

Edition 1.0
22 October 2008

Technical Clarifications

on

**Vessel Tracking and Tracing Standard
for Inland Navigation, Edition 1.01**

and

Test Standard for Inland AIS, Edition 1.0

1. Introduction

The "Vessel Tracking and Tracing Standard for Inland Navigation" and the "Test Standard for Inland AIS" are documents that describe the technical characteristics for an Inland Automatic Identification System.

As with any technical document some concepts are subject to interpretation. This document presents a series of clarifications for some of these concepts as agreed by the European Expert Group for Vessel Tracking and Tracing.

This document deals specifically with technical details of Inland AIS. It acknowledges the fact that some of the specific technical paragraphs in the "Vessel Tracking and Tracing Standard for Inland Navigation" and the "Test Standard for Inland AIS" might require interpretations as to their precise, intended meaning. Consequently, this document presents a set of unifying recommendations that will, hopefully, result in a standardized application of these paragraphs by potential manufacturers, system integrators as well as users of the systems. Adherence to these recommendations will ensure the viability of the VDL and the interoperability among AIS units obtained from different sources.

2. Technical Clarifications

Important General Remark

Every clarification of this Chapter is presented in a uniform way:

- Every clarification is introduced in the appropriate context of the "Vessel Tracking and Tracing Standard for Inland Navigation" or the "Test Standard for Inland AIS", which is always quoted as a whole section. This is done to ensure, that all clarifications are to be understood in their appropriate context.
- The verbatim text of the "Vessel Tracking and Tracing Standard for Inland Navigation" or the "Test Standard for Inland AIS" is given in italics; additions by the clarification are given upright and underlined as of previous clarification editions and upright and double underlined in the present edition. Deleted text portions are identified with ~~strike-out~~ as of previous clarification editions and ~~double strike-out~~ in the present edition.
- For every clarification a rationale is given to allow complete understanding as to why a clarification was needed also. Eventually, the clarifications will be incorporated into a future revision of the "Vessel Tracking and Tracing Standard for Inland Navigation" and the "Test Standard for Inland AIS".
- A date of when the clarification was drafted by the European Expert Group for Vessel Tracking and Tracing is given.
- A comment contains additional information on the clarification itself. For instance, some clarifications have already been incorporated in the first edition of the "Vessel Tracking and Tracing Standard for Inland Navigation" (Edition 1.01 of October 10th; 2007). A future substantial change of the clarification results in the creation of a legacy issue. Any future change for those clarifications should therefore be done with the utmost caution.

3. Technical clarifications on Vessel Tracking and Tracing Standard for Inland Navigation; Edition 1.01

3.1 VTT Standard § 2.3.9 Type approval

3.1.1 Proposed Clarifying Text:

§ 2.3.9 Type approval

Inland AIS Equipment has to be type approved by a competent authority to verify that the equipment meets the requirements lied down in this standard.

3.1.2 Rationale for Clarification:

There was no clear requirement for type approval lied down in the VTT standard

3.1.3 Date of amendment: 19 June 2008

3.1.4 Comment

No comment.

3.2 VTT Standard § 2.4.4.2.6 Inland specific message 24: water levels

3.2.1 Proposed Clarifying Text:

This message should be used to inform skippers about actual water levels in their area. It is additional short term information to the water levels distributed via Notices to Skippers. The update rate shall be defined by the competent authority. It is possible to transmit the water levels of more than 4 gauges using multiple messages.

This message should be sent by base stations only, to give water level information to all vessels in a certain area. The message should be sent with binary message 8 at regular intervals.

Table 2.15: Water level report

| Parameter | Bit | 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. Default = 0; 3 = do not repeat any more |
| Source ID | 30 | MMSI number |
| Spare | 2 | Not used, should be set to zero. Reserved for future use. |
| Application Identifier | 16 | As described in Table 2.6 |
| UN country code | 12 | UN country code using 2*6-Bit ASCII characters according to ERI specification |
| Gauge ID | 11 | National unique ID of gauge *1 1-2047, 0 = default = unknown |
| Water level | 14 | Bit 0: 0 = negative value, 1 = positive value Bits 1-13 44: 0-4-8191, in 1/100m, Bits 0-13: 0 = unknown = default *2 |
| Gauge ID | 11 | National unique ID of gauge *1 1-2047, 0 = default = unknown |
| Water level | 14 | Bit 0: 0 = negative value, 1 = positive value Bits 1-13 44: 0-4-8191, in 1/100m, Bits 0-13: 0 = unknown = default *2 |
| Gauge ID | 11 | National unique ID of gauge *1 1-2047, 0 = default = unknown |
| Water level | 14 | Bit 0: 0 = negative value, 1 = positive value Bits 1-13 44: 0-4-8191, in 1/100m, Bits 0-13: 0 = unknown = default *2 |
| Gauge ID | 11 | National unique ID of gauge *1 1-2047, 0 = default = unknown |
| Water level | 14 | Bit 0: 0 = negative value, 1 = positive value Bits 1-13 44: 0-4-8191, in 1/100m, Bits 0-13: 0 = unknown = default *2 |
| Binary data | | |
| | 168 | occupies 1 slot |

*1 should be defined by ERI for each country

*2 difference value referring to reference waterlevel (GIW in Germany, RNW on the Danube)

3.2.2 Rationale for Clarification:

Clarification regarding the distinction between water level value "0" and "unknown".
 Clarification regarding number of bit.

