KONGSBERG

Harbour Acceptance Test

Product: *Produkt:*	EM 122 Multibeam Echo Sounder					
Product reg.no: *Produkt reg.nr:*			*Rev.A Created by:* *Rev.A Laget av:*		KTU	
Doc.reg.no: *Dokument reg.nr:*	310218		*Rev.A Controlled by:* *Rev.A Sjekket av:*		IHS	
Doc.archive no: *Dokument arkiv-nr:*			*Rev.A Approved by:* *Rev.A Godkjent av:*		KEN	
Revision: *Revisjon:*	**A**	**B**	**C**	**D**	**E**	**F**
Date: *Dato:*	May 26, 2008.	Nov 03, 2009.	Sep 17, 2012	Jan 21, 2013		

5 LIST OF ITEMS

The items which are to be tested will depend on the particular configuration. Use the manufacturer type number column to indicate which items are actually included in this particular delivery or furnished by the owner to be used with the system.

List of items to be tested			
Item	Manufacturer, type and/or registration number	Equipment	Serial number
1	309653	EM 122 TRANSCEIVER UNIT	121
2	306 359	EM 122 PREAMPLIFIER UNIT	158
3	125-213191	JUNCTION BOX COMPL 1 OR 2	200, 204
4	380-213298	CONNECTION CABLES 12 OR 24	24
5	380-213296	CONNECTION CABLES 2, 4, OR 8	4
6	108-212591	REMOTE CONTROL	N/A
7	HP MP8300	HYDROGRAPHIC WORKSTATION	C2C3407HFH
8		HEADING SENSOR	
9		MOTION SENSOR	
10		FIXED SOUND SPEED SENSOR	
11		SOUND SPEED PROFILE SENSOR	
12		POSITIONING SYSTEM	
13			

6 CONFIGURATION

For module serial numbers, please refer to the FAT record. Any replaced modules must be documented below.

6.1 CHANGED SW- OR HW MODULES

Replacement list			
Item	*Equipment*	*Registration number*	*Serial number*
1	12V Power Supply	300991	Removed: [illegible] Installed: [illegible]
2			
3			
4			
5			
6			
7			

7 INTERCONNECTION/ARRANGEMENT

The system shall be fully installed and the external sensors shall be connected.

8 TEST PROCEDURE

Switch on power to the Operator Station and to the Transceiver Unit. Perform all tests as described in the check list and fill in the results for each individual test.

9 CHECK LIST

Check list				
Pos	Test operation	Result		Specification
		preHAT	HAT	
1	Start the SIS operator software and select the EM 122 Transceiver Unit (TRU)	PASS	PASS	The SIS is started and contact with the Transceiver Unit is established.
2	Verify TRU status led cPCI power	PASS	PASS	Green led
3	Verify TRU status led 6 V power	PASS	PASS	Green led
4	Verify TRU status led 12 V power	PASS	PASS	Green led
5	Verify TRU status led 170 V power	PASS	PASS	Green led
6	Start internal test. Execute the following BIST (Built in system tests) tests, one by one.			Verify successful completion of the tests.
	Software date/version			List date and version:
	6.1 BSP 67B master version	PASS	PASS	2.2.3 090702
	6.2 BSP 67B slave version	PASS	PASS	2.2.3 090702
	6.3 CPU version	PASS	PASS	1.3.5 150812
	6.4 DDS version	PASS	PASS	3.5.10 140106
	6.5 RX 32 version	PASS	PASS	1.11 Feb 18 2010
	6.6 TX 36 version	PASS	PASS	1.11 May 07 2013
	6.7 SIS Software version (press the icon located on the bottom line in the SIS window)	PASS	PASS	4.3.1
7	Self tests:			
	7.1 BSP test	PASS	PASS	
	7.2 TX 36 test	PASS	PASS	
	7.3 RX 32 test	PASS	PASS	
	7.4 TRU power test	PASS	PASS	
	7.5 HV power test	PASS	PASS	
	7.6 RX 32 - BSP link	PASS	PASS	
	7.7 RX channels	PASS	PASS	
	7.8 TX channels	PASS	PASS	
	7.9 RX noise level	PASS	PASS	
	7.10 RX noise spectrum	PASS	PASS	
	7.11 CPU Test	PASS	PASS	

Check list				
Pos	Test operation	Result		Specification
		preHAT	HAT	
8	Test of navigation input. Start the navigation system. Make sure that the navigation output matches the serial line 1 setup, and make this port the active one.	PASS	PASS	At the Operator Station Numerical display, verify that the sensor fields changes from red to white and that the sensor values are updated.
9	Test of attitude input. Start the attitude sensor. Make sure that the attitude sensor output matches the serial line 2 setup, and make this port the active one.	PASS	PASS	At the Operator Station Numerical display, verify that the attitude sensor fields changes from red to white and that the sensor values are updated.
10	Test of heading input. Start the heading sensor. Make sure that the sensor output matches the serial line 3 setup, and make this port the active one.	PASS	PASS	At the Operator Station Numerical display, verify that the heading sensor field changes from red to white and that the sensor value is updated.
11	Test of serial line 4. This serial line is normally spare, but connect the heading sensor to it. Ensure that the sensor output matches the serial line setup, and make this port the active one.	PASS	PASS	At the Operator Station Numerical display, verify that the heading sensor field changes from red to white and that the sensor value is updated.
12	Connect all sensors (including 1PPS if required) and configure the system for normal use.	PASS	PASS	At the Operator Station verify all sensor displays and check that all sensor alarms disappears.
13	Test of sound speed probe. If a probe is connected to the echo sounder, check the interface to the probe. Set sound speed at transducer to be originated from probe.	PASS	PASS	Verify that the readings in the numerical display is updated.
14	Test of printer. If a printer is included in the delivery, transfer a file to the printer.	N/A	N/A	Verify the print of the file (picture) transferred from the Operator Station.
15	Test ping mode (It may be too shallow in the harbour to get good results) Fill inn the installation parameters and start pinging. A position simulator may be used to make the ship move around in the geographical display.	PASS	PASS	Verify the functionality of the cross track displays, the waterfall display, the seabed image display and the geographical display. Verify that the coverage sector can be adjusted.
16	Start pinging and log data.	PASS	PASS	Verify data logging.

10 DATA RECORDS

From the Operator Station (SIS):

- Run all Built In System Tests. Save the BIST results to file.
- Run the System Info test and save to file (This file contains info about registration numbers, serial numbers, software versions etc).
- Save PU parameters to file (this file contains information about runtime and installation parameters).

Transfer these files to Kongsberg Maritime head office for update of the ships installation records (Archive).

11 TESTIMONIAL

The HARBOUR ACCEPTANCE TEST for the EM 122, for ARMSTRONG has been performed according to the test procedure.

The HAT approval is only valid if the test is performed by an engineer certified by Kongsberg Martime A/S.

The test is: **Accepted** / **Not accepted** *(Delete as appropriate)*

Remarks:

Test performed by	Position	Date
TONY DAHLHEIM	Field Engineer	Feb 7, 2016

(Please use capital letters)

Test accepted by	Position	Date
Amy Simoneau	SSSGTech	7 Feb 2016

(Please use capital letters)

Signatures: