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INTERNATIONAL STANDARD

colour inside

Maritime navigation and radiocommunication equipment and systems – Shipborne equipment for long-range identification and tracking (LRIT) – Performance requirements

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Maritime navigation and radiocommunication equipment and systems – Shipborne equipment for long-range identification and tracking (LRIT) – Performance requirements

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MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – SHIPBORNE EQUIPMENT FOR LONG-RANGE IDENTIFICATION AND TRACKING (LRIT) – PERFORMANCE REQUIREMENTS

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The text of this standard is based on the following documents:

FDIS	Report on voting
80/663/FDIS	80/668/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – SHIPBORNE EQUIPMENT FOR LONG-RANGE IDENTIFICATION AND TRACKING (LRIT) – PERFORMANCE REQUIREMENTS

1 Scope

International Standard IEC 62729 specifies the performance requirements and methods of testing for shipborne equipment for use for long-range identification and tracking (LRIT). Long-range identification and tracking of ships is a requirement of regulation V/19-1 of SOLAS 1974 as amended. An introduction to the system is given in Annex A. The standard results from observations made at the IMO meeting of MSC 88 in November 2010 that some LRIT equipment in practice was not operating in accordance with the provisions of SOLAS and the IMO performance standards.

The standard takes account of the general requirements given in IMO resolution A.694(17) and is associated with IEC 60945. When a requirement in this International Standard is different from IEC 60945, the requirement in this standard takes precedence.

This standard incorporates the parts of the performance standards included in IMO resolution MSC.263(84), Revised performance standards and functional requirements for the long-range identification and tracking of ships.

Equipment tested to this standard will demonstrate compliance with the SOLAS regulation as indicated below and the test results will assist Administrations in granting type approval:

(SOLAS V/19-1.6) Systems and equipment used to meet the requirements of this regulation shall conform to performance standards and functional requirements not inferior to those adopted by the IMO*. Any shipboard equipment shall be type approved by the Administration.*

Shipboard installations are not covered by this standard but matters relating to the installation of the shipboard equipment are reproduced in Annex B. The IMO conformance test of shipborne installations is not covered by this standard but details are given, for information, in Annex C.

NOTE All text of this standard, whose wording is identical to that of IMO resolution MSC.263(84) and the SOLAS Convention, is printed in italics, and the resolution and associated performance standard paragraph numbers or regulation are indicated in brackets.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60945:2002, *Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results*

IMO, *International Convention for the safety of life at sea (SOLAS), 1974 as amended*

IMO Resolution A.694(17):1991, *General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids*

IMO Resolution MSC.263(84):2008, *Revised performance standards and functional requirements for the long-range identification and tracking of ships*

ITU Radio Regulations, *Appendix 3, Tables of maximum permitted power levels for spurious or spurious domain emissions*

3 Abbreviations

ASP	Application Service Provider
CSP	Communication Service Provider
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite System
IMO	International Maritime Organization
LRIT	Long-Range Identification and Tracking
MMSI	Maritime Mobile Service Identity
RAIM	Receiver Autonomous Integrity Monitoring
SOLAS	International Convention for the Safety Of Life At Sea
SSAS	Ship Security Alert System

NOTE The meaning and usage of certain LRIT terms can be found in Annex A.

4 Performance requirements

4.1 General

4.1.1 General requirements

(See 6.2.1)

(*MSC.263(84) A4.1) In addition to the general requirements contained in resolution A.694(17) on Recommendations on general requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids, the shipborne equipment should comply with the following minimum requirements.*

The equipment shall comply with the general requirements described in IEC 60945.

In addition to the requirements of IEC 60945 for equipment manuals, the equipment handbooks shall state the areas in which the equipment will operate (see 4.6) and information on installation as described in Annex B.

4.1.2 Additional facilities

(See 6.2.2)

If the equipment incorporates facilities additional to the minimum requirements of this standard (for instance for GMDSS or SSAS) the operation of such additional facilities shall not degrade the performance of the equipment and the required performance requirements for LRIT shall be met. However, communications for distress, urgency and safety take priority over the transmission of LRIT information.

