



Simrad EK80
Scientific echo sounder
Sea Acceptance Test

This document explains how to do the Sea Acceptance Test on the Simrad EK80 Scientific echo sounder.

Customer/Vessel identification
WHOI / NEEL ARMSTRONG

System serial numbers (if applicable)			
18 KHZ	WBT	549755	XDCR 2142
38 KHZ	WBT	545613	XDCR 31334
70 KHZ	WBT	582202	XDCR 249
120 KHZ	WBT	545617	XDCR 1152
200 KHZ	WBT	582209	XDCR G11

Document information

- **Product:** Simrad EK80
- **Document:** Sea Acceptance Test
- **Document number:** 401926
- **Revision:** A
- **Date of issue:** April 2015

Copyright

The information contained in this document remains the sole property of Kongsberg Maritime AS. No part of this document may be copied or reproduced in any form or by any means, and the information contained within it is not to be communicated to a third party, without the prior written consent of Kongsberg Maritime AS.

Warning

The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment and/or injury to personnel. The user must be familiar with the contents of the appropriate manuals before attempting to operate or work on the equipment.

Kongsberg Maritime disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

Disclaimer

Kongsberg Maritime AS endeavours to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

Table of contents

INTRODUCTION.....	5
Purpose.....	6
Personnel and location	6
Referenced documents	7
HARDWARE AND SOFTWARE REGISTRATION	8
Verification of previously tested items.....	9
Software registration table	10
Hardware registration tables	11
Tools and test equipment	13
TEST PROCEDURES	14
Powering up the EK80 Scientific echo sounder.....	15
Reading the transceiver hardware and software versions	16
Calibrating the EK80 Scientific echo sounder	18
Making a noise/speed curve to determine vessel noise	19
CUSTOMER ACCEPTANCE FORM	21
CALIBRATING THE EK80 SCIENTIFIC ECHO SOUNDER.....	23
Calibration summary	24
Calibration procedures	26
Checking the echo sounder installation.....	26
Preparing the vessel for EK80 calibration.....	27
Starting the EK80 calibration	29
Importing the echo data	31
Processing the echo data.....	33
Operational procedures	35
Defining the file and folder settings for echogram recordings	35
Recording echogram sequences of raw data	36
Choosing which echogram data file(s) to replay	37
Defining the pulse type for the EK80 transmissions	38
Functions and dialog boxes.....	40
Calibration Wizard dialog box (Page 1).....	40
Calibration Wizard dialog box (Page 2).....	41
Calibration Wizard dialog box (Page 3).....	42
Calibration Wizard dialog box (Page 4).....	47
Sphere Administration dialog box.....	50
Calibration Description dialog box	52
Single Target Detection dialog box	53

Introduction

Topics

Purpose, page 6

Personnel and location, page 6

Referenced documents, page 7

Purpose

This is the Sea Acceptance Test for the EK80 Scientific echo sounder system.

The purpose of this Sea acceptance test procedure is to test the EK80 functions that can only be fully verified with the vessel at sea. The test assumes that the Harbour acceptance test has been previously performed on the same EK80 system.

After the test is concluded it must be signed by the relevant parties. The complete test then becomes the official test report.

Note

The test includes a complete calibration of the EK80 system.

The duration of the test is estimated to two hours for each transceiver installed. This does not include necessary time for transit to and from a suitable location, mooring of the vessel, and the rigging of the calibration winches.

Personnel and location

Successful completion of the test requires qualified and experienced test engineers and/or technicians.

This sea acceptance test is done on board the vessel, in open waters, by technical personnel from Kongsberg Maritime. All personnel have good knowledge of the product to be tested.

A representative from an authorized dealer or distributor can do the sea acceptance test on behalf of Kongsberg Maritime.

Representatives from the client and/or end user are normally present to witness the test and results.

As with all assembly and test procedures related to advanced technical and/or electronic equipment, the skill of the operator is vital to a successful completion of the tasks. The only way to secure high quality of our products is first rate workmanship and high professional standards throughout the production chain.

It is equally important that all members of the production and test crews show initiative, and are willing to suggest improvements to functionality, design, procedures and documents. If you find a mistake in a document, or find that information is missing, offer this information to the proper authorities without further delay. Likewise, your experience as a skilled worker is valuable. Please forward any suggestions to make improvements to the product, the design, the production method, or any other matter related to your expertise.

Referenced documents

Some documents may be required to do this test, while other documents can prove to be useful for reference purposes.

Note

Unless specified in the applicable procedure(s), the EK80 documents listed here are not required during this test.

Refer to the following documents.

Note that all end user manuals can be download from our website.

