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I-02

SHIP SECURITY ALERT SYSTEM

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Foreword:

CCS Product Inspection and Testing Guideline (hereinafter referred to as this Guideline) contains the technical requirements, inspection and testing criteria related to classification and statutory survey of marine products to be applied for CCS approval/inspection.

This Guideline frees the users to adopt other test methods and requirements which are equivalent to or are stricter than this Guideline.

This Guideline is published and updated by CCS, and is released at http://www.ccs.org.cn. Your comments or suggestions are welcomed and may be sent to our email addressed mp@ccs.org.cn.

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Main changes:

This edition includes the following significant technical changes with respect to the previous edition:

1. In the normative reference documents, there are large technical changes in the reference documents.

CONTENTS

SHIP SECURITY ALERT SYSTEM

1 Application

This guideline applies to the approval and inspection of ship security alert systems fitted on ships engaged on international voyages according to the requirements specified in Chapter XI-2 of the International Convention for the Safety of Life at Sea, 1974and the amendments thereto.

2 Normative references

2.1 IMO A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids;

2.2 IMO MSC.136(76) Performance Standards for A Ship Security Alert System;

2.3 IMO MSC.147(77) Adoption of the Revised Performance Standards for A Ship Security Alert System;

2.3 IMO Regulation XI-2/6 of the International Convention for the Safety of Life at Sea, 1974and the amendments thereto;

2.4 IMO MSC/Circ.1072 Guidance on Provision of Ship Security Alert Systems;

2.5 IMO MSC/Circ.1155 Guidance on the Message Priority and the Testing of Ship Security Alert System;

2.6 IMO MSC/Circ.1190 Guidance on the Provision of Information for Identifying Ships When Transmitting Ship Security Alerts;

2.7 Attention is to be given to the relevant provisions and requirements for transmission unit forming part of SSSA, as specified in the relevant international conventions or by the International Telecommunications Union (ITU), International Electrotechnical Commission (IEC) and related flag State and port State authorities, e.g. the requirements for INMARSAT C specified in MSC.68(68), A.807(19), A.664(16), IEC61162-1: 2016, IEC 61162-450: 2018, IEC 61162-460: 2018, IEC 61097-4: 2012+AMD1: 2016+AMD2: 2019 CSV.

2.8 For implementation of this Chapter, attention is to be paid to the latest provisions and requirements for ship security alert systems specified by relevant international conventions and IMO.

3 Terms and definitions

For the purpose of this guideline:

3.1 SSAS means the ship security alert system as defined in Chapter XI-2 of the International Convention for the Safety of Life at Sea, 1974 and the amendments thereto.

3.2 GMDSS means global maritime distress and safety system.

3.3 IEC means the International Electrotechnical Commission.

3.4 ITU means the International Telecommunications Union.

3.5 IACS means the International Association of Classification Societies.

3.6 GNSS means Global Navigation Satellite System.

4 Plans and documents

4.1 Drawing approval need submit the following plans and technical documents to approve:

(1) General plan (including drawing of overall size and structure with arrangement of panel and backboard);

(2) Schematic circuit diagram;

(3) Schematic block diagram;

(4) Technical specifications (manual);

(5) Other documents to be submitted for approval, e.g. plans and documents related to the receiving and transmitting unit forming main equipment of SSAS.

4.2 Drawing approval need submit the following plans and technical documents for information:

(1) Operation instructions for the products;

(2) Relevant technical processes;

(3) Process flow diagram indicating quality control points;

(4) Drawing of external wiring.

4.3 Type approve need submit the following plans and technical documents:

(1) General situation of the factory: name, address, production history, production capacity, technical and inspection personnel, main products, affiliation, product trademarks, etc.

(2) Details of products for approval;

(3) List of major production equipment;

(4) List of main testing equipment;

(5) Brief production process of products for approval;

(6) Quality management documents or quality system certificates;

(7) Certificate of enterprise registration;

(8) Certificate of qualification and/or production license, if applicable;

(9) Samples of product quality certificates or certificates of conformity;

(10) Quality control plan;

(11) List of qualified suppliers, if applicable.

