots

Additional bit stuffing will be required for this message type. For details refer to transport layer, § 5.2.1, Annex 2.

Table 61 gives the number of 6-bit ASCII characters, so that the whole message fits into a given number of slots. It is recommended that any application minimizes the use of slots by limiting the number of characters to the numbers given, if possible:

TABLE 61

Number of slots	Maximum 6-bit ASCII characters
1	16
2	53
3	90
4	128
5	161

These numbers also take bit stuffing into account.

The AIS-SART should use Message 14, and the safety related text should be:

1   For the active SART, the text should be "SART ACTIVE".

2   For the test mode, the text should be "SART TEST".

3.13 Message 15: Interrogation

This message should be used for interrogations via the TDMA (not DSC) VHF data link other than requests for UTC and date. The response should be transmitted on the channel where the interrogation was received.

TABLE 62

Interrogator / Interrogated	Class A	Class B-SO	Class B -CS	SAR aircraft	AtoN	Base station
Class A	3, 5	N	N	3, 5	N	3, 5
Class B-SO	18, 19	N	N	18, 19	N	18, 19
Class B-CS	18, 24[1]	N	N	18, 24[1]	N	18, 19, 24[1]
SAR-aircraft	9, 24[1]	N	N	9	N	9, 24[1]
AtoN	21	N	N	N	N	21
Base Station	4, 24[1]	N	N	4, 24[1]	N	4, 24[1]

[1] An Interrogation for Message 24 shall be answered with a Part A and depending on its own capability with a Part B.

[2] Some AtoN stations are not able to respond due to there operational behaviour.

The parameter slot offset should be set to zero, if slot should autonomously be allocated by the responding station. An interrogating mobile station should always set the parameter "slot offset" to zero. Slot assignments for the reply to an interrogation should only be used by a base station. If a slot offset is given, it should be relative to the start slot of this transmission. A mobile station should be able to process a minimum slot offset of 10 slots. There should be the following four (4) possibilities to use this message:

– One (1) station is interrogated one (1) message: The parameters destination ID1, message ID1.1 and slot offset 1.1 should be defined. All other parameters should be omitted.

– One (1) station is interrogated two (2) messages: The parameters destination ID1, message ID1.1, slot offset 1.1, message ID1.2, and slot offset 1.2 should be defined. The parameters destination ID2, message ID2.1, and slot offset 2.1 should be omitted. See § 3.3.7, Annex 2 for byte boundaries.

– The first station and the second station are interrogated one (1) message each: The parameters destination ID1, message ID1.1, slot offset 1.1, destination ID2, message ID2.1, and slot offset 2.1 should be defined. The parameters message ID1.2 and slot offset 1.2 should be set to zero (0).

– The first station is interrogated two (2) messages, and the second station is interrogated one (1) message: All parameters should be defined.

TABLE 63

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 15; always set to 15
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI number of interrogating station
Spare	2	Not used. Should be set to zero. Reserved for future use
Destination ID1	30	MMSI number of first interrogated station

TABLE 63 (*end*)

Parameter	Number of bits	Description
Message ID1.1	6	First requested message type from first interrogated station
Slot offset 1.1	12	Response slot offset for first requested message from first interrogated station
Spare	2	Not used. Should be set to zero. Reserved for future use
Message ID1.2	6	Second requested message type from first interrogated station
Slot offset 1.2	12	Response slot offset for second requested message from first interrogated station
Spare	2	Not used. Should be set to zero. Reserved for future use
Destination ID 2	30	MMSI number of second interrogated station
Message ID 2.1	6	Requested message type from second interrogated station
Slot offset 2.1	12	Response slot offset for requested message from second interrogated station
Spare	2	Not used. Should be set to zero. Reserved for future use
Number of bits	88-160	Total number of bits depends upon number of messages requested

3.14   Message 16: Assigned mode command

Assignment should be transmitted by a base station when operating as a controlling entity. Other stations can be assigned a transmission schedule, other than the currently used one. If a station is assigned a schedule, it will also enter assigned mode.

Two stations can be assigned simultaneously.

When receiving an assignment schedule, the station should tag it with a time-out, randomly selected between 4 and 8 min after the first transmission.

When a Class A shipborne mobile AIS station receives an assignment it should revert to either the assigned reporting rate or the resulting reporting rate (when slot assignment is used) or the autonomously derived reporting rate (see § 4.3.1, Annex 2), whatever is higher. The Class A shipborne mobile AIS station should indicate that it is in assigned mode (by using the appropriate messages), even if it reverts to a higher autonomously derived reporting rate.

NOTE 1 – The assigning station should monitor the mobile station's transmissions in order to determine when the mobile station will time-out.

For bounds of assignment settings see Table 16, Annex 2.

Transmissions of Message 16 by base stations using assignment of transmission slots should consider directing transmissions to slots which have previously been reserved by the base station by FATDMA (Message 20).

If continued assignment is required, the new assignment should be transmitted before the start of the last frame of the previous assignment.

TABLE 64

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 16. Always 16
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI of assigning station
Spare	2	Spare. Should be set to zero. Reserved for future use
Destination ID A	30	MMSI number. Destination identifier A
Offset A	12	Offset from current slot to first assigned slot[(1)]
Increment A	10	Increment to next assigned slot[(1)]
Destination ID B	30	MMSI number. Destination identifier B. Should be omitted if there is assignment to station A, only
Offset B	12	Offset from current slot to first assigned slot. Should be omitted if there is assignment to station A, only[(1)]
Increment B	10	Increment to next assigned slot[(1)]. Should be omitted, if there is assignment to station A, only
Spare	Maximum 4	Spare. Not used. Should be set to zero. The number of spare bits, which should be 0 or 4, should be adjusted in order to observe byte boundaries. Reserved for future use
Number of bits	96 or 144	Should be 96 or 144 bits

[(1)] To assign a reporting rate for a station, the parameter increment should be set to zero. The parameter offset should then be interpreted as the number of reports in a time interval of 10 min.

When number of reports per 10 min are assigned, only multiples of 20 between 20 and 600 should be used. If a mobile station received a value which is not a multiple of 20 but below 600, it should use the next higher multiple of 20. If a mobile station receives a value grater than 600 it should use 600.

When slot increments are assigned, one of the following increment parameter settings should be used:

    0 = see above
    1 = 1125 slots
    2 = 375 slots
    3 = 225 slots
    4 = 125 slots
    5 = 75 slots
    6 = 45 slots
    7 = undefined.

If a station receives the value 7, the station should disregard this assignment. Class B mobile AIS stations should not be assigned a reporting interval of less than 2 s.

3.15   Message 17: GNSS broadcast binary message

This message should be transmitted by a base station, which is connected to a DGNSS reference source, and configured to provide DGNSS data to receiving stations. The contents of the data should be in accordance with Recommendation ITU-R M.823, excluding preamble and parity formatting.

TABLE 65

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 17; always 17
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source ID	30	MMSI of the base station
Spare	2	Spare. Should be set to zero. Reserved for future use
Longitude	18	Surveyed longitude of DGNSS reference station in 1/10 min (±180º, East = positive, West = negative). If interrogated and differential correction service not available, the longitude should be set to 181º
Latitude	17	Surveyed latitude of DGNSS reference station in 1/10 min (±90º, North = positive, South = negative). If interrogated and differential correction service not available, the latitude should be set to 91º
Spare	5	Not used. Should be set to zero. Reserved for future use
Data	0-736	Differential correction data (see below). If interrogated and differential correction service not available, the data field should remain empty (zero bits). This should be interpreted by the recipient as DGNSS data words set to zero
Number of bits	80-816	80 bits: assumes $N = 0$; 816 bits: assumes $N = 29$ (maximum value); see Table 66

The differential correction data section should be organized as listed below:

TABLE 66

Parameter	Number of bits	Description
Message type	6	Recommendation ITU-R M.823
Station ID	10	Recommendation ITU-R M.823 station identifier
Z count	13	Time value in 0.6 s (0-3 599.4)
Sequence number	3	Message sequence number (cyclic 0-7)
N	5	Number of DGNSS data words following the two word header, up to a maximum of 29
Health	3	Reference station health (specified in Recommendation ITU-R M.823)

TABLE 66 (*end*)

Parameter	Number of bits	Description
DGNSS data word	N = 24	DGNSS message data words excluding parity
Number of bits	736	Assuming *N* = 29 (the maximum value)

NOTE 1 – It is necessary to restore preamble and parity in accordance with Recommendation ITU-R M.823 before using this message to differentially correct GNSS positions to DGNSS positions.

NOTE 2 – Where DGNSS corrections are received from multiple sources, the DGNSS corrections from the nearest DGNSS reference station should be used taking into account the Z count, and the health of the DGNSS reference station.

NOTE 3 – Transmissions of Message 17 by base stations should take into account ageing, update rate and the resulting accuracy of the DGNSS service. Because of the resulting effects of VDL channel loading, the transmission of Message 17 should be no more than necessary to provide the necessary DGNSS service accuracy.

3.16 Message 18: Standard Class B equipment position report

The Standard Class B equipment position report should be output periodically and autonomously instead of Messages 1, 2, or 3 by Class B shipborne mobile equipment, only. The reporting interval should default to the values given in Table 2, Annex 1, unless otherwise specified by reception of a Message 16 or 23; and depending on the current SOG and navigational status flag setting.