3.2.3 Date of amendment: 19 June 2008

3.2.4 Comment

No comment.

3.3 VTT Standard § 2.4.3 Message 23: Group Assignment Command

3.3.1 Proposed Clarifying Text:

The Group Assignment Command is transmitted by a Base station when operating as a controlling entity (see § 3.3.6 ff, Annex 2 and § 3.20, Annex 8 of Draft Revision ITU-R M.1371-2). This message should be applied to a mobile station within the defined region and as selected by "Ship and Cargo Type" or by "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; and
- the duration of a quiet time.

TABLE 1

| 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. Shall 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 ($\pm 180^\circ$, 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 ($\pm 90^\circ$, 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 ($\pm 180^\circ$, 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 ($\pm 90^\circ$, North = positive, South = negative) |
| Station type | 4 | 0 = all types of mobiles (default); 1 = <u>Class A mobile station only reserved for future use;</u> 2 = all types of Class B mobile stations; 3 = SAR airborne mobile station; 4 = <u>Class B "SO" mobile stations only AtoN station;</u> 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, Annex 8 of Draft Revision ITU-R M.1371-2 100...199 reserved for regional use 200...255 reserved for future use |
| Spare | 22 | Not used. Should be set to zero. Reserved for future use. |

| Parameter | Number of bits | Description |
|--------------------|----------------|---|
| 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 2.5 below |
| 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 2.5: 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 minutes |
| 2 | 6 minutes |
| 3 | 3 minutes |
| 4 | 1 minute |
| 5 | 30 seconds |
| 6 | 15 seconds |
| 7 | 10 seconds |
| 8 | 5 seconds |
| 9 | 2 seconds (not applicable to the Class B "CS") |
| <u>9</u> | Next shorter reporting interval |
| 11-10 | Next longer reporting interval |
| <u>11</u> | <u>2 seconds (not applicable to the Class B "CS")</u> |
| 12-15 | Reserved for future use |

NOTE – 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.

3.3.2 Rationale for Clarification:

Changes introduced in Message 23 to maintain the interoperability between Inland AIS and Maritime AIS.

3.3.3 Date of amendment: 16 April 2008

3.3.4 Comment

Proposed clarification has already been incorporated in Edition 1.01 of the "Vessel Tracking and Tracing Standard for Inland Navigation" (Edition 1.01 of October 10th; 2007). Proposed clarification is not yet included in EU VTT specification (EC No 415/2007)

4. Technical clarifications on Inland AIS test standard; Edition 1.0

4.1 Test Standard § 6.5.2 Information reporting intervals

4.1.1 Proposed Clarifying Text:

The different information types of Inland AIS should be transmitted with different reporting rates. For moving vessels in inland waterway areas the reporting rate for the dynamic information can be switched between SOLAS mode and inland waterway mode. In inland mode it can be increased ~~assigned up to between~~ 2 seconds ~~and 10 minutes~~. In mixed traffic areas like seaports it should be possible to decrease the reporting rate for dynamic information from by the competent authority to ensure a balance in reporting behaviour between inland vessels and SOLAS vessels. The reporting behaviour should be switch able by TDMA commands from a base station (automatic switching by TDMA telecommand via message 23) and by commands from ship borne systems, e.g. MKD, ECDIS or on board computer, via interface, e.g. IEC 61162 (automatic switching by ship borne system command) For static and voyage related information it is recommended to have a reporting rate of several minutes, on request, or if information is amended.

| | |
|--|---|
| <i>Static Ship Information</i> | <i>Every 6 minutes or when data has been amended or on request</i> |
| <i>Dynamic Ship Information</i> | <i>Depends on navigational status and ship operating mode, either inland waterway mode or SOLAS mode (default), see Table 1</i> |
| <i>Voyage related Ship Information</i> | <i>Every 6 minutes, when data has been amended or on request</i> |
| <i>Traffic management information</i> | <i>As required (to be defined by competent authority)</i> |
| <i>Safety related messages</i> | <i>As required.</i> |