- <http://www.simrad.com>

End user manuals:

- Quick start guide (NYA)
- Operator manual (NYA)
- Reference manual (NYA)
- Installation manual (394149)

Software documents:

- Software release note (NYA)

Customer acceptance tests:

- Factory acceptance test (393714)
- Harbour acceptance test (401925)
- Sea acceptance test (401926)

Production and in-house test procedures:

- Wide Band Transceiver (WBT), Final test (NYA)

Hardware and software registration

Topics

Verification of previously tested items, page 9

Software registration table, page 10

Hardware registration tables, page 11


Tools and test equipment, page 13

Verification of previously tested items

It is not necessary to fill in registration tables for software and hardware items that have already been recorded in a previous test.

If the EK80 user interface software and hardware units are the same as those tested during the harbour acceptance test, the relevant registration tables will not be required.

- If no changes have been made to neither the software nor the hardware, sign the table below to verify this.
- If the software has updated, record the new software version.
- If hardware changes have been made (units are replaced), all serial numbers must be recorded again.

Verification
Neither user interface software nor hardware units have been changed on this EK80 system since the <i>Harbour acceptance test</i> . For this reason, the registration tables have not been filled in.
Date and signature
1 March 2016 

Software registration table

Every user interface software program that is provided as a part of the EK80 system delivery must be registered.

Simrad EK80

Software program	Order number	SW version
Simrad EK80	389847	1.8.2 1.8.3

Software media

When applicable, the *software media* item can be any memory device (CD, DVD, USB memory device etc) that contains the EK80 software. End user documentation may be included on the software media, or provided on a separate memory device.

Software information on <http://www.simrad.com>

The latest software version can be found in the EK80 *Software release note* and on the EK80 pages on our website.

- <http://www.simrad.com/ek80>

Hardware registration tables

Every hardware unit that is provided as a part of the EK80 system delivery must be registered.

Display

Fill in the serial number for the display(s) that is provided with the delivery. For units that are not provided, set serial number to "N/A" (not applicable).

Item	Order number	Serial number
19" display (Hatteland JH19T14 MMD)	335513	
<i>Other type (specify make and model):</i>		

If more than one display is provided, use this table to record the serial numbers:

Item	Serial number	Comments
1		
2		
3		
4		

Processor Unit

Processor Unit	Order number	Serial number
Processor Unit (Enix) with software <i>HP-MP0300</i>	386927	<i>C2C3407HCB</i>

Ethernet switch

For units that are not provided, set serial number to "N/A" (not applicable).

Ethernet switch	Order number	Serial number
Black Box LBS209AE-R2	352527	
<i>Other type (specify make and model):</i>		
<i>NET GEAR 8-PORT</i>	<i>G5108V4</i>	<i>3TX2577T085FZ</i>

Wide Band Transceiver (WBT) units

The Wide Band Transceiver (WBT) units have all the same order number, as their operational parameters are defined in the EK80 software and the license strings.

If fewer than eight transceivers are provided, set serial number to "N/A" (not applicable).

Wide Band Transceiver (WBT)	Order number	Serial number	Frequency
Wide Band Transceiver (WBT)	392729	549755	18 KHz
		545613	30 KHz
		582202	70 KHz
		545617	120 KHz
		582209	200 KHz

Additional comments

Use this space to include additional comments related to the hardware units.
ES18-11 SN2142 ES38B SN31338 ES70-7C SN349 ES120-7C SN1152 ES200-7C SN611

Tools and test equipment

Specific tools and/or test equipment may be required to do this test. If such equipment is required, it must be made available before the test can start.

The required test equipment is listed. For each item, record the instrument's serial number and - if relevant - its calibration expiry date.

1 Calibration spheres (copper or tungsten, diameter to fit the operational frequency)

Frequency	Material	Diameter
18 kHz	Cu	60 mm
38, 70, 120, 200	WC-Co	38.1 mm

2 Sphere deployment system (winches, ropes etc)

Make and model	Serial number	Calibration expiry

All external sensors (GPS, speed, heading etc) used during normal operation of the EK80 must be available.

Test procedures

Topics

[Powering up the EK80 Scientific echo sounder, page 15](#)

[Reading the transceiver hardware and software versions, page 16](#)

[Calibrating the EK80 Scientific echo sounder, page 18](#)

[Making a noise/speed curve to determine vessel noise, page 19](#)

Powering up the EK80 Scientific echo sounder

A brief functional test is used to verify that the EK80 is operational with all channels.

Prerequisites

The EK80 Scientific echo sounder has been installed according to the instructions in the EK80 *Installation manual*. All transceivers have been set up, and are operational with their respective transducers.