TABLE 67

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 18; always 18
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more; should be 0 for "CS" transmissions
User ID	30	MMSI number
Spare	8	Not used. Should be set to zero. Reserved for future use
SOG	10	Speed over ground in 1/10 knot steps (0-102.2 knots) 1 023 = not available, 1 022 = 102.2 knots or higher
Position accuracy	1	1 = high (≤10 m) 0 = low (>10 m) 0 = default The PA flag should be determined in accordance with Table 47
Longitude	28	Longitude in 1/10 000 min (±180º, East = positive (as per 2's complement), West = negative (as per 2's complement); 181º (6791AC0h) = not available = default)
Latitude	27	Latitude in 1/10 000 min (±90º, North = positive (as per 2's complement), South = negative (as per 2's complement); 91= (3412140h) = not available = default)
COG	12	Course over ground in 1/10= (0-3 599). 3 600 (E10h) = not available = default; 3 601-4 095 should not be used

TABLE 67 (*end*)

Parameter	Number of bits	Description
True heading	9	Degrees (0-359) (511 indicates not available = default)
Time stamp	6	UTC second when the report was generated by the EPFS (0-59 or 60 if time stamp is not available, which should also be the default value or 61 if positioning system is in manual input mode or 62 if electronic position fixing system operates in estimated (dead reckoning) mode or 63 if the positioning system is inoperative) 61, 62, 63 are not used by "CS" AIS
Spare	2	Not used. Should be set to zero. Reserved for future use
Class B unit flag	1	0 = Class B SOTDMA unit 1 = Class B "CS" unit
Class B display flag	1	0 = No display available; not capable of displaying Message 12 and 14 1 = Equipped with integrated display displaying Message 12 and 14
Class B DSC flag	1	0 = Not equipped with DSC function 1 = Equipped with DSC function (dedicated or time-shared)
Class B band flag	1	0 = Capable of operating over the upper 525 kHz band of the marine band 1 = Capable of operating over the whole marine band (irrelevant if "Class B Message 22 flag" is 0)
Class B Message 22 flag	1	0 = No frequency management via Message 22 , operating on AIS1, AIS2 only 1 = Frequency management via Message 22
Mode flag	1	0 = Station operating in autonomous and continuous mode = default 1 = Station operating in assigned mode
RAIM-flag	1	RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use see Table 47
Communication state selector flag	1	0 = SOTDMA communication state follows 1 = ITDMA communication state follows (always "1" for Class-B "CS")
Communication state	19	SOTDMA communication state (see § 3.3.7.2.1, Annex 2), if communication state selector flag is set to 0, or ITDMA communication state (see § 3.3.7.3.2, Annex 2), if communication state selector flag is set to 1 Because Class B "CS" does not use any Communication State information, this field should be filled with the following value: 1100000000000000110
Number of bits	168	Occupies one slot

3.17   Message 19: Extended Class B equipment position report

This message should be used by Class B shipborne mobile equipment. This message should be transmitted once every 6 min in two slots allocated by the use of Message 18 in the ITDMA communication state. This message should be transmitted immediately after the following parameter values change: dimension of ship/reference for position or type of electronic position fixing device.

TABLE 68

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 19; always 19
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
Spare	8	Not used. Should be set to zero. Reserved for future use
SOG	10	Speed over ground in 1/10 knot steps (0-102.2 knots) 1 023 = not available, 1 022 = 102.2 knots or higher
Position accuracy	1	1 = high (≤10 m) 0 = low (>10 m) 0 = default The PA flag should be determined in accordance with Table 47
Longitude	28	Longitude in 1/10 000 min (±180º, East = positive (as per 2's complement), West = negative (as per 2's complement); 181° (6791AC0h) = not available = default)
Latitude	27	Latitude in 1/10 000 min (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement); 91= (3412140h) = not available = default)
COG	12	Course over ground in 1/10= (0-3 599). 3 600 (E10h) = not available = default; 3 601-4 095 should not be used
True heading	9	Degrees (0-359) (511 indicates not available = default)
Time stamp	6	UTC second when the report was generated by the EPFS (0-59 or 60) if time stamp is not available, which should also be the default value or 61 if positioning system is in manual input mode or 62 if electronic position fixing system operates in estimated (dead reckoning) mode, or 63 if the positioning system is inoperative)
Spare	4	Not used. Should be set to zero. Reserved for future use
Name	120	Maximum 20 characters 6-bit ASCII, as defined in Table 44. @@@@@@@@@@@@@@@@@@@@ = not available = default
Type of ship and cargo type	8	0 = not available or no ship = default 1-99 = as defined in § 3.3.2 100-199 = reserved, for regional use 200-255 = reserved, for future use
Dimension of ship/reference for position	30	Dimensions of ship in metres and reference point for reported position (see Fig. 41 and § 3.3.3)
Type of electronic position fixing device	4	0 =Undefined (default); 1 = GPS, 2 = GLONASS, 3 = combined GPS/GLONASS, 4 = Loran-C, 5 = Chayka, 6 = integrated navigation system, 7 = surveyed; 8 = Galileo, 9-14 = not used, 15 = internal GNSS

TABLE 68 (*end*)

Parameter	Number of bits	Description
RAIM-flag	1	RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use see Table 47
DTE	1	Data terminal ready (0 = available 1 = not available; = default) (see § 3.3.1)
Assigned mode flag	1	0 = Station operating in autonomous and continuous mode = default 1 = Station operating in assigned mode
Spare	4	Not used. Should be set to zero. Reserved for future use
Number of bits	312	Occupies two slots

3.18   Message 20: Data link management message

This message should be used by base station(s) to pre-announce the fixed allocation schedule (FATDMA) for one or more base station(s) and it should be repeated as often as required. This way the system can provide a high level of integrity for base station(s). This is especially important in regions where several base stations are located adjacent to each other and mobile station(s) move between these different regions. These reserved slots cannot be autonomously allocated by mobile stations.