Table 1: Update rate of dynamic ship information

| <i>Ship dynamic conditions</i> | <i>Nominal reporting interval</i> |
|---|--|
| <i>Ship status "at anchor" and not moving faster than 3 knots</i> | <i>3 minutes¹</i> |
| <i>Ship status "at anchor" and moving faster than 3 knots</i> | <i>10 seconds¹</i> |
| <i>Ship operating in SOLAS mode, moving 0 – 14 knots</i> | <i>10 seconds¹</i> |
| <i>Ship operating in SOLAS mode, moving 0 – 14 knots and changing course</i> | <i>3 1/3 seconds¹</i> |
| <i>Ship operating in SOLAS mode, moving 14 – 23 knots</i> | <i>6 seconds¹</i> |
| <i>Ship operating in SOLAS mode, moving 14 – 23 knots and changing course</i> | <i>2 seconds</i> |
| <i>Ship operating in SOLAS mode, moving faster 23 knots</i> | <i>2 seconds</i> |
| <i>Ship operating in SOLAS mode, moving faster 23 knots and changing course</i> | <i>2 seconds</i> |
| <i>Ship operating in inland waterway mode, moving²</i> | <i>assigned between 2 seconds and 10 seconds minutes</i> |

- 1 When a mobile station determines that it is the semaphore (refer to ITU-R M.1371-1, Annex 2, § 3.1.1.4), the reporting rate should increase to once per 2 seconds (refer to ITU-R M.1371-1, Annex 2, § 3.1.3.3.2).
- 2 Shall be switched by competent authority using message 23, when ship enters inland waterway area.

Note: An Inland AIS Mobil station operates either in Inland Waterway mode, (Group assignment by message 23) or in SOLAS mode (autonomous mode, no group assignment active).

4.1.2 Rationale for Clarification:

In Inland AIS the reporting rate can only be increased relative to the autonomously derived reporting rate.

4.1.3 Date of amendment: 16 April 2008

4.1.4 Comment

Proposed clarification has already been incorporated in Edition 1.01 of the "Vessel Tracking and Tracing Standard for Inland Navigation" (Edition 1.01 of October 10th; 2007). The Note under the Table 1 is to be included in the next revision of the VTT standard (Edition 1.01).

Proposed clarification is not yet included in EU VTT specification (EC No 415/2007).

4.2 Test Standard § 6.5.4 Inland AIS Data storage and message compilation

4.2.1 Proposed Clarifying Text: (VTT 2.3.8, VTT 2.4.4.2)

For data input of the required information for transmission either means for manual input or the proposed digital interface sentences for Inland AIS (\$--SSD, \$--VSD, \$PIWWSSD and \$PIWWIVD) shall be used. This requires means for input and storage of the inland specific data. Only inputs that change the stored data (manual input or \$--SSD, \$--VSD, \$PIWWSSD, \$PIWWIVD) shall generate a transmission where applicable.

The following tables define the behaviour of the Inland AIS mobile station regarding inland specific functional messages:

Initiation of an inland specific functional message

The following table defines the initiator of inland specific functional messages (IFM, RFM) to be transmitted by the Inland AIS mobile station.

(ABM/BBM = via standard Presentation Interface, MKD = via Minimum Keyboard and Display, Inland ECDIS = via connected Inland ECDIS (recommendation only), On VDL request = autonomous reaction when an IFM 2 or 3 interrogation is received)

| Message | Description | Addr/ Bc | Tx initiated by | | | |
|---------|--|----------|-----------------|-------------------|---------------------------------------|----------------------|
| | | | ABM/BBM | MKD | Inland ECDIS | On VDL request |
| RFM10 | Inland static data ¹⁾ | Bc | x | --- | --- | Opt ^{1) 3)} |
| RFM 21 | ETA | Addr | x | Opt | x | No |
| RFM 55 | Inland number of persons ³⁾ | Addr | x | Opt | x | x |
| RFM 55 | Inland number of persons | Bc | x | x | x | No |
| IFM 2 | Interrogation | Addr | x | No | No ²⁾ Opt ⁴⁾ | --- |
| IFM 3 | Capability interrogation | Addr | x | No | Opt | --- |
| IFM 4 | Capability response ³⁾ | Addr | x | --- | --- | x |
| IFM 16 | Number of persons ³⁾ | Addr | x | Opt | x | x |
| IFM 16 | Number of persons | Bc | x | x ⁵⁾ | x | No |
| IFM yy | Any other IFM | Addr/ Bc | x | Opt ⁴⁾ | Opt ⁴⁾ | --- |
| RFM yy | Any other RFM | Addr/ Bc | x | Opt ⁴⁾ | Opt ⁴⁾ | --- |

'X' = required; 'Opt' = Optional; 'No' = Not allowed; '---' = Not applicable

¹⁾ Autonomously provided in conjunction with AIS VDL Message 5 by the Inland AIS mobile station

²⁾ Not IFM 55 and RFM 16 and RFM 10;

³⁾ Messages is provided only if interrogation is addressed to own station

⁴⁾ May be optional for future function message

⁵⁾ Alternatively to RFM 55

Processing of received inland specific functional messages

The following table defines the behaviour (internal processing and reaction) of the Inland AIS mobile station, when an inland specific functional message (IFM, RFM) is received.
 (VDM = output via Presentation Interface, MKD = displayed on Minimum Keyboard and Display.