The EK80 *Harbour Acceptance Test* has been conducted successfully.

Procedure

- 1 Power up the EK80 Scientific echo sounder.
- 2 Verify that the EK80 starts.
- 3 For each channel (transceiver/transducer combination):
 - a Verify that the EK80 can detect bottom.
 - b Verify that the EK80 can detect objects in the water column.
 - c Start and stop raw data recording.
 - d Verify that the raw data can be replayed.

Result

Task summary and requirements	OK / Not OK
Power up the EK80 Scientific echo sounder for a brief functional test. <ol style="list-style-type: none"> a EK80 starts up. b Bottom is detected. c Targets in the water column are detected. d Raw data can be recorded and played back. 	OK

Further requirements

When all test have been successfully concluded, open the *Customer acceptance form*, and fill it in with the relevant signatures.

Related topics

Customer acceptance form, page 21

Reading the transceiver hardware and software versions

The **Transceiver Installation** page shows you all relevant information related to the hardware and software versions of the Wide Band Transceiver (WBT).


Prerequisites

The EK80 must be operational with all relevant channels (transceiver/transducer combination) installed.

Context

The hardware and software versions of the Wide Band Transceiver (WBT) are required for a unique identification of the EK80 system at the time of the test.

Procedure

- 1 Click the **Setup** icon.
This icon is located under the **Main** menu. It is used to open the **Setup** menu.
- 2 Click the **Installation** button.

a Observe that the **Installation** dialog box opens.
b On the left side, click **Transceiver**.
c Observe that the **Transceiver** page opens.
- 3 Check that all applicable transceivers and transducers are connected and operational.
For each transceiver, this is indicated by the green label with text “Installed”.
If a problem exists, refer to the relevant procedure in the *Operational procedures* chapter.
- 4 Repeat this cycle for each transceiver in use.
 - a Click on the transceiver to select it.
 - b In the transceiver list, read the name of the transducer in use.
 - c In the *Transceiver Information* field, read the following information:
 - Identity
 - FPGA TX Firmware version
 - FPGA RX Firmware version
 - SW Version
 - d Write down this information in the result table
- 5 Close the **Installation** dialog box.

Result

Task summary and requirements	Ok / Not ok / Results
Read the transceiver hardware and software versions. a The software and hardware information is recorded in a dedicated table.	OK

WBT	Identity	Transducer	TX Firmware version	RX Firmware version	SW Version
1	WBT549755	ES1B-11	Rev. 4	Rev. 7	1.70
2	WBT545613	ES3B-B	Rev. 4	Rev. 7	1.70
3	WBT582202	ES7C-7C	Rev. 5	Rev. 7	1.70
4	WBT545617	ES17D-7C	Rev. 4	Rev. 7	1.70
5	WBT582209	ES20E-7C	Rev. 5	Rev. 7	1.70
6					

Further requirements

When all tests are finished, open the *Customer acceptance form*, and sign it.

Related topics

Customer acceptance form, page 21

Calibrating the EK80 Scientific echo sounder

A complete test of the EK80 Scientific echo sounder is done by means of a system calibration.

Prerequisites

In order to calibrate the EK80, the following equipment is required:

- Reference targets (metal spheres) to fit the operational frequencies
- Winch arrangement with relevant lines to lower the sphere into the sound beam

The vessel must be anchored in a suitable position with sufficient depth, and with calm and sheltered water.

Context

During calibration a reference target with known target strength (TS) is lowered into the sound beam, and the measured target strength is compared with the known target strength.

The reference target is normally a metal sphere. Simrad can supply a variety of copper and tungsten spheres dedicated for different operational frequencies. Each sphere diameter is selected for minimum temperature dependence.

Procedure

- 1 Prepare the vessel for calibration according to the relevant procedures.
- 2 Calibrate all channels on the EK80 Scientific echo sounder according to the relevant procedures.

Result

Task summary and requirements	OK / Not OK
Calibrate the EK80 Scientific echo sounder. a Calibration is successful for all channels.	OK

Further requirements

When all test have been successfully concluded, open the *Customer acceptance* form, and fill it in with the relevant signatures.

Related topics

[Customer acceptance form, page 21](#)

[Calibrating the EK80 Scientific echo sounder, page 23](#)

Making a noise/speed curve to determine vessel noise

The performance of the EK80 Scientific echo sounder will always be limited by different noise sources. During the sea acceptance test, accurate noise measurements must be performed for different vessel speeds. The weather and sea conditions for the noise measurements will be those at the time of the sea acceptance test.

Prerequisites

The EK80 Scientific echo sounder has been installed according to the instructions in the EK80 *Installation manual*. All transceivers have been set up, and are operational with their respective transducers.