The mobile station, within 120 nautical miles[13] should then reserve the slots for transmission by the base station(s) until time-out occurs. The base station should refresh the time-out value with each transmission of Message 20 in order to allow mobile stations to terminate their reservation for the use of the slots by the base stations (refer to § 3.3.1.2, Annex 2).

The parameters: offset number, number of slots, time-out, and increment should be treated as a unit, meaning that if one parameter is defined all other parameters should be defined within that unit. The parameter offset number should denote the offset from the slot in which Message 20 was received to the first slot to be reserved. The parameter number of slots should denote the number of consecutive slots to be reserved starting with the first reserved slot. This defines a reservation block. This reservation block should not exceed 5 slots. The parameter increment should denote the number of slots between the starting slot of each reservation block. An increment of zero indicates one reservation block per frame. The values recommended for increment are as follows: 2, 3, 5, 6, 9, 10, 15, 18, 25, 30, 45, 50, 75, 90, 125, 150, 225, 250, 375, 450, 750, or 1125. Use of one of these values guarantees symmetric slot reservations throughout each frame. This message applies only to the frequency channel in which it is transmitted.

If interrogated and no data link management information available, only offset number 1, number of slots 1, time-out 1, and increment 1 should be sent. These fields should all be set to zero.

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[13] A base station report (Message 4) in conjunction with a data link management message (Message 20) with the same base station ID (MMSI) must be received by the mobile station so that it can determine its distance from the transmitting base station.

TABLE 69

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 20; always 20
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Source station ID	30	MMSI number of base station
Spare	2	Not used. Should be set to zero. Reserved for future use
Offset number 1	12	Reserved offset number; 0 = not available[1]
Number of slots 1	4	Number of reserved consecutive slots: 1-15; 0 = not available[1]
Time-out 1	3	Time-out value in minutes; 0 = not available[1]
Increment 1	11	Increment to repeat reservation block 1; 0 = one reservation block per frame[1]
Offset number 2	12	Reserved offset number (optional)
Number of slots 2	4	Number of reserved consecutive slots: 1-15; optional
Time-out 2	3	Time-out value in minutes (optional)
Increment 2	11	Increment to repeat reservation block 2 (optional)
Offset number 3	12	Reserved offset number (optional)
Number of slots 3	4	Number of reserved consecutive slots: 1-15; optional
Time-out 3	3	Time-out value in minutes (optional)
Increment 3	11	Increment to repeat reservation block 3 (optional)
Offset number 4	12	Reserved offset number (optional)
Number of slots 4	4	Number of reserved consecutive slots: 1-15; optional
Time-out 4	3	Time-out value in minutes (optional)
Increment 4	11	Increment to repeat reservation block 4 (optional)
Spare	Maximum 6	Not used. Should be set to zero. The number of spare bits which may be 0, 2, 4 or 6 should be adjusted in order to observe byte boundaries. Reserved for future use
Number of bits	72-160	

[1] If interrogated and no data link management information is available, only Offset number 1, number of slots 1, time-out 1, and increment 1 should be sent. These fields should all be set to zero.

3.19 Message 21: Aids-to-navigation report (AtoN)

This message should be used by an AtoN AIS station. This station may be mounted on an aid-to-navigation or this message may be transmitted by a fixed station when the functionality of an AtoN station is integrated into the fixed station. This message should be transmitted autonomously

at a Rr of once every three (3) min or it may be assigned by an assigned mode command (Message 16) via the VHF data link, or by an external command. This message should not occupy more than two slots.

TABLE 70

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 21
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
ID	30	MMSI number, (see Article 19 of the RR and Recommendation ITU-R M.585)
Type of aids-to-navigation	5	0 = not available = default; refer to appropriate definition set up by IALA; see Table 71
Name of Aids-to-Navigation	120	Maximum 20 characters 6-bit ASCII, as defined in Table 44 "@@@@@@@@@@@@@@@@@@@@" = not available = default. The name of the AtoN may be extended by the parameter "Name of Aid-to-Navigation Extension" below
Position accuracy	1	1 = high (≤10 m) 0 = low (>10 m) 0 = default The PA flag should be determined in accordance with Table 47
Longitude	28	Longitude in 1/10 000 min of position of an AtoN (±180º, East = positive, West = negative 181 = (6791AC0$_h$) = not available = default)
Latitude	27	Latitude in 1/10 000 min of an AtoN (±90º, North = positive, South = negative 91 = (3412140$_h$) = not available = default)
Dimension/ reference for position	30	Reference point for reported position; also indicates the dimension of an AtoN (m) (see Fig. 42 and § 4.1), if relevant[1]
Type of electronic position fixing device	4	0 = Undefined (default) 1 = GPS 2 = GLONASS 3 = Combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = Integrated Navigation System 7 = surveyed. For fixed AtoN and virtual AtoN, the charted position should be used. The accurate position enhances its function as a radar reference target 8 = Galileo 9-14 = not used 15 = internal GNSS