4.2 Transmission of information

(See 6.3.1)

(MSC.263(84) A4.1.1) The shipborne equipment shall *be capable of automatically and without human intervention on board the ship transmitting the ship's LRIT information at 6-hour intervals to an LRIT Data Centre.*

NOTE LRIT data centres are described in Annex A. The LRIT information is described in Table 1.

Means shall be provided to enable the shipborne equipment to be remotely programmed to transmit the LRIT information to the selected LRIT data centre.

There shall be no control available to the shipborne user to set up or remove the programming information (however, see 4.7).

The default transmission interval shall be 6 h.

4.3 Remote configuration

(See 6.3.2)

(MSC.263(84) A4.1.2) The shipborne equipment shall *be capable of being configured remotely to transmit LRIT information at variable intervals (Pre-scheduled position reports).*

The equipment shall be capable of being remotely configured to transmit LRIT information at intervals ranging from a minimum of 15 min to periods of 6 h to the LRIT data centre, irrespective of where the ship is located and without human interaction on board the ship.

Means shall be provided to enable a request from an LRIT data centre to program the equipment with the desired interval between transmissions.

4.4 On-demand reports

(See 6.3.3)

(*MSC.263(84) A4.1.3)* The shipborne equipment shall *be capable of transmitting LRIT information following receipt of polling commands (On-demand position reports)*

NOTE 1 *On-demand position reports* means transmission of LRIT information as a result of either receipt of polling command or of remote configuration of the equipment so as to transmit at intervals other than the preset ones.

The equipment shall be capable of responding to a request to transmit LRIT information on demand without human interaction on board the ship, irrespective of where the ship is located.

Means shall be provided for the equipment to respond to a polling command.

The equipment shall transmit the LRIT information within 8 min of receiving the polling command.

NOTE 2 MSC.263(84) A13.2 requires that on-demand information should be provided to an LRIT data user within 30 min of the time that the LRIT data user requested the information. MSC.263(84) A13.1 requires that data should be available to an LRIT data user within 15 min of the time it is transmitted by the ship.

4.5 Functionality

(See 6.3.4)

(*MSC.263(84)A4.2) In addition to the* previous *provisions, the shipborne equipment* shall *provide the functionality specified in* Table 1*.*

Table 1 – Data to be transmitted from the shipborne equipment

Parameter	Comments
Identity of the ship	The identifier used by the shipborne equipment.
Position of the ship (latitude and longitude)	The Global Navigation Satellite System (GNSS) position (latitude and longitude) of the ship (based on the WGS 84 datum) without human interaction on board the ship.
Date and time of the position provided	The date and time, indicated as Universal Coordinated Time (UTC), associated with the GNSS position. In the LRIT system this is known as Time Stamp 1.The equipment should be capable of transmitting the time associated with the GNSS position with each transmission of LRIT information.

The identifier used by the shipborne equipment shall be suitable to be translated into the identity of the ship (MMSI, IMO number and name).

The latitude and longitude of the position shall be coded to an precision of not less than 0,04′.

The date and time of the position shall be coded to an precision of not less than 2 min.

4.6 Coverage

(See 6.3.5)

(MSC.263(84)A4.3) The shipborne equipment shall transmit the LRIT information using a communication system which provides coverage in all areas where the ship operates.

The equipment handbook shall state the areas in which the equipment will operate.

Means shall be provided to continue transmitting after a change of area if appropriate to the communication system.

4.7 User controls

(See 6.3.6)

(SOLAS V/19-1.7) Systems and equipment used to meet the requirements of this regulation shall be capable of being switched off on board or be capable of ceasing the distribution of long-range identification and tracking information:

1) *where international agreements, rules or standards provide for the protection of navigational information; or*
2) *in exceptional circumstances and for the shortest duration possible where the operation is considered by the master to compromise the safety or security of the ship. In such a case, the master shall inform the Administration without undue delay and make an entry in the record of navigational activities and incidents setting out the reasons for the decision and indicating the period during which the system or equipment was switched off.*

(*MSC.263(84)A4.4.1) When a ship is undergoing repairs, modifications or conversions in dry-dock or in port or is laid up for a long period, the master or the Administration may reduce the frequency of the transmission LRIT information to one transmission every 24-hour period, or may temporarily stop the transmission of such information.*

Facilities shall be provided for the shipborne user to stop the transmission of LRIT information.