The EK80 *Harbour Acceptance Test* has been conducted successfully.

For this test you will need a desktop or laptop computer with a spreadsheet program.

Context

In order to measure the noise, you must record the noise value using the tooltip in the echogram. Since the noise will vary with each individual ping, you must five measurements for each speed, and calculate the average noise.


You must measure the noise for each single channel, but you can do all these measurements simultaneously.

Tip

If you record all the raw data you retrieve during the test, you can go back later and repeat the test using the replay file. You may then for example record more than five noise samples for each speed to make a more accurate curve.

Procedure

- 1 Prepare the EK80 to read the noise values.
 - a On the **Display** menu, click **Display Options** to open the dialog box.


 - b In the **Display Options** dialog box, enable the **Noise** tooltip.
 - c Click **OK** to close the **Display Options** dialog box.
- 2 Establish a separate communication line with the bridge to verify the vessel speed during the test.
- 3 Start raw data recording.
- 4 Repeat the following cycle for each vessel speed:
 - a Ask the bridge to set the speed.

- b Once the bridge reports that the speed has been obtain, click the **Event marker** on the toolbar.
 - c If you can read the vessel speed on the toolbar, verify the speed.
 - d For each channel, place the cursor five different places on the echogram on the right side of the event marker, and record the noise values.
 - e Calculate the average noise in each channel, and record it in the table.
 - f Ask the bridge to set the next speed.
- 5 Stop raw data recording.
- 6 When all the measurements have been made, type the data (speed and noise) into a spreadsheet to create the curve.

Result

see excel spreadsheet for 5 frequency

Use the following table to record the noise values, or write them straight into a spreadsheet. Make the necessary copies to that you have one table for each channel.

Speed	M1	M2	M3	M4	M5	Average
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Channel:						

Task summary and requirements	OK / Not OK
Make a noise/speed curve to determine vessel noise.	<i>OK</i>
a The noise/speed data is recorded, and a curve has been drawn.	

Related topics

Customer acceptance form, page 21

Customer acceptance form

Fill in and sign this form for formal acceptance of the EK80 system.

The Sea Acceptance Test for the EK80 Scientific echo sounder system for delivery to the vessel identified below has been performed according to procedure 401926 Revision A.		
The EK80 is (tick relevant column):		
Accepted ✓	Accepted with comments	Not accepted

Vessel/Customer:	RV Neil Armstrong	
Place and date:	Western Atlantic	28 FEB - 01 MAR 2016
Comments:		

Test done by	Company/Position	Signature
AARON BERRY	KUTT / PROJECT MANAGER	

Test accepted by	Company/Position	Signature
ANNY SIMONCAU	WITOL / SSSGTECH	

When this test procedure has been completed with all relevant signatures and applicable forms filled in, the document (except appendices) must be sent to Simrad's support department at Strandpromenaden 50, P.O Box 111, 3191 Horten, Norway. Alternatively, scan all the pages (except appendices) in this document, using minimum 200 DPI resolution, and send the file to simrad.support@simrad.com.

Related topics

[Powering up the EK80 Scientific echo sounder, page 15](#)

[Reading the transceiver hardware and software versions, page 16](#)

[Calibrating the EK80 Scientific echo sounder, page 18](#)

[Making a noise/speed curve to determine vessel noise, page 19](#)

Calibrating the EK80 Scientific echo sounder

Topics

Calibration summary, page 24

Calibration procedures, page 26

Operational procedures, page 35

Functions and dialog boxes, page 40

Calibration summary

In order to maintain the accuracy provided by the Simrad EK80 and that is required for scientific applications, the echo sounder must be calibrated.

Prerequisites

In order to calibrate the EK80, the following equipment is required:

- Reference targets (metal spheres) to fit the operational frequencies
- Winch arrangement with relevant lines to lower the sphere into the sound beam

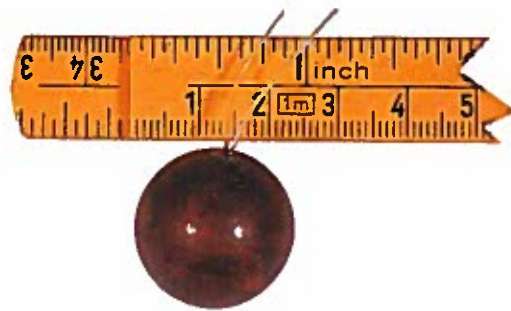
The vessel must be anchored in a suitable position with sufficient depth, and with calm and sheltered water.

Context

During calibration a reference target with known target strength (TS) is lowered into the sound beam, and the measured target strength is compared with the known target strength.