TABLE 70 (*end*)

Parameter	Number of bits	Description
Time stamp	6	UTC second when the report was generated by the EPFS (0-59 or 60) if time stamp is not available, which should also be the default value or 61 if positioning system is in manual input mode or 62 if electronic position fixing system operates in estimated (dead reckoning) mode or 63 if the positioning system is inoperative)
Off-position indicator	1	For floating AtoN, only: 0 = on position; 1 = off position. NOTE 1 – This flag should only be considered valid by receiving station, if the AtoN is a floating aid, and if time stamp is equal to or below 59. For floating AtoN the guard zone parameters should be set on installation
AtoN status	8	Reserved for the indication of the AtoN status 00000000 = default
RAIM-flag	1	RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use see Table 47
Virtual AtoN flag	1	0 = default = real AtoN at indicated position; 1 = virtual AtoN, does not physically exist[2].
Assigned mode flag	1	0 = Station operating in autonomous and continuous mode = default 1 = Station operating in assigned mode
Spare	1	Spare. Not used. Should be set to zero. Reserved for future use
Name of Aid-to-Navigation Extension	0, 6, 12, 18, 24, 30, 36, ... 84	This parameter of up to 14 additional 6-bit-ASCII characters for a 2-slot message may be combined with the parameter "Name of Aid-to-Navigation" at the end of that parameter, when more than 20 characters are needed for the name of the AtoN. This parameter should be omitted when no more than 20 characters for the name of the A-to-N are needed in total. Only the required number of characters should be transmitted, i.e. no @-character should be used
Spare	0, 2, 4, or 6	Spare. Used only when parameter "Name of Aid-to-Navigation Extension" is used. Should be set to zero. The number of spare bits should be adjusted in order to observe byte boundaries
Number of bits	272-360	Occupies two slots

[1] When using Fig. 41 for AtoN the following should be observed:

– For fixed Aids-to-Navigation, virtual AtoN, and for off-shore structures, the orientation established by the dimension A should point to true north.

– For floating aids larger than 2 m * 2 m the dimensions of the AtoN should always be given approximated to a circle, i.e. the dimensions should always be as follows A = B = C = D ≠ 0. (This is due to the fact that the orientation of the floating Aid to Navigation is not transmitted. The reference point for reported position is in the centre of the circle.)

– A = B = C = D = 1 should indicate objects (fixed or floating) smaller than or equal to 2 m * 2 m. (The reference point for reported position is in the centre of the circle.)

Notes relating to Table 70 (cont.):

– Floating off shore structures that are not fixed, such as rigs, should be considered as Code 31 type from Table 71 AtoN. These structures should have their "Dimension/reference for position" parameter as determined above in Note [(1)].

For fixed off shore structures, Code 3 type from Table 71, should have their "Dimension/reference for position" parameter as determined above in Note [(1)]. Hence, all off shore AtoN and structures have the dimension determined in the same manner and the actual dimensions are contained in Message 21.

[(2)] When transmitting virtual AtoN information, i.e. the virtual/pseudo AtoN Target Flag is set to one (1), the dimensions should be set to A=B=C=D=0 (default). This should also be the case, when transmitting "reference point" information (see Table 70).

This message should be transmitted immediately after any parameter value was changed.

Note on AtoN within AIS:

The competent international body for aids-to-navigation, IALA, defines an AtoN as: "a device or system external to vessels designed and operated to enhance safe and efficient navigation of vessels and/or vessel traffic." (IALA Navguide, Edition 1997, Chapter 7).

The IALA Navguide stipulates: "A floating aid to navigation, which is out of position, adrift or during the night is unlighted, may itself become a danger to navigation. When a floating aid is out of position or malfunctioning, navigational warnings must be given." Therefore, a station, which transmits Message 21, could also transmit safety related broadcast message (Message 14) upon detecting that the floating AtoN has gone out of position or is malfunctioning, at the competent authority's discretion.

TABLE 71

The nature and type of AtoN can be indicated with 32 different codes

	Code	Definition
	0	Default, Type of AtoN not specified
	1	Reference point
	2	RACON
	3	Fixed structures off-shore, such as oil platforms, wind farms. (NOTE 1 – This code should identify an obstruction that is fitted with an AtoN AIS station)
	4	Spare, Reserved for future use
Fixed AtoN	5	Light, without sectors
	6	Light, with sectors
	7	Leading Light Front
	8	Leading Light Rear
	9	Beacon, Cardinal N
	10	Beacon, Cardinal E
	11	Beacon, Cardinal S
	12	Beacon, Cardinal W

TABLE 71 (*end*)

	Code	Definition
	14	Beacon, Starboard hand
	13	Beacon, Port hand
	14	Beacon, Starboard hand
	15	Beacon, Preferred Channel port hand
	16	Beacon, Preferred Channel starboard hand
	17	Beacon, Isolated danger
	18	Beacon, Safe water
	19	Beacon, Special mark
Floating AtoN	20	Cardinal Mark N
	21	Cardinal Mark E
	22	Cardinal Mark S
	23	Cardinal Mark W
	24	Port hand Mark
	25	Starboard hand Mark
	26	Preferred Channel Port hand
	27	Preferred Channel Starboard hand
	28	Isolated danger
	29	Safe Water
	30	Special Mark
	31	Light Vessel/LANBY/Rigs

NOTE 1 – The types of aids to navigation listed above are based on the IALA Maritime Buoyage System, where applicable.