Inland ECDIS = displayed on connected Inland ECDIS (recommendation only), VDL response = autonomous reaction on a received VDL message)

| Message | Description | Addr/Bc | Processing | | | |
|---------|---|----------|------------|-------------------|-------------------|--------------|
| | | | VDM | MKD | Inland ECDIS | VDL Response |
| RFM10 | Inland static data | Bc | x | x | x | --- |
| RFM 22 | ETA response ⁶⁾ | Addr | x | Opt. | x | --- |
| RFM 23 | EMMA warning | Bc | x | Opt. | x | --- |
| RFM 24 | Water level | Bc | x | Opt. | x | --- |
| RFM 40 | Signal status | Bc | x | Opt. | x | --- |
| RFM 55 | Inland number of persons ⁶⁾ | Addr | x | x | x | --- |
| RFM 55 | Inland number of persons | Bc | x | x | x | --- |
| IFM 2 | Interrogation ^{3) 6)} | Addr | x | --- | --- | x |
| IFM 3 | Capability interrogation ^{3) 6)} | Addr | x | --- | --- | x |
| IFM 4 | Capability response ⁶⁾ | Addr | x | --- | --- | --- |
| IFM 16 | Number of persons ⁶⁾ | Addr | x | x | x | --- |
| IFM 16 | Number of persons | Bc | x | x | x | --- |
| IFM yy | Any other IFM ⁶⁾ | Addr/ Bc | x | Opt ⁴⁾ | Opt ⁴⁾ | --- |
| RFM yy | Any other RFM ⁶⁾ | Addr/ Bc | x | Opt ⁴⁾ | Opt ⁴⁾ | --- |

'X' = required; 'Opt' = Optional; 'No' = Not allowed; '---' = Not applicable

³⁾ Messages is provided only if interrogation is addressed to own station

⁴⁾ May be optional for future function message

⁶⁾ Messages is processed only if addressed to own station

4.2.2 Rationale for Clarification:

There was no clear definition regarding Inland AIS messages

- of the initiator of transmission of inland specific functional messages
- of the processing of received messages

4.2.3 Date of amendment: 16 April 2008

4.2.4 Comment

No comment.

4.3 Test Standard § 6.1.5 (6.1 Composition)

4.3.1 Proposed Clarifying Text: (VTT 2.4.1)

The Inland AIS station shall be able to process the regional application flags in the IEC 61162-1 \$--VSD sentence (if used as source for blue sign information the \$--VSD shall be updated every 2 seconds) or by using a direct connection to the blue sign switch to set the special manoeuvre indicator in AIS VDL message 1, 2, 3 for transmission accordingly (blue sign information).

The VSD field defines 4 bit (values 0...15) which set the 2 bit "Special manoeuvre indicator" field and the first 2 spare bits. Therefore the 2 bits for the spare field should be set to 0 in the VSD sentence. The blue sign bits would be defined by the values 8 = 1000bin (on) and 4 = 0100bin (off).

4.3.2 Rationale for Clarification:

In the ITU-R M.1371 Ed 1 there was a 4 bit field "Reserved for regional applications" in message 1. This field can be set by the last field of the VSD sentence: "Regional application flags, 0 to 15". This field was followed by a 1 bit spare field. It was not clear how to set the blue sign bits by the VSD sentence.

4.3.3 Date of amendment: 16 April 2008

4.3.4 Comment

No comment.

4.4 Test standard § 16.6.6.3.5 Ships not under way (NavStat 1 or 5)

4.4.1 Proposed Clarifying Text:

§ 16.6.6.3.5 Ships not under way (NavStat 1 or 5)

Method of measurement

Set up standard test environment and operate EUT with navigational status not under way (NavStat 1 or 5) and not moving (autonomous mode with a reporting interval of 3 minutes.)

a) Transmit a Group Assignment command (message 23) to the EUT; define station type 0 and geographic region so that the EUT is inside this region. Set the reporting rate to 2 seconds and apply message to VDL.

b) Transmit a Group Assignment command (message 23) to the EUT; define station type 0 and geographic region so that the EUT is inside this region). Set the Tx/Rx mode to mode 2 and apply message to VDL.

Set up standard test environment and operate EUT with navigational status not under way (NavStat 1 or 5) and moving faster than 3 knots (autonomous mode with a reporting interval of 10 seconds.)

- c) Transmit a Group Assignment command (message 23) to the EUT; define station type 0 and geographic region so that the EUT is inside this region. Set the reporting rate to 2 seconds and apply message to VDL.