Facilities shall also be provided to increase the intervals between transmissions to 24 h.

Facilities shall also be provided to re-enable the transmissions at 6 h intervals.

These facilities provided for the shipborne user shall be security protected so that access to these controls can be restricted to the master only.

4.8 Remote switching

(See 6.3.7)

Means shall be provided to enable the shipborne equipment to be remotely programmed to stop the transmission of LRIT information.

NOTE The conditions under which this facility is used is described in 4.7.

5 Technical requirements

5.1 Interfacing

(See 6.4.1)

(MSC.263(84) A4.1.4) The shipborne equipment shall *interface directly to the shipborne global navigation satellite system equipment, or have internal positioning capability.*

If the equipment does not have internal positioning capability, the interface shall, as a minimum, support the sentences GNS, RMC and ZDA described in IEC 61162-1.

If the equipment includes a global navigation satellite system receiver, then this receiver shall meet the following requirements of the applicable part of the IEC 61108 series:

– position accuracy; static and dynamic;
– COG / SOG accuracy;
– position update;
– Interference susceptibility;
– status indications (RAIM optional); and
– WGS-84 datum positions.

5.2 Environmental requirement

The equipment shall comply with the environmental requirements detailed in the tests in IEC 60945:2002, Clause 8 (see 4.1).

The manufacturer shall state whether the equipment, or parts of the equipment, are

– protected from the weather,
– exposed to the weather.

5.3 Electromagnetic compatibility requirement

(MSC.263(84) A4.1.6) The shipborne equipment shall *be tested for electromagnetic compatibility taking into account the recommendations developed by the IMO.*

The equipment shall comply with the electromagnetic compatibility requirements detailed in the tests in IEC 60945:2002, Clauses 9 and 10 (see 4.1).

5.4 Recovery after power outage

(See 6.4.2)

The equipment shall automatically resume the transmission of LRIT information after a power outage.

The necessary configuration information shall be stored in non-volatile memory.

5.5 Radiated spurious emissions

(See 6.4.3)

The equipment shall conform to the appropriate requirements for radiated spurious emissions given in Appendix 3 of the ITU Radio Regulations.

6 Methods of testing and required test results

6.1 General

IMO provides guidance to Administrations in MSC.1/Circ.1307 on methods of demonstrating compliance with the SOLAS requirement for type approval of the shipborne equipment given in SOLAS regulation V/19-1.6. In addition to conformance testing (see Annex C) the methods are as follows for equipment being:

a) of a type approved by the Administration in accordance with the provisions of SOLAS regulation V/19-1; or

b) of a type approved by the Administration in accordance with the provisions of SOLAS regulation IV/14 (GMDSS) IMO resolution A.694(17); or

c) certified by the Administration as meeting the requirements of IEC 60945; or

d) certified by the Administration as meeting the requirements of the provisions of SOLAS regulation XI-2/6 and the performance standards given in IMO resolutions MSC.136(76) or MSC.147(77) (Ship security alert system).

Successful completion of the tests below will demonstrate compliance with the provisions of SOLAS regulation V/19-1 together with IEC 60945 and the performance standards given in section 4 of IMO resolution MSC.263(84).

Some equipment may have already been tested to some of the tests below for other purposes. These test results will be acceptable in lieu of the tests below.

Some tests below require measurements of the equipment performance. These tests may be conducted using a suitable simulator or over the LRIT system under the control of an application service provider (see Annex A).

Some of the tests below may be combined with IMO conformance tests. Annex C provides a cross reference of the tests which are equivalent to the conformance tests.

NOTE IEC 61097-4 contains test requirements for Inmarsat-C equipment used in the GMDSS.

6.2 General

6.2.1 General requirements

(See 4.1.1)

The equipment shall be tested against the general requirements contained in IEC 60945 for the equipment category “protected” or “exposed”, as applicable.