NOTE 2 – There is potential for confusion when deciding whether an aid is lighted or unlighted. Competent authorities may wish to use the regional/local section of the message to indicate this.

3.20 Message 22: Channel management

This message should be transmitted by a base station (as a broadcast message) to command the VHF data link parameters for the geographical area designated in this message. The geographical area designated by this message should be as defined in § 4.1, Annex 2. Alternatively, this message may be used by a base station (as an addressed message) to command individual AIS mobile stations to adopt the specified VHF data link parameters. When interrogated and no channel management performed by the interrogated base station, the not available and/or international default settings should be transmitted (see § 4.1, Annex 2).

TABLE 72

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 22; always 22
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
Station ID	30	MMSI number of Base station
Spare	2	Not used. Should be set to zero. Reserved for future use
Channel A	12	Channel number according to Recommendation ITU-R M.1084, Annex 4
Channel B	12	Channel number according to Recommendation ITU-R M.1084, Annex 4
Tx/Rx mode	4	0 = Tx A/Tx B, Rx A/Rx B (default) 1 = Tx A, Rx A/Rx B 2 = Tx B, Rx A/Rx B 3-15: not used When the dual channel transmission is suspended by Tx/Rx mode command 1 or 2, the required reporting interval should be maintained using the remaining transmission channel
Power	1	0 = high (default), 1 = low
Longitude 1, (or 18 most significant bits (MSBs) of addressed station ID 1)	18	Longitude of area to which the assignment applies; upper right corner (North-East); in 1/10 min, or 18 MSBs of addressed station ID 1 (±180º, East = positive, West = negative) 181 = not available
Latitude 1, (or 12 least significant bits (LSBs) of addressed station ID 1)	17	Latitude of area to which the assignment applies; upper right corner (North-East); in 1/10 min, or 12 LSBs of addressed station ID 1, followed by 5 zero bits (±90º, North = positive, South = negative) 91° = not available
Longitude 2, (or 18 MSBs of addressed station ID 2)	18	Longitude of area to which the assignment applies; lower left corner (South-West); in 1/10 min, or 18 MSBs of addressed station ID 2 (±180º, East = positive, West = negative)
Latitude 2, (or 12 LSBs of addressed station ID 2)	17	Latitude of area to which the assignment applies; lower left corner (South-West); in 1/10 min, or 12 LSBs of addressed station ID 2, followed by 5 zero bits (±90º, North = positive, South = negative)
Addressed or broadcast message indicator	1	0 = broadcast geographical area message = default; 1 = addressed message (to individual station(s))
Channel A bandwidth	1	0 = default (as specified by channel number); 1 = spare (formerly 12.5 kHz bandwidth in Recommendation ITU-R M.1371-1)

TABLE 72 (*end*)

Parameter	Number of bits	Description
Channel B bandwidth	1	0 = default (as specified by channel number); 1 = spare (formerly 12.5 kHz bandwidth in Recommendation ITU-R M.1371-1)
Transitional zone size	3	The transitional zone size in nautical miles should be calculated by adding 1 to this parameter value. The default parameter value should be 4, which translates to 5 nautical miles; see § 4.1.5, Annex 2
Spare	23	Not used. Should be set to zero. Reserved for future use
Number of bits	168	

3.21 Message 23: Group Assignment Command

The Group Assignment Command is transmitted by a Base station when operating as a controlling entity(see § 4.3.3.3.2 Annex 7 and § 3.20). This message should be applied to a mobile station within the defined region and as selected by "Ship and Cargo Type" or "Station type". The receiving station should consider all selector fields concurrently. It controls the following operating parameters of a mobile station:

– transmit/ receive mode;

– reporting interval;

– the duration of a quiet time.