If it is necessary to adjust the EK80, this is done automatically by the calibration software. No analogue gain adjustments are required.

The reference target is normally a metal sphere. Simrad can supply a variety of copper and tungsten spheres dedicated for different operational frequencies. Each sphere diameter is selected for minimum temperature dependence.



A calibration sphere for 120 kHz

Note

If you remove or add a transducer from a calibrated EK80 system, the transceiver must be calibrated one more time. However, you may use the measured target strength (TS) from a previous calibration, as well as the reference target strength for the calibration sphere you used.

*If you have a EK80 system with several transceivers, you must calibrate one by one. Make sure that you set all other transceivers to **Passive** in the **Normal Operation** dialog box.*

A summary of the calibration process is provided. Each step is explained in more detail in the separate tasks that are referenced.

Procedure

- 1 Verify that the EK80 system is correctly installed.

- 2 Prepare the vessel for EK80 calibration.
 - a Locate a suitable area for the calibration.
 - b Prepare a winch arrangement to lower the calibration target (sphere).
- 3 Repeat the following calibration tasks for each channel:
 - a Using the calibration target (sphere) dedicated for the operational frequency, start "pinging" while recording the raw data.

Note

It is possible to calibrate the EK80 using recorded data instead of live data. However, we recommend that you use live data, as this allows you to monitor the echoes in the beam while importing the data. If you wish to restart the whole calibration process later, you can use the raw data recording made during the calibration.

- b Click **Calibration** on the **Setup** menu to open the **Calibration Wizard**.



- c On the first page of the wizard, select *New calibration from raw data (Real time or Replay)*.
 - d On the second page, select the channel and calibration target (sphere).
 - e On the third page, click **Start** to load the echo data.
 - f On the fourth page, open the **TS Data** page, and remove unwanted echoes.
 - g Click **Reprocess** to run the calibration processing.
 - h Finalize the calibration process:
 - 1 When the processing has finished, click **Finish**.
 - 2 Save the calibration results.
 - 3 Update the calibration used by the echo sounder; select **Merge** or **Replace**.
 - **Merge** is typically used when you wish to use different pulse lengths on the same channel (transceiver/transducer combination) to make the parameter file more complete and accurate. The calibration data for the channel will then include all the data from all the pulse lengths.
 -
 - **Replace** is typically used when you wish to keep only the latest parameters for the relevant channel (transceiver/transducer combination).
 - 4 Close the **Calibration Wizard**.
 - 5 Return to normal operation.

Calibration procedures

Topics

Checking the echo sounder installation, page 26

Preparing the vessel for EK80 calibration, page 27

Starting the EK80 calibration, page 29

Importing the echo data, page 31

Processing the echo data, page 33

Checking the echo sounder installation

Prior to calibration, you must check that your EK80 system is fully functional.

Context

A fully functional EK80 system is vital for a successful calibration. It is also necessary to measure the environmental conditions before the calibration process starts.

Procedure

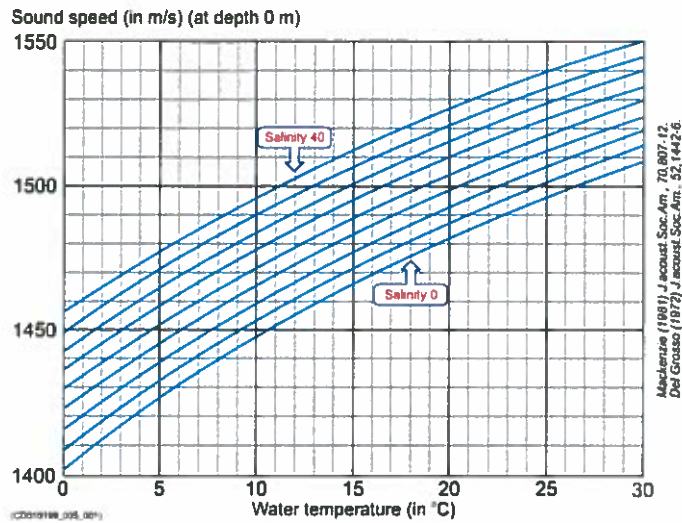
- 1 Check that the EK80 and all the transceivers and transducers are installed correctly, and that they are all fully functional.
- 2 Set **Operation** to *Normal*, and verify that the EK80 is fully operational on all channels.
- 3 Measure the water salinity and temperature between the transducer and the planned depth of the calibration sphere.
- 4 Calculate the average salinity and temperature values, and type these into the **Environment** dialog box.

The sound velocity is automatically calculated by the EK80.