Required result

- a) Confirm that the EUT transmits position reports with the autonomous reporting interval.
- b) Confirm that the EUT switches to Tx/Rx mode 2 and reverts to normal operation mode after timeout period.
- c) Confirm that the EUT transmits position reports with the assigned reporting interval (2 seconds).

4.4.2 Rationale for Clarification:

Definition of Inland AIS mobile station behavior when Ship is not under way (NavStat not 1 or 5).

4.4.3 Date of amendment: 16 April 2008

4.4.4 Comment

No comment.

4.5 Test standard § 16.6.6.1.1 Assignment by message 22

4.5.1 Proposed Clarifying Text:

Method of measurement

Set up standard test environment and operate EUT in autonomous mode. Transmit an Assigned mode command (message 23) to the EUT with Tx/Rx mode 1.

- a) *Transmit a message 22 defining a region with the EUT inside that region. Transmit a message 22 to the EUT individually addressed and specifying Tx/Rx mode 2.*
- b) Transmit a message 23 to the EUT with Tx/Rx mode 1 within 10 minutes after test a)
- c) Repeat transmission of message 23 to the EUT with Tx/Rx mode 1 after 15 minutes.
- d-b) Repeat the test, clear the region defined by message 22 under a)³. Transmit message 22 to the EUT with regional settings specifying Tx/Rx mode 2.
Record transmitted messages.

³ This can be carried out by assigning a new simulated position to the EUT.

Required results

- a) *The Tx/Rx mode field setting of message 22 shall take precedence over the Tx/Rx mode field setting of message 23.*
- b) Verify that the EUT ignores the assignment by message 23 and the setting of message 22 takes precedence for 10 minutes.
- c) Verify that the EUT applies the Tx/Rx mode field setting of message 23
- d-b) The Tx/Rx mode field setting of message 23 shall take precedence over the Tx/Rx mode field setting of message 22. The receiving station shall revert to its previous Tx/Rx mode after a timeout value randomly chosen between 240 sec and 480 sec.

4.5.2 Rationale for Clarification:

4.5.3 Date of amendment: 16 April 2008

Clarification of priority requirement needed. Message 22 addressed individually to the EUT shall have precedence for a limited time period of 10 minutes only without blocking all other commands for the future.

4.5.4 Comment

No comment.

4.6 Test standard § 16.6.6.2.2 Increased reporting interval assignment by manual input (e.g.: \$PIWWIVD)

4.6.1 Proposed Clarifying Text:

(7.3.3.1, M.1371/A2-3.3.6, E.1.6)

Method of measurement

Set up the standard test environment and operate EUT in autonomous mode.

- a) *Apply a manual input assignment to the EUT with a reporting interval greater than the autonomous reporting interval (MKD or \$PIWWIVD).*
- ~~b) *Apply a manual input assignment to the EUT with a quiet time command (MKD or \$PIWWIVD).*~~
- b) Apply a manual input assignment to the EUT with a reporting interval shorter than the autonomous reporting interval (MKD or \$PIWWIVD).

Record transmitted messages.

Required results

- a) Confirm that the EUT transmits position reports with the autonomous reporting interval in a) ~~and b)~~.
- b) Verify that EUT switches to assigned mode and transmits position reports with 2 seconds reporting interval. Verify that EUT reverts to autonomous mode after timeout period.

4.6.2 Rationale for Clarification:

4.6.3 Date of amendment: 16 April 2008

Not applicable. Manual input for quiet time is not available via \$PIWWIVD or MKD.

4.6.4 Comment

No comment.

4.7 Test standard § 16.6.6.3.1 Entering interval assignment

4.7.1 Proposed Clarifying Text:

Method of measurement

Set up standard test environment and operate EUT in autonomous mode with a reporting interval of 10 seconds.

- a) Transmit a Group Assignment command (message 23) to the EUT with a reporting interval of 5 s assigned reset by assigning 30 s reporting interval; repeat 10 times.*
- b) Repeat test with a reporting interval of 2 s assigned.*
- c) Transmit a Group Assignment command (message 23) to the EUT with a reporting interval next shorter.*
- d) Operate EUT in autonomous mode with a reporting interval of 6 seconds. Transmit a Group Assignment command (message 23) to the EUT with a reporting interval next shorter.*

Monitor the VDL.

Required results

Verify that the first transmission after receiving the message 23 is within a time randomly selected between the time the message 23 has been received and the assigned interval.

- a) Verify that EUT enters assigned operation mode and transmits position report message 2 with 5 seconds reporting interval.
Verify that EUT builds up the assigned transmission scheduled according to network entry procedure. Verify that unused slots of the previous reporting schedule are released.*
- b) Verify that EUT enters assigned operation mode and transmits position report message 2 with 2 seconds reporting interval.*
- c) Verify that EUT enters assigned operation mode and transmits position report message 2 with 5 seconds reporting interval.*
- d) Verify that EUT enters assigned operation mode and transmits position report message 2 with 2 seconds reporting interval.*

4.7.2 Rationale for Clarification:

4.7.3 Date of amendment: 21 May 2008

Clarification of entering interval assignment needed. An Inland AIS unit has to release the slots of the old reporting interval (time-out 0, slot offset 0) and build up the new Tx schedule with message 3.