TABLE 73

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 23; always 23
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. 0-3; default = 0; 3 = do not repeat any more
Source ID	30	MMSI of assigning station
Spare	2	Spare. Should be set to zero
Longitude 1	18	Longitude of area to which the group assignment applies; upper right corner (north-east); in 1/10 min ($\pm 180°$, 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 ($\pm 90°$, 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 ($\pm 180°$, 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 ($\pm 90°$, North = positive, South = negative)

TABLE 73 (*end*)

Parameter	Number of bits	Description
Station type	4	0 = all types of mobiles (default); 1 = Class A mobile stations only; 2 = all types of Class B mobile stations; 3 = SAR airborne mobile station; 4 = Class B "SO" mobile stations only; 5 = Class B "CS" shipborne mobile station only; 6 = inland waterways; 7 to 9 = regional use and; 10 to 15 = for future use
Type of ship and cargo type	8	0 = all types (default) 1...99 see Table 50 100...199 reserved for regional use 200...255 reserved for future use
Spare	22	Not used. Should be set to zero. Reserved for future use
Tx/Rx mode	2	This parameter commands the respective stations to one of the following modes: 0 = TxA/TxB, RxA/RxB (default); 1 = TxA, RxA/RxB , 2 = TxB, RxA/RxB, 3 = reserved for future use
Reporting interval	4	This parameter commands the respective stations to the reporting interval given in Table 74
Quiet time	4	0 = default = no quiet time commanded; 1-15 = quiet time of 1 to 15 min
Spare	6	Not used. Should be set to zero. Reserved for future use
Number of bits	160	Occupies one-time period

TABLE 74

Reporting interval settings for use with Message 23

Reporting interval field setting	Reporting interval for Message 23
0	As given by the autonomous mode
1	10 min
2	6 min
3	3 min
4	1 min
5	30 s
6	15 s
7	10 s
8	5 s
9	Next shorter reporting interval
10	Next longer reporting interval
11	2 s (not applicable to the Class B "CS")
12-15	Reserved for future use
NOTE 1 – When the dual channel transmission is suspended by Tx/Rx mode command 1 or 2, the required reporting interval should be maintained using the remaining transmission channel.	

3.22 Message 24: Static data report

Message 24 Part A and Part B may be used by any AIS station to associate a MMSI with a name.

Message 24 Part A and Part B should be used by Class B "CS" shipborne mobile equipment. The message consists of two parts. Message 24B should be transmitted within 1 min following Message 24A.

In case of an interrogation for a Class B "CS" on a Message 24, the response should include Part A and Part B.

TABLE 75

Message 24 Part A

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 24; always 24
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
Part number	2	Identifier for the message part number; always 0 for Part A
Name	120	Name of the MMSI-registered vessel. Maximum 20 characters 6-bit ASCII, @@@@@@@@@@@@@@@@@@@@ = not available = default. For SAR aircraft, it should be set to "SAR AIRCRAFT NNNNNNN" where NNNNNNN equals the aircraft registration number
Number of bits	160	Occupies one-time period

TABLE 76

Message 24 Part B

Parameter	Number of bits	Description
Message ID	6	Identifier for Message 24; always 24
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
Part number	2	Identifier for the message part number; always 1 for Part B
Type of ship and cargo type	8	0 = not available or no ship = default 1-99 = as defined in § 3.3.2 100-199 = reserved, for regional use 200-255 = reserved, for future use Not applicable to SAR aircraft
Vendor ID	42	Unique identification of the Unit by a number as defined by the manufacturer (option; "@@@@@@@" = not available = default) See Table 76A
Call sign	42	Call sign of the MMSI-registered vessel. 7 X 6 bit ASCII characters, "@@@@@@@" = not available = default

TABLE 76 (*end*)

Parameter	Number of bits	Description
Dimension of ship/reference for position. Or, for unregistered daughter vessels, use the MMSI of the mother ship	30	Dimensions of ship in metres and reference point for reported position (see Fig. 41 and § 3.3.3). Or, for an unregistered daughter vessel, use the MMSI of the associated mother ship in this data field. For SAR aircraft, the use of this field may be decided by the responsible administration. If used it should indicate the maximum dimensions of the craft. As default should A = B = C = D be set to "0"
Spare	6	
Number of bits	168	Occupies one-time period

TABLE 76A

Vendor ID field

Bit	Information	Description
(MSB) 41 .... 24 (18 bits)	Manufacturer's ID	The Manufacturer's ID bits indicate the manufacture's mnemonic code consisting of three 6 bit ASCII characters[1]
23 .... 20 (4 bits)	Unit Model Code	The Unit Model Code bits indicate the binary coded series number of the model. The first model of the manufacture uses "1" and the number is incremented at the release of a new model. The code reverts to "1" after reaching to "15". The "0" is not used
19 .... 0 (LSB) (20 bits)	Unit Serial Number	The Unit Serial Number bits indicate the manufacture traceable serial number. When the serial number is composed of numeric only, the binary coding should be used. If it includes figure(s), the manufacture can define the coding method. The coding method should be mentioned in the manual

[1]   IALA is presently considering the creation of an open international register of manufacturers' IDs.

3.23   Message 25: Single slot binary message

This message is primarily intended short infrequent data transmissions. The single slot binary message can contain up to 128 data-bits depending on the coding method used for the contents, and the destination indication of broadcast or addressed. The length should not exceed one slot. See application identifiers in § 2.1, Annex 5.

This message will not be acknowledged by either Message 7 or 13.