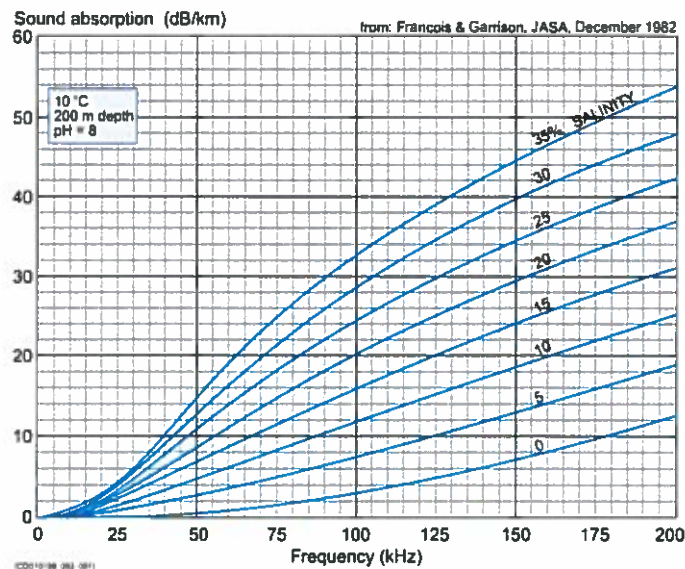
The corresponding absorption coefficient is calculated by the echo sounder according to *Francois & Garrison, JASA December 1982*.

Note

When you calculate the target strength (TS), you must use the sound velocity at the depth of the sphere.



Sound speed in water for different salinity values



Sound absorption for different salinity values

Preparing the vessel for EK80 calibration

Prior to calibration, a suitable location must be found. The rigging description is to a great extent reproduced from *ICES report 144*.

Context

It is desirable to work in water as deep as possible, consistent with maintaining a stable platform. Both bow and stern anchoring or mooring is recommended.

We recommend the use of winches to guide and steer the lines to the sphere for its centring in the EK80 beam. These winches must be mounted to the deck railing in accordance with detailed ship drawings.

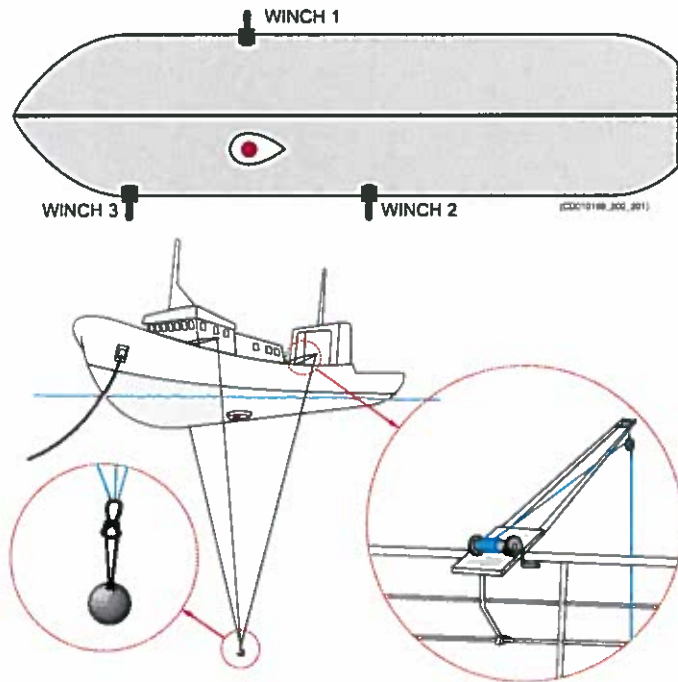
Each winch must be provided with a long spool of 0.60 mm diameter monofilament nylon line, which is marked with small swivels at 5 m intervals, beginning 10 m from the loose end.

The purpose of the swivels is threefold:

- They will unravel rotation of the nylon line
- They will mark distances on the line
- They will add weight so that the line sinks in water

Procedure

- 1 Find a location with calm and sheltered water.
 - a Avoid areas with large differences in tidal height, as this gives strong tidal current.
 - b Avoid areas near river mouths and harbours with heavy traffic.
 - c Try to find an area with little or no fish present.
- 2 Ensure that the depth is sufficient for clear separation of sphere and bottom echoes.
- 3 Anchor the vessel.



Note

If the vessel is anchored or moored only fore or aft, the wind will cause it to drift sideways. If the current then attacks with a different angle, it will make a bad situation even worse. If the vessel is allowed to move sideways, or if the current runs abeam, this will normally give larger variations in the EK80 performance. This results in poor and not reliable calibration accuracy.

- 4 Pull a rope beneath the hull from one side of the vessel to the other.
- 5 Place the first winch in the transverse plane of the vessel running through the transducer.