If a performance test and performance check is not otherwise defined, the following definition applies:

Performance test/check – receipt of a polling command and successful transmission of a response.

6.2.2 Additional facilities

(See 4.1.2)

If the equipment incorporates additional facilities, these shall be operated while the tests below are carried out. It may be necessary to repeat tests that might be affected by additional facilities.

6.3 Performance requirements

6.3.1 Transmission of information

(See 4.2)

Confirm by inspection of the manufacturer's documentation that facilities exist to remotely programme the equipment with the details of a LRIT Data Centre to which transmissions can be made.

Confirm by observation of the equipment that no user control is available to set up or remove details of LRIT Data Centres.

Using a simulator or the LRIT system, instruct the equipment to transmit LRIT information to a LRIT data centre. Confirm that the equipment transmits the LRIT data at intervals of 6 h (see also 6.3.4).

6.3.2 Remote configuration

(See 4.3)

Confirm by inspection of manufacturer's documentation that facilities exist to remotely configure the equipment to transmit LRIT information at intervals ranging from 15 min to 6 h.

Using a simulator or the LRIT system, instruct the equipment to transmit LRIT information at 15 min intervals. Confirm that the equipment transmits at 15 min intervals.

Using a simulator or the LRIT system, instruct the equipment to transmit LRIT information at 60 min intervals. Confirm that the equipment transmits at 60 min intervals.

NOTE This test may be combined with conformance test numbers 9a and 9b (Annex C).

6.3.3 On demand reports

(See 4.4)

Confirm by inspection of manufacturer's documentation that the equipment will transmit LRIT information following receipt of a polling command.

Using a simulator or the LRIT system, instruct the equipment with a polling command. Confirm by that the equipment transmits the LRIT information within 8 min of receiving the polling command.

6.3.4 Functionality

(See 4.5)

Confirm by inspection of manufacturer's documentation that the equipment will transmit the data given in Table 1 with the required accuracies.

Confirm by inspection of the manufacturer's documentation that the identifier used by the equipment can be translated into the identity of the ship by an application service provider.

Using a simulator or the LRIT system confirm that the data transmitted complies with Table 1.

6.3.5 Coverage

(See 4.6)

Confirm by inspection of the equipment documentation that the areas in which the equipment will operate are stated.

Using a simulator or the LRIT system, cause the equipment to transit a boundary between areas (if appropriate). Confirm that the equipment continues to transmit LRIT information after the change of area.

6.3.6 User controls

(See 4.7)

Confirm by observation that facilities are provided for the shipborne user to stop the transmission of LRIT information, to increase the intervals between transmissions to 24 h and to re-enable the transmissions at 6 h intervals.

Confirm by observation that operation of the facilities is protected by unauthorised access such as by a password or a key-lock.

Using a simulator or the LRIT system, use the facilities to stop the transmission of LRIT information. Check that no information is transmitted within a 90 min period. Use the facilities to increase the intervals between transmissions to 24 h and confirm that LRIT transmissions are made at 24 h intervals. Using the facilities provided confirm that the interval between transmissions can be reset to 6 h.

NOTE This test may be combined with conformance test number 7 (Annex C).

6.3.7 Remote switching

(See 4.8)

Confirm by inspection of the manufacturer's documentation that facilities exist to remotely programme the equipment to stop the transmission of LRIT information.

Using a simulator or the LRIT system, instruct the equipment to stop the transmission of LRIT information. Check that no information is transmitted within a 90 min period.

NOTE This test may be combined with conformance test number 7 (Annex C).

6.4 Technical requirements

6.4.1 Interfacing

(See 5.1)

If the equipment does not have an internal positioning capability, confirm by inspection that an interface is provided. Confirm by inspection of the manufacturer's documentation that the interface supports the sentences GNS, RMC and ZDA, as described in IEC 61162-1.

If the equipment includes a global navigation satellite system receiver, confirm by inspection of the manufacturer's documentation that the receiver complies with the stated requirements of the applicable part of the IEC 61108 series.