5 Technical requirements

The design for SSAS products is to comply with the performance requirements specified for the equipment in MSC resolution 147(77) and MSC relevant circulars 1072, 1155 and 1190.If the receiving and transmitting unit of the system is other than the communication equipment specified in Chapter IV of 1974 SOLAS and the amendments thereto, such unit is to comply with IMO A.694(17) and be type tested and certified for access to related communication networks, which are to ensure coverage of the sea areas in which the ship is to operate. If the receiving and transmitting unit of the system is the communication equipment specified in Chapter IV of 1974 SOLAS and the amendments thereto, the equipment is to be so designed that the ship security alert is rather independent and will not harm GMDSS functions and that once started, the system will not activate any (other) alarm of the ship. The design is also to take into account the consistency between the receiving and transmitting unit of SSAS and the sea areas determined by the ship's

GMDSS.

The software and hardware composing SASS are to comply with the following performance or function requirements.

(1) The system is to have at least two manually operated call points.

(2) The manually operated call points (buttons) are to be designed such that any inadvertent operation will be prevented and that the operator can start the system without removing any seal or lid/cover.

(3) When starting (activating) an alarm, no adjustment is allowed on involved devices, such as choosing frequency, setting working mode or selecting menu, nor is any (other) alarm to be activated thereby onboard.

(4) The alarm message of the security alert system is to include the ship's name, IMO identification number, call sign, maritime mobile services identity, ship GNSS position signals (including longitude and latitude) and time of GNSS ship position signals (date/month/year and time).

(5) SSAS alarm is not to be transmitted through GMDSS distress alarm procedure and is only to be sent to coast station without notification to the ship.

(6) Once activated, SSAS alarm is to keep transmitting the ship security alert before being turned off and/or reset.

(7) SSAS is to be capable of testing and indicating that the transmitted message is for test purpose.

(8) SSAS is to be fitted with power switch, reset button, power indicating light, alarm transmitting light, failure indicating light on the main controlling unit.

(9) In addition to the main source of electrical power of the ship, an optional source of electrical power is to be available for SSAS, which can be either a power source other than the main one, or an integrated power source of the equipment. Furthermore, the two types of power sources are to be capable of being switched from one to another.

(10) The software of SSAS is to be designed for the above requirements and in addition, for completeness, independence, reliability and confidentiality Such software is also to be capable of being upgraded and functionally expanded so far as possible.

6 Materials and components

The receiving and transmitting unit of SSAS is to comply with the requirements in IMO A.694(17), to be type tested and certified by a related international organization and type tested and certified for access to related communications networks. The certification for type approval and as marine product is also to be requested and hold.

7 Type test

The type test program is to be prepared by the manufacturer (or CCS)according to relevant technical standards, technical specifications and test standards. The type test program is to be approved by CCS.

7.1 Selection of typical samples

The products, for which CCS type approval is requested for the first time, are to be subjected to "approval type test (or prototype test)". Two samples are generally selected (one of which is taken as a standby), which are manufactured according to the plans and relevant technical documents approved by CCS, complete with all associated parts and fitted with all software for ready delivery.

For an initial approval or any request for adding pages or alteration, it is necessary in principle for CCS Surveyor to take and seal samples and send them to an independent verification test organization designated or recognized by CCS for approval type test. Where the manufacturer has the ability to carry out the type approval test for certain items, CCS may arrange for the test of such items at the manufacturer, restricted to the items for which the required test conditions are not severe and which are required in routine test, e.g. visual inspection, operational check, performance test and power supply failure test, provided that CCS Surveyor will witness the test process on site confirm test results.

7.2 For renewal of the type approval certificate(re-approval), the applicant may apply for exemption from some type test items, provided that he has a perfect quality system (e.g. certification in accordance with ISO9000, 2000-GB/T19000, 2000 quality system requirements), a perfect test location with reliable and effective test equipment, and qualified test personnel. CCS will make a decision as appropriate.

7.3 Test equipment

The main instruments used for type test of ship security alert systems (SSAS):

High and low temperature test chamber, damp heat test chamber, meg-ohmmeter, dielectric breakdown tester, electric vibration table system, 3m improved semi-anechoic chamber, signal generator, EMI receiver, dual logarithmic antenna, unilateral power line coupling/decoupling network, electromagnetic interference rejection means of marine instrumentation, surge signal generator, electrical fast transient pulse generator, sound level meter, dripping test equipment, etc.