If the transducer is mounted on one side of the keel, place the first winch on the opposite side of the vessel.
- 6 Place the second and third winches on the same vessel side as the transducer and at equal distances from the transverse section containing the transducer and first winch.

Starting the EK80 calibration

The EK80 calibration is started by recording echo data from a sphere.

Prerequisites

In order to calibrate the EK80, the following equipment is required:

- Reference targets (metal spheres) to fit the operational frequencies
- Winch arrangement with relevant lines to lower the sphere into the sound beam

The vessel must be anchored in a suitable position with sufficient depth, and with calm and sheltered water.

Context

The **Calibration Wizard** offers four dialog boxes to guide you through the calibration process:

- 1 The first page in the **Calibration Wizard** allows you to either start a new calibration process, or return to a previous calibration process reusing saved data.
- 2 The second page in the **Calibration Wizard** allows you to select the channel and the calibration target (sphere) that are used. You can also add or delete spheres, and modify their parameters.
- 3 The third page in the **Calibration Wizard** allows you to import the echo data into the calibration process. You can make changes to the target strength detection, and add a brief description, but you are not permitted to do anything with the echo data.
- 4 The fourth page in the **Calibration Wizard** allows you to manually "clean" the echo data before you process it to calibrate the EK80. When the processing is finished, you can save the results, and update the calibration data used by the EK80.

This procedure guides you through the first two pages in the wizard.

Procedure

- 1 Lower the reference target (sphere) into the sound beam.
- 2 Find a suitable folder on the Processor Unit to save the data you will record during the calibration, and specify the file name to be used.

Tip

We recommend that you use the file name to identify the your physical location, the frequency used, which calibration sphere that is used, and the pulse form. The data and time of the recording are added automatically.

- 3 In the **Normal Operation** dialog box, set the pulse type you wish to use (CW or FM).
- 4 Set **Operation** to *Normal* to start "pinging".
- 5 Click **Calibration** on the **Setup** menu to open the **Calibration Wizard**.
- 6 On the first page of the wizard, select *New calibration from raw data*.
- 7 Click **Next**.
- 8 On the second page of the wizard, select channel and calibration target (sphere) that are in use.

Tip

*The sphere parameters can be modified in the **Sphere Administration** dialog box. You can also add a new sphere if it is not listed.*

- 9 Click **Next**.

Further requirements

Proceed to the third page in the **Calibration Wizard**.

Related topics

- [Defining the file and folder settings for echogram recordings, page 35](#)
- [Recording echogram sequences of raw data, page 36](#)
- [Choosing which echogram data file\(s\) to replay, page 37](#)
- [Defining the pulse type for the EK80 transmissions, page 38](#)
- [Calibration Wizard dialog box \(Page 1\), page 40](#)
- [Calibration Wizard dialog box \(Page 2\), page 41](#)
- [Sphere Administration dialog box, page 50](#)

Importing the echo data

The third page in the **Calibration Wizard** allows you to import the echo data into the calibration process. You can make changes to the target strength detection, and add a brief description, but you are not permitted to do anything with the echo data.

Prerequisites

In order to import echo data, the EK80 must be "pinging" with a relevant calibration target (sphere) inside the beam.

Alternatively, you can import the data from, a pre-recorded raw data file.

Context

The third page in the **Calibration Wizard** offers the following fields:

a Target Position

The left side of the *Target Position* field shows all the individual echoes that are imported into the calibration program. All are placed inside a circle to reflect their locations in the beam.

The right side of the field shows the calibration layer that is automatically created once the calibration starts.

b Frequency/Target Detection

The *Frequency/Target Detection* field shows a curve reflecting the target strength of the sphere for individual frequencies. This is the same curve as you can see in the **Sphere Administration** dialog box, but with a few additional features.

c Numerical

The *Numerical* field provides three tabs.

- The **General** page displays numerical parameters related to the calibration target (sphere) and the target strength detection.
- The **Channel Data** page displays numerical parameters related to the transceiver channel that was used to record the echo data.
- The **TS Data** page displays the numerical parameters related to each individual echo. You can select a single echo in the **TS Data** list to identify it (in red colour) in the *Target Position* field.

Procedure

- 1 In the *Frequency/Target Detection* field, verify that the calibration target (sphere) is useful for the chosen frequency range.
- 2 If relevant, change the **Max Deviation** to a lower value than the default setting.
The chosen range is shown in the *Frequency/Target Detection* field. A lower value can be useful to filter out echoes from other targets than the sphere.
- 3 In the bottom of the dialog box, click **Calibration Description** to type in relevant information about the calibration.

You can type any kind of textual information. The data is saved with in the XML files with the imported echo parameters.