TABLE 77

Parameter	Number of bits	Description		
Message ID	6	Identifier for Message 25; always 25		
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1, Annex 2; 0-3; default = 0; 3 = do not repeat any more		
Source ID	30	MMSI number of source station		
Destination indicator	1	0 = Broadcast (no Destination ID field used) 1 = Addressed (Destination ID uses 30 data bits for MMSI)		
Binary data flag	1	0 = unstructured binary data (no Application Identifier bits used) 1 = binary data coded as defined by using the 16-bit Application identifier		
Destination ID	0 / 30	If Destination indicator = 0 (Broadcast); no data bits are needed for the Destination ID If Destination indicator = 1; 30 bits are used for the MMSI number of the destination		
Binary data	Broadcast Maximum 128 Addressed Maximum 98	Application identifier (if used)	16 bits	Should be as described in § 2.1, Annex 5
		Application binary data	Broadcast Maximum 112 bits Addressed Maximum 82 bits	Application specific data
Maximum number of bits	Maximum 168	Occupies up to 1 slot subject to the length of sub-field message content		

TABLE 78

**Gives the maximum number of binary data-bits for settings
of destination indicator and coding method flags,
such that, the message does not exceed one slot**

Destination indicator	Coding method	Binary data (maximum bits)
0	0	128
0	1	112
1	0	98
1	1	82

3.24   Message 26: Multiple slot binary message with communications state

This message is primarily intended for scheduled binary data transmissions by applying either the SOTDMA or ITDMA access scheme. This multiple slot binary message can contain up to 1 004 data-bits (using 5 slots) depending on the coding method used for the contents, and the destination indication of broadcast or addressed. See application identifiers in § 2.1, Annex 5.

This message will not be acknowledged by either Message 7 or 13.

TABLE 79

Parameter	Number of bits	Description		
Message ID	6	Identifier for Message 26; always 26		
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1, Annex 2; 0-3; default = 0; 3 = do not repeat any more		
Source ID	30	MMSI number of source station		
Destination indicator	1	0 = Broadcast (no Destination ID field used) 1 = Addressed (Destination ID uses 30 data bits for MMSI)		
Binary data flag	1	0 = unstructured binary data (no Application Identifier bits used) 1 = binary data coded as defined by using the 16-bit Application identifier		
Destination ID	0/30	If Destination indicator = 0 (Broadcast); no data bits are needed for the Destination ID If Destination indicator = 1; 30 bits are used for the MMSI number of the destination		
Binary data	Broadcast Maximum 108	Application identifier (if used)	16 bits	Should be as described in § 2.1, Annex 5
	Addressed Maximum 78	Application binary data	Broadcast Maximum 92 bits Addressed Maximum 62 bits	Application specific data
Binary data added by 2nd slot	224	Allows for 32 bits of bit-stuffing		
Binary data added by 3rd slot	224	Allows for 32 bits of bit-stuffing		
Binary data added by 4th slot	224	Allows for 32 bits of bit-stuffing		
Binary data added by 5th slot	224	Allows for 32 bits of bit-stuffing		
Communication state selector flag	1	0 = SOTDMA communication state follows 1 = ITDMA communication state follows		
Communication state	19	SOTDMA communication state (see § 3.3.7.2.1, Annex 2), if communication state selector flag is set to 0, or ITDMA communication state (§ 3.3.7.3.2, Annex 2), if communication state selector flag is set to 1		
Maximum number of bits	Maximum 1 064	Occupies 1 to 5 slots subject to the length of sub-field message content		

Table 80 gives the maximum number of binary data-bits for settings of destination indicator and coding method flags, such that, the message does not exceed the indicated number of slots.

TABLE 80

Destination indicator	Binary data flag	Binary data (maximum bits)				
		1-slot	2-slot	3-slot	4-slot	5-slot
0	0	108	332	556	780	1004
0	1	92	316	540	764	988
1	0	78	302	526	750	974
1	1	62	286	510	734	958

3.25 Message 27: Long-range AIS broadcast message

This message is primarily intended for long-range detection of AIS Class A equipped vessels (typically by satellite). This message has a similar content to Messages 1, 2 and 3, but the total number of bits has been compressed to allow for increased propagation delays associated with long-range detection. Refer to Annex 4 for details on Long-Range applications.

TABLE 81

Parameter	Number of bits	Description
Message ID	6	Identifier for this message; always 27
Repeat indicator	2	Always 3
User ID	30	MMSI number
Position accuracy	1	As defined for Message 1
RAIM flag	1	As defined for Message 1
Navigational status	4	As defined for Message 1
Longitude	18	Longitude in 1/10 min (±180º, East = positive, West = negative
Latitude	17	Latitude in 1/10 min (±90º, North = positive, South = negative
SOG	6	Knots (0-62); 63 = not available = default
COG	9	Degrees (0-359); 511 = not available = default
Status of current GNSS position	1	0 = Position is the current GNSS position; 1 = Reported position is not the current GNSS position = default
Spare	1	Set to zero, to preserve byte boundaries
Total number of bits	**96**	

NOTE 1 – There is no time stamp in this message. The receiving system is expected to provide the time stamp when this message is received.