6.4.2 Recovery after power outage

(See 5.4)

Confirm by inspection of the manufacturer's documentation that non–volatile memory is provided in the equipment to store configuration information.

Using a simulator or the LRIT system, remove the source of power from the equipment for 24 h. Confirm that the equipment automatically resumes the transmission of LRIT information when the power is restored.

6.4.3 Radiated spurious emissions

(See 5.5)

Confirm by inspection of manufacturer's documentation that the radiated spurious emissions from the equipment have been measured and comply with the limits given in Appendix 3 of the ITU Radio Regulations.

Annex A
(informative)

Introduction to the LRIT system

The long-range identification and tracking (LRIT) system provides for the global identification and tracking of ships. The obligations of ships to transmit LRIT information and the rights and obligations of SOLAS contracting governments and of search and rescue services to receive LRIT information are established in regulation V/19-1 of the 1974 SOLAS convention.

The LRIT system consists of the shipborne LRIT information transmitting equipment, the communication service provider(s), the application service provider(s), the LRIT data centre(s) including any related vessel monitoring system(s) (VMS), the LRIT data distribution plan and the international LRIT data exchange. Certain aspects of the performance of the LRIT system are reviewed or audited by the International Mobile Satellite Organization (IMSO) as LRIT coordinator acting on behalf of all SOLAS contracting governments.

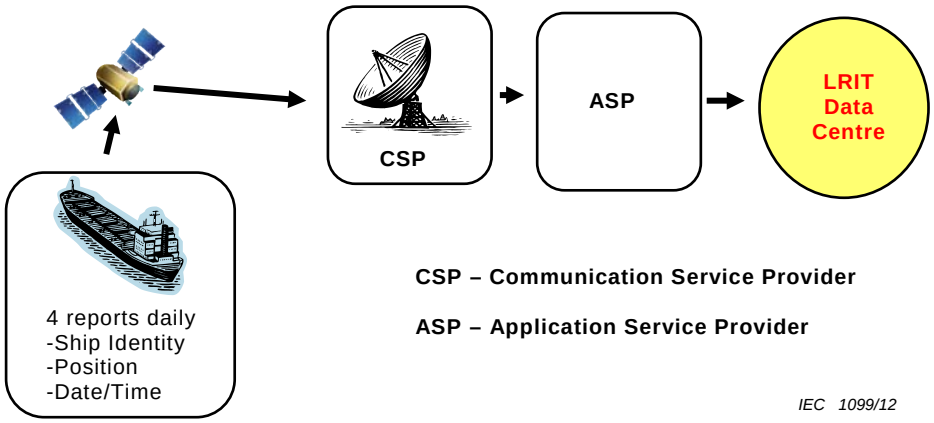

Figure A.1 – Schematic of information transfer from ship to LRIT data centre

Ships carry LRIT transmitting equipment, as described in this standard, which transmit LRIT information nominally four times a day. Examples of shipborne equipment currently used include Inmarsat-C terminals, Inmarsat mini-C terminals, Inmarsat-D+ terminals and Iridium terminals.

The LRIT information is transported by a communication service provider who ensures secure transfer of the LRIT information. Examples of communication service providers currently include Inmarsat, Iridium and Globe Wireless.

The LRIT information is routed to a LRIT data centre by an application service provider. Governments recognise one or more application service providers and provide their names and details to the IMO who maintain a list. Application service providers convert the identifier used in the shipborne equipment (see Table 1) into the identity of the ship (MMSI, IMO number and name) and add a time stamp each time the information is forwarded.

Application service providers provide a communication protocol interface between the communication service providers and the LRIT data centre to enable the following functionality:

– remote integration of the shipborne equipment into an LRIT data centre;
– automatic configuration of transmission of LRIT information;
– automatic modification of the interval of transmission of LRIT information;
– automatic suspension of transmission of LRIT information;
– on demand transmission of LRIT information; and
– automatic recovery and management of transmission of LRIT information.

LRIT data centres are set up by governments, either individually or in cooperation with other governments. Each administration provides the LRIT data centre it has selected with a list of the ships entitled to fly its flag which are required to transmit LRIT information. Ships only transmit the LRIT information to the LRIT data centre selected by their administration. LRIT data centres collect LRIT information and execute requests from LRIT data users for polling and changes in the intervals of transmissions.