7.4 Test items, methods and requirements in the type test program are given in the following table.

Test Items, Methods and Requirements in Type Test Program Table 7.4

No.	Test item	Test method (test standard)	Technical requirement for test
1	Visual examination	Manufacturer's technical specifications	Plans and relevant technical documents
2	Operational check	Sections 6.1 ~ 6.4 of IEC60945	Plans and relevant technical documents
3	Performance test①	Section 5.1 of IEC60945	Performance requirements in relevant technical documents
3.1	Power supply (including secondary power supply test)	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.2	Indicating light	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.3	Test function of equipment	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.4	Confirmation of test message (format)	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.5	Transmitting of security alert	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.6	Confirmation of alarm message (format)	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
4	Extreme power supply variation	Sections 7.1and 5.2.2 of IEC60945	Relevant technical requirements
5	Excessive conditions of power supply	Sections 7.2 and 5.2.3 of IEC60945	Relevant technical requirements
6	Power supply short-term variation	Sections 7.3 and 10.7IEC60945	Relevant technical requirements
7	Power supply failure	Sections 7.4 and 10.8 of IEC60945	Relevant technical requirements
8	Dry heat test	Section 8.2 of IEC60945	Relevant technical requirements
9	Damp heat	Section 8.3 of IEC60945	Relevant technical requirements
10	Low temperature test	Section 8.4 of IEC60945	Relevant technical requirements

Continued Table 7.4

No	Test item	Test method (test standard)	Technical requirement for test
11	Vibration test	Section 8.7 of IEC60945	Relevant technical requirements
12	Rain and spraying (exposed equipment)	Section 8.8 of IEC60945	Relevant technical requirements
13	Salt fog (corrosion)	Section 8.8 of IEC60945	Relevant technical requirements
14	Conducted emissions	Section 9.2 of IEC60945	Relevant technical requirements
15	Radiated emissions from enclosure port	Section 9.3 of IEC60945	Relevant technical requirements
16	Immunity to conducted radio frequency disturbance	Section 10.3 of IEC60945	Relevant technical requirements
17	Immunity to radiated radio frequencies	Section 10.4 of IEC60945	Relevant technical requirements
18	Immunity to fast transients on electrical lines	Section 10.5 of IEC60945	Relevant technical requirements
19	Immunity to surge (impact)	Section 10.6 of IEC60945	Relevant technical requirements
20	Immunity to electrostatic discharge	Section 10.9 of IEC60945	Relevant technical requirements
21	Acoustic noise and signals	Section 11.1 of IEC60945	Relevant technical requirements
22	Compass safe distance	Section 11.2 of IEC60945	Relevant technical requirements
23	Protection against accidental access to dangerous voltages	Section 12.1 of IEC60945	Relevant technical requirements
24	Electromagnetic radio frequency radiation	Section 12.2 of IEC60945	Relevant technical requirements
25	Emission from visual display unit (VDU)	Section 12.3 of IEC60945	Relevant technical requirements
26	X-radiation	Section 12.4 of IEC60945	Relevant technical requirements

Note①: Ambient conditions for performance test: temperature range: 15℃~35℃; relative humidity: 30%~90%; air pressure: 86kPa~106kPa.

8 Unit/batch inspection

8.1 After obtained CCS type approval B certificate, the manufacturer is to perform routine test for each product.

8.2 For well specialized manufacturers with long production history and advanced techniques, the Surveyor may select products for unit/batch inspection according to a certain rate, based on the manufacturer's inspection. The sampling rate may be related to the turnout of the manufacturer,

e.g. one from every 10 units. For manufacturers with short production history and relatively low technical level, however, the sampling rate is to be higher or all products are to be subject to routine inspection.

Routine Test Items, Methods and Requirements Table 8.2

No.	Test item	Test method (test standard)	Technical requirement
1	Visual examination	Manufacturer's technical specifications	Plans and relevant technical documents
2	Operational check	Sections 6.1 ~ 6.4 of IEC60945	Plans and relevant technical documents
3	Performance test①	Section 5.1 of IEC60945	Plans and relevant technical documents
3.1	Power supply (including secondary power supply test)	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.2	Indicating light	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.3	Test function of equipment	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents
3.4	Function of transmitting security alert	Manufacturer's technical specifications and MSC.147(77)	Plans and relevant technical documents

Note①: Ambient conditions for performance test: temperature range: 15℃~35℃; relative humidity: 30%~90%; air pressure: 86kPa~106kPa.