4.7.4 Comment

No comment.

4.8 Test standard § 16.6.6.3.2 Addressing by geographic region

4.8.1 Proposed Clarifying Text:

Method of measurement

Set up standard test environment and operate EUT in autonomous mode with a reporting interval of 10 seconds.

- a) Transmit a Group Assignment command (message 23) to the EUT (define station type 0 and geographic region so that the EUT is inside this region). Set the reporting rate to 2 seconds and apply message to VDL.
- b) Transmit a Group Assignment command (message 23) to the EUT (define station type 0 and geographic region so that the EUT is outside this region). Set the reporting rate to 2 seconds and apply message to VDL.

Required result

- a) ~~Verify that the first transmission after receiving the message 23 is within a time randomly selected between the time the message 23 has been received and the assigned interval. Verify that EUT switches to assigned mode and transmits position reports with 2 seconds. Verify that EUT reverts to normal operation mode after timeout period.~~
- b) Verify that EUT declines message 23.

4.8.2 Rationale for Clarification:

Clarification of entering interval assignment needed. An Inland AIS unit has to release the slots of the old reporting interval (time-out 0, slot offset 0) and build up the new Tx schedule with message 3.

4.8.3 Date of amendment: 16 April 2008

4.8.4 Comment

No comment.

4.9 Test standard § 16.6.6.4 Reverting from interval assignment

4.9.1 Proposed Clarifying Text:

Method of measurement

Set up standard test environment and operate EUT in autonomous mode. Transmit a Group Assignment command (message 23) to the EUT with a reporting interval of 5 s assigned, monitor the VDL until at least 1 minute after timeout occurred; repeat 10 times (transmissions of message 23 shall not be synchronised to the initial transmission schedule of the EUT).

Measure the time T_{rev} between the reception of message 23 and first transmission after timeout.

Required result

~~*T_{rev} shall be randomly distributed between 240 s and 480 s.*~~

Verify that EUT enters autonomous operation mode after a time-out of 4 to 8 minutes and transmits position report message 1 with autonomous derived reporting interval.

Verify that EUT builds up the assigned transmission scheduled according to network entry procedure. Verify that unused slots of the previous reporting schedule are released.

4.9.2 Rationale for Clarification:

Clarification of reverting from interval assignment needed. An Inland AIS unit has to release the slots of the old reporting interval (time-out 0, slot offset 0) and build up the new Tx schedule with message 3.

4.9.3 Date of amendment: 16 April 2008

4.9.4 Comment

No comment.

4.10 Test standard § 16.8.2.1 Position report message 1, 2 or 3

4.10.1 Proposed Clarifying Text:
(6.5.4.1)

Blue Sign information may be derived by a direct connected switch or by the regional bits of the periodically received PI sentence (\$--VSD). The presence of the direct connected switch shall be made available by automatic means or manual configuration. Ensure that Blue Sign information derived from direct connected switch has precedence of transferred NMEA commands (regional bits of \$--VSD sentence).

Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

- a) Apply a valid VSD sentence with the regional application flag set to:
"Blue sign not set" (0100bin ~~two most significant bits =1~~)
"Blue sign is set" (1000bin ~~two most significant bits =2~~)
"Blue sign information is not available" (0000bin ~~two most significant bits =0~~).
- b) Set the input data for Blue sign information in VSD to invalid (e.g. wrong checksum).
- c) Apply a valid VSD sentence with the regional application flag set to 2. Disconnect VSD input for Blue sign information.
- d) Connect Blue Sign switch to EUT in a way that the Blue Sign value is set to 1 (= not set).
- e) Change Blue Sign value to 2 (= set) by direct connected switch to EUT.
- f) Change Blue Sign value to 1 (= not set) by applying VSD sentence (regional bits of VSD sentence) to EUT.
- g) Disconnect Blue Sign switch from EUT in a way that Blue Sign value is set to 0 (=not available).

Required results

- a) Check the parameter blue sign in VDL message 1, 2, 3:
1 = not engaged in special manoeuvre (blue sign not set)
2 = engaged in special manoeuvre (blue sign set).
0 = not available.
Confirm that EUT transmits message 1 or 2 or 3 with blue sign value accordingly.
Confirm that EUT does not transmit message 5 for unchanged data derived from PI sentence (VSD).
- b) Confirm that EUT switches blue sign value to 0 (= not available) within 2 seconds after invalid input (check PI Output, VDO sentence) and that EUT transmits message 1 or 2 or 3 with blue sign value 0 (= not available).
- c) Confirm that EUT switches blue sign value to 0 (= not available) within 2 seconds after invalid input (check PI Output, VDO sentence) and that EUT transmits message 1 or 2 or 3 with blue sign value 0 (= not available).
- d) Confirm that EUT transmits message 1 or 2 or 3 with blue sign value 1 (= not set).
- e) Confirm that EUT transmits message 1 or 2 or 3 with blue sign value 2 (= set).
- f) Confirm that EUT ignores Blue Sign information derived from VSD sentence.
- g) Confirm that EUT transmits message 1 or 2 or 3 with blue sign value 0 (= not available).