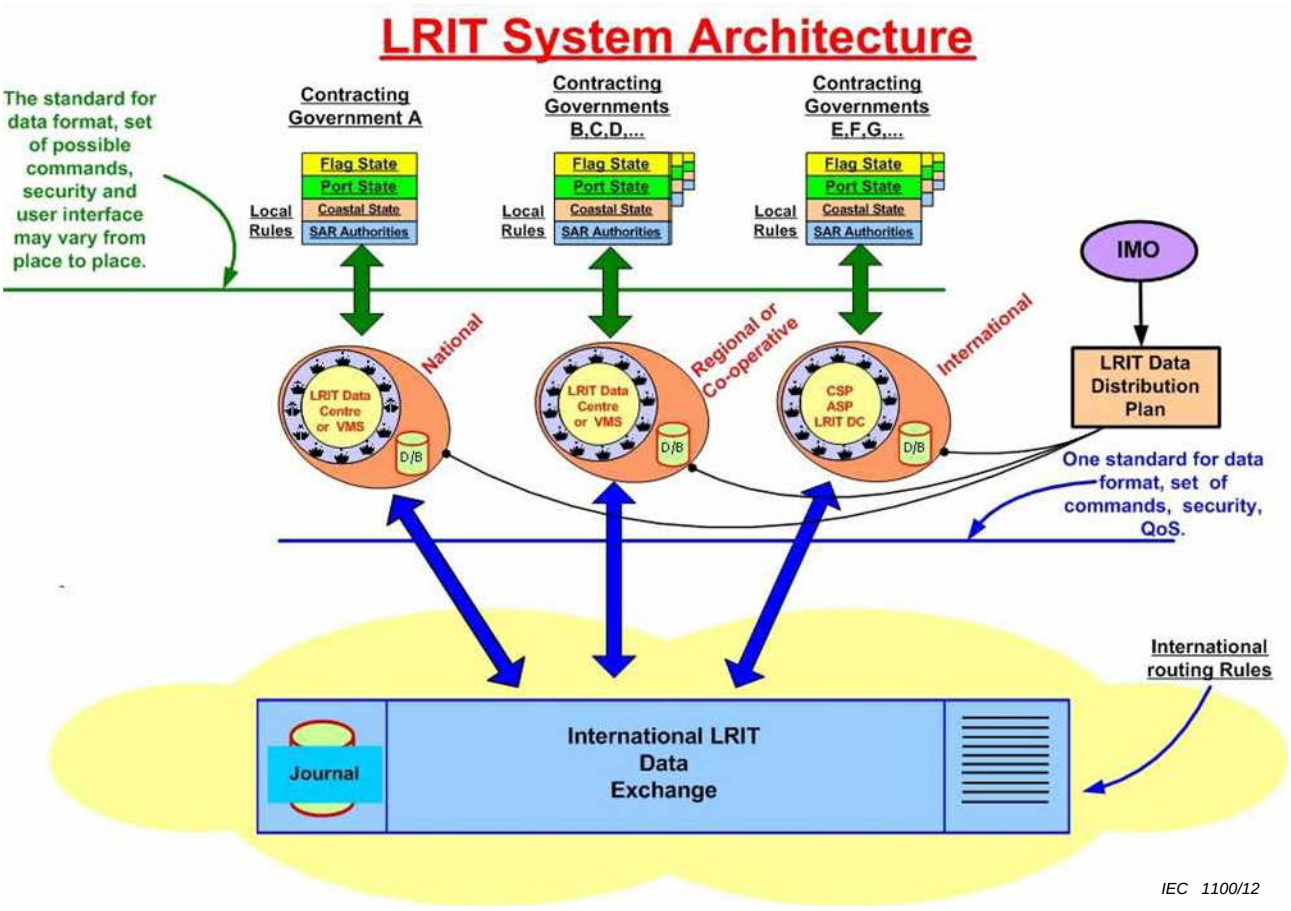

Figure A.2 – Schematic of information transfer in the LRIT system

LRIT information is provided to LRIT data users using the international LRIT data exchange. Governments are entitled to receive information about ships of their own flag (flag states), of ships which have indicated an intention to enter their ports (port states) and ships located up to 1 000 nautical miles from their coast excluding the territorial seas of other governments (coastal states). Search and rescue services are permitted to obtain LRIT information about ships in their search and rescue region. The detail of territorial seas, ports and search and rescue regions is maintained by the IMO in the LRIT data distribution plan.