4.10.2 Rationale for Clarification:

Definition of bit order in regional application flag in VSD sentence.

4.10.3 Date of amendment: 16 April 2008

4.10.4 Comment

No comment.

4.11 Test standard § 16.8.3.1 Transmit an interrogation for a specific FM (IFM 2)

4.11.1 Proposed Clarifying Text:

Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

Apply an ABM sentence containing an IFM 2 (Interrogation for a specific FM) using binary message 6 to request "Inland ship and voyage related data (RFM 10)". Record transmitted messages.

- a) Send an IFM 2 ~~with DAC = 200~~, request DAC = 200 and requested FI = 10.
- b) Send an IFM 2 ~~with DAC = 303~~, request DAC = 200 and requested FI = 10.
- c) Send an IFM 2 ~~with DAC = 200~~, request DAC = 303 and requested FI = 10.

Required results

Check that EUT reacts as follows:

- a) Verify that EUT sends interrogation message on VDL using binary message 6 and that DAC FI and requested DAC are correct.
- b) Verify that EUT sends interrogation message on VDL using binary message 6 and that DAC FI and requested DAC are correct.
- c) Verify that EUT sends interrogation message on VDL using binary message 6 and that DAC FI and requested DAC are correct.

4.11.2 Rationale for Clarification:

IFM 2 implicitly includes DAC is 001.

4.11.3 Date of amendment: 16 April 2008

4.11.4 Comment

No comment.

4.12 Test standard § 16.8.4.1 Response to "Capability interrogation" (IFM 3) with "Capability reply" (IFM 4)

4.12.1 Proposed Clarifying Text:

Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

- a) Apply an IFM 3 (Capability interrogation) using addressed binary message (message 6) to the VDL with requested DAC = 200. Record transmitted messages.
- b) Repeat the test with DAC = 303.
- c) Repeat the test with DAC = 001.

Required results

- a) Check that the EUT transmits the appropriate response "Capability reply" (IFM 4) using addressed binary message (message 6) addressed to the interrogator. Check the content of this message in accordance to the specification in ITU-R M.1371. Bit order of 'FI capability table':

| | | | | | | | | | | | | |
|--------------|-------------|--------------|-------------|--------------|-------------|--|--|--|--------------|-------------|--------------|-------------|
| <u>first</u> | <u>sec.</u> | <u>first</u> | <u>sec.</u> | <u>first</u> | <u>sec.</u> | | | | <u>first</u> | <u>sec.</u> | <u>first</u> | <u>sec.</u> |
| FI 0 | | FI 1 | | FI 2 | | | | | FI 62 | | FI 63 | |

Verify that at least the DAC 200 / FI 10 and DAC 200 / FI 55 for Inland AIS are included in the binary structure. Confirm that the EUT transmits the response on the same channel as where the request was received.

- b) Confirm that the EUT does not respond.
- c) Check that the EUT transmits the appropriate response "Capability reply" (IFM 4) using addressed binary message (message 6) addressed to the interrogator. Check the content of this message in accordance to the specification in ITU-R M.1371. Verify that at least the DAC 001 / FI 16 is included in the binary structure. Confirm that the EUT transmits the response on the same channel as where the request was received.

4.12.2 Rationale for Clarification:

Clarifies Bit order of 'FI capability table' in IFM 4.

4.12.3 Date of amendment: 16 April 2008

4.12.4 Comment

No comment

4.13 Test Standard Annex F (Normative) Additional PI port sentences for Inland AIS

4.13.1 Proposed Clarifying Text:

F.1 Inland Waterway voyage data

~~This sentence is used to change setting which are not covered by SSD and VSD. Because these items have to be protected the settings shall be accepted only in combination with a preceding password sentence.~~

\$PIWWIVD,x,x,x,xx.xx,xx.xx,x,xxx,xxxx,xxx*hh<CR><LF>
 field 1 2 3 4 5 6 7 8 9

| Field | Format | Description |
|-------|--------|---|
| 1 | x | See Table 2.5 Reporting rate settings, default setting: 0 |
| 2 | x | number of blue cones: 0-3, 4=B-Flag, 5=default=unknown |
| 3 | x | 0=not available=default, 1=loaded, 2=unloaded, rest not used |
| 4 | xx.xx | static draught of ship 0 to 20,00 meters, 0=unknown=default, rest not used |
| 5 | xx.xx | air draught of ship 0 to 40,00 meters, 0=unknown=default, rest not used |
| 6 | x | number of assisting tugboat 0-6, 7=default=unknown, rest not used |
| 7 | xxx | number of crew members on board 0 to 254, 255=unknown=default, rest not |
| 8 | xxxx | number of passengers on board 0 to 8190, 8191=unknown=default, rest not used |
| 9 | xxx | number of shipboard personnel on board 0 to 254, 255=unknown=default, rest not used |

In case of null fields, the corresponding configuration setting shall not be changed.

F.2 Inland Waterway Static Ship data

This sentence is used to change settings, which are not covered by SSD and VSD. Because the ENI number has to be protected, the settings of the ENI number shall be accepted only in combination with a preceding password sentence. The ENI number needs its own level of protection.

\$PIWWSSD,cccccccc,xxxx,xxx.x,xxx.x,x,x,x*hh<CR><LF>
 field 1 2 3 4 5 6 7

| Field | Format | Description |
|-------|----------|---|
| 1 | cccccccc | ENI number (<u>password protected</u>) |
| 2 | Xxxx | ERI ship type according to ERI classification (see Vessel Tracking and Tracing Standard for Inland Navigation, Edition 1.0, Annex E, CCNR, 31.5.2006) |
| 3 | xxx.x | length of ship 0 to 800,0 meter |
| 4 | xxx.x | beam of ship 0 to 100,0 meter |
| 5 | X | quality of speed information 1=high or 0=low |
| 6 | X | quality of course information 1=high or 0=low |
| 7 | x | quality of heading information 1=high or 0=low |

4.13.2 Rationale for Clarification:

Password protection is for F2 - Inland Waterway Static Ship data – Parameter ENI number - not for F1

4.13.3 Date of amendment: 16 April 2008

4.13.4 Comment

No comment.

4.14 Inland AIS security password sentence

4.14.1 Proposed Clarifying Text:

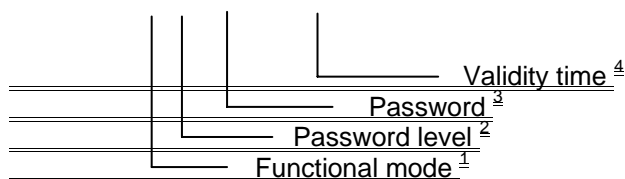
New paragraph: F.3 Inland AIS security password sentence

This sentence can be used to apply a password for protected sentences / data fields. For this purpose the sentence has to be applied before the protected sentence (e.g. PIWWSSD for data field ENI number).

In addition it can be used to change the password. When changing a password (functional mode "C") there must be a preceding Inland AIS security password sentence with functional mode "E" and the same or higher password level (lower number in field 2). The password should consist out of 6 alphanumeric characters at a minimum.

A PIWWSPR sentence should be generated in response to report, if the password was accepted or not.

\$PIWWSPW,a,x,c--c,x.x*hh<cr><lf>



Note 1: Function mode of the password

E = Enter password

C = Change password

Note 2: Password level. This field is used to supply different password levels, like Administrator or Operator password

1 = Administrator or installation password

2 = Operator password

Note 3: Password.

In case of entering a password this is the password used for authentication. The password has to match the password stored in the equipment for the security level as defined by field 2.

In case of changing a password this is the new password. An Inland AIS security password sentence with a valid password for the same or higher level indicated in field 2 (lower number in field 2) must be received before.

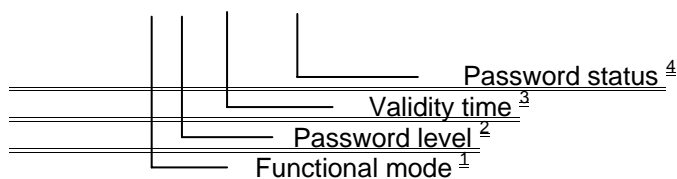
Note 4: Indicates the validity time-out in seconds, range 0 to 60 seconds. When this time has elapsed a new SPW sentence is required for configuration.

"0" = "valid for only one following sentence within next 60 seconds"

New paragraph: F.4 Inland AIS security password response sentence

This sentence is used to report on the status of an Inland AIS security password sentence.

\$PIWWSPR,a,x,x.x,x*hh<cr><lf>



Note 1: Function mode of the PIWWSPW sentence being reported on.

E = Status for enter password

C = Status for change password

Note 2: Password level of the PIWWSPW sentence being reported on.

Note 3: Validity time-out of the PIWWSPW sentence being reported on.

Note 4: Password status.

0 = operation was successful

1 = operation failed

4.14.2 Rationale for Clarification:

Definition of a PI sentence to apply a password protection is for Inland Waterway Static Ship data – Parameter "ENI number" is required.

4.14.3 Date of amendment: 21 May 2008

4.14.4 Comment

No comment.