Governments bear all the costs of the LRIT system. There is no charge on ships and the LRIT data centres incorporate billing arrangements for LRIT data users.

The performance of the LRIT system is:

– LRIT information should be available to an LRIT data user within 15 min of the time it is transmitted by the ship.

– On-demand LRIT information should be provided to an LRIT data user within 30 min of the time the LRIT data user requested the information.

The quality of service is 95 % of the time over any 24 h period and 99 % over any 1 month expressed as:

$$\frac{\text{Number of delivered LRIT information meeting latency requirements}}{\text{Total number of LRIT information requests}} \times 100\ \%$$

Annex B
(normative)

Requirements relating to installation

B.1 General

This annex reproduces those requirements relating to installation as extracted from IMO Resolution MSC.263(84).

B.2 Source of electrical energy

(*MSC.263(84) A4.1.5)* The LRIT system shall *be supplied with energy from the main and emergency source of electrical power.*

This provision should not apply to ships that use for the transmission of LRIT information any of the radiocommunication equipment provided for compliance with the provisions of SOLAS chapter IV. In such cases the shipborne equipment should be provided with sources of energy as specified in SOLAS regulation IV/13.

B.3 Transmission of information

(*MSC.263(84)A4.4) The shipborne equipment* shall *be set to automatically transmit the ship's LRIT information at 6-hour intervals to the LRIT Data Centre identified by the Administration, unless the LRIT Data User requesting the provision of LRIT information specifies a more frequent transmission interval.*

B.4 Requirements

It shall be confirmed that the equipment installation handbook contains appropriate information.

Annex C
(informative)

LRIT shipborne equipment conformance test

Individual shipboard installations are required to complete a conformance test as part of the IMO certification process for a LRIT installation. The details are given in IMO circular MSC.1/Circ.1307. Table C.1 is derived from the IMO circular and specifies the shipborne equipment test requirements. The related procedures and the corresponding acceptance criteria for each conformance test (CTN) are provided.

Table C.1 also gives a cross reference to the tests of this standard which are equivalent to the conformance tests.

Table C.1 – Shipborne equipment test requirements

CTN[a]	IMO test requirement Procedure	IMO acceptance criteria	Test of this standard
	The equipment is activated into the ASP system ASP issuance of an activation command	CSP acknowledgement received Permitted tolerance: maximum of 3 attempts separated by a minimum of 15 min.	6.3.1
1	Establish the GMDSS sea areas the ship is certified to operate from the Cargo Ship Safety Radio Certificate, Cargo Ship Safety Certificate, Passenger Ship Safety Certificate or equivalent	Confirmed by shipowner declaration on testing registration form prior to testing including certificate type and reference number	Not applicable to this standard
2	The equipment automatically transmits an LRIT information	Validated in conjunction with CTN 9	6.3.1
3	The equipment identity is present in the received LRIT information	Validated in conjunction with CTN 9	6.3.4
4a	The latitude and longitude is present in the received LRIT information	Validated in conjunction with CTN 9	6.3.4
4b	The equipment GNSS position information is based upon the WGS84 datum	Assumed compliant in accordance with standard IMO guidelines and regulations	6.3.4
5a	The date and time is present in the received LRIT information	Validated in conjunction with CTN 9	6.3.4
5b	The equipment date and time information is in UTC	Confirmed by the ASP recognized by the Administration or approved to conduct conformance testing based upon the compliance of the received message structure with the equipment manufacturers published standard for a message containing the generated Date and Time stamp	6.3.4
5c	The equipment transmits a Time Stamp relative to when the position was generated (not the CSP receipt time)	Confirmed by the ASP recognized by the Administration or approved to conduct conformance testing based upon the compliance of the received message structure with the equipment manufacturers published standard for a message containing the generated Date and Time stamp	6.3.4

CTN[a]	IMO test requirement Procedure	IMO acceptance criteria	Test of this standard
6	The equipment is of a type approved by the Administration	Forms the subject of this test specification which will be if the results are satisfactory and a Statement of conformity is issued by the ASP conducting the test (and the subsequent issuance of a Certificate of compliance by the Administration)	All tests of this standard
7	The equipment is switched off on board or ceases the distribution of LRIT information ASP outbound Program-Stop command	CSP acknowledgement received and nil LRIT information are transmitted within 90 min Permitted tolerance: maximum of 3 attempts separated by a minimum of 15 min	6.3.6 6.3.7
8	The equipment is compliant with provisions of IMO resolution A.694(17) The equipment has been tested for electromagnetic compatibility	Confirmed by manufacturer or validation of technical specification	6.2.1
9a	The equipment is re-configured to automatically transmit LRIT information at 15-min intervals ASP issuance of Start-15 min reporting command	Confirmed subsequent to receipt of 48 consecutive 15-min automatic transmissions of LRIT information. Permitted tolerance: 3 attempts separated by a minimum of 15 min Acceptable results: a minimum of 40 out of 48 transmissions are received (>82 % success rate)	6.3.2 (in part)
9b	The equipment is re-configured to automatically transmit LRIT information at 60-min intervals demonstrating that a change in transmitting interval has been successfully achieved ASP issuance of Start-60 min reporting command	Confirmed subsequent to receipt of 12 consecutive 60-min automatic transmissions of LRIT information. Permitted tolerance: 3 attempts separated by a minimum of 15 min Acceptable results: a minimum of 10 out of the 12 transmissions are received (>82 % success rate)	6.3.2 (in part)
9c	The equipment automatically transmits a LRIT information at 6-h intervals	Confirmed by ASP or manufacturer or validation of the technical specification	6.3.1
9d	The equipment is re-configured to automatically transmit LRIT information at 24 h intervals	Confirmed by ASP or manufacturer or validation of technical specification	6.3.6
9e	LRIT information is available within 15 min of the time it is transmitted by the ship Comparison of the UTC time stamp when the LRIT information was generated against the UTC time stamp when the information was received by the ASP	Validated in conjunction with CTN 9a and 9b	Not applicable to this standard
10	The equipment transmits LRIT information (subsequent to the ASP issuing a poll command) and the LRIT information is available within 30 min of the time the ASP has requested the information ASP issuance of a Send-Request for Position command	Confirmed subsequent to receipt of 1 polled transmission of LRIT information within 30 min Permitted tolerance: 3 attempts separated by a minimum of 15 min Acceptable results: a minimum 1 out of 1 transmissions are received (100 % success rate)	Not applicable to this standard (see 6.3.3 for the shipborne equipment requirement)

CTN[a]	IMO test requirement Procedure	IMO acceptance criteria	Test of this standard
11	The equipment interfaces directly to the shipborne global navigation satellite system equipment, or has internal positioning capability	Confirmed by ASP or manufacturer or by validation of technical specification if internal GNSS, or if external GNSS confirmed by shipowner declaration on testing registration form prior to testing	6.4.1
12	The equipment is supplied with energy from the main and emergency source of electrical power	Confirmed by shipowner declaration on testing registration form prior to testing	Not applicable to this standard (see Annex B)
13	The equipment automatically transmits LRIT information via the CSP to the ASP in a reliable and secure manner	Confirmed by the ASP recognized by the administration or approved to conduct conformance testing based upon confirmation that all communication links from the terminal to satellite to CSP to ASP are direct and secure with no third party ASP involvement	Not applicable to this standard
	The equipment is de-activated and released from the LRIT system ASP issuance of deactivation command	CSP acknowledgement or CSP declaration received Permitted tolerance: 3 attempts separated by a minimum of 15 min	6.3.7

[a] Conformance test number

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