- 4 Start the raw data recording.
- 5 Click **Start** to start echo data import.

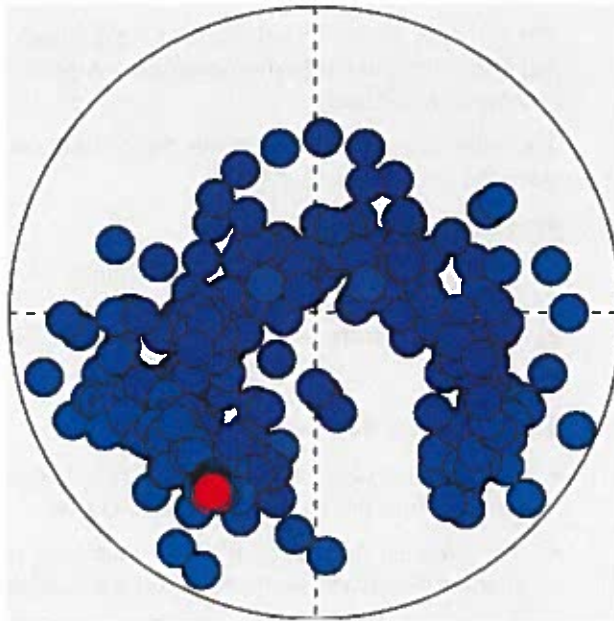
During the data import, use the three winches to move the sphere inside the sound beam. This can be done by adjusting the length of the winch wires in a programmed pattern.

Tip

We have seen that some customers use automatic winches. These are controlled by a software program which methodically places the sphere in the different sections of the beam.

- 6 Observe that the echo data is added to the *Target Position* field.

During this phase, it is important that the calibration target (sphere) is moved inside the beam. You need as many echoes necessary to "paint" the beam circle with echoes. Several echoes on "top" of each other do not increase the calibration accuracy, but the distribution of the echoes within the beam circle does.



- 7 When the appropriate number of echoes have been imported, click **Stop**.
- 8 Stop the raw data recording.
- 9 Stop the "pinging".
- 10 In the bottom of the dialog box, click **Save** to save the imported data.

The resulting file is on XML format, and contains all the echo parameters that were imported. A default file name and folder location is suggested.

- 11 Click **Next**.

Further requirements

Proceed to the fourth page in the **Calibration Wizard**.

Related topics

[Calibration Wizard dialog box \(Page 3\), page 42](#)

[Calibration Description dialog box, page 52](#)

[Single Target Detection dialog box, page 53](#)

Processing the echo data

The fourth page in the **Calibration Wizard** allows you to manually "clean" the echo data before you process it to calibrate the EK80. When the processing is finished, you can save the results, and update the calibration data used by the EK80.

Prerequisites

In order to process echo data for calibration, you must have imported and saved valid echo data from a relevant calibration target (sphere) inside the beam.

Context

The fourth page in the **Calibration Wizard** offers the following fields:

a Target Position

The left side of the *Target Position* field shows all the individual echoes that are imported into the calibration program. All are placed inside a circle to reflect their locations in the beam.

The right side of the field shows the calibration layer that is automatically created once the calibration starts.

b Frequency/Target Detection

The *Frequency/Target Detection* field shows a curve reflecting the target strength of the sphere for individual frequencies. This is the same curve as you can see in the **Sphere Administration** dialog box, but with a few additional features.

c Numerical

The *Numerical* field provides five tabs.

- The **General** page displays numerical parameters related to the calibration target (sphere) and the target strength detection.
- The **Channel Data** page displays numerical parameters related to the transceiver channel that was used to record the echo data.
- The **TS Data** page displays the numerical parameters related to each individual echo. You can select a single echo in the **TS Data** list to identify it (in red colour) in the *Target Position* field.
- The **Results** page displays the numerical parameters that are created by the calibration processing.
- The **Error Analysis** page displays the shows all the individual echoes that are imported into the calibration program. Each echo is shown using a colour to indicate the individual target strength.

Procedure

- 1 Click the **TS Data** tab in the *Numerical* file to access the individual echoes.
- 2 "Clean" the list by suspending the echoes you do not wish to use in the calibration.
 - a Click at the top of each column so sort the table.
 - b In the **Suspended** column, select individual echoes to spend them.
- 3 Click **Reprocess** to run the calibration processing.
- 4 Finalize the calibration process:
 - 1 When the processing has finished, click **Finish**.
 - 2 Save the calibration results.
 - 3 Update the calibration used by the echo sounder; select **Merge** or **Replace**.
 - **Merge** is typically used when you wish to use different pulse lengths on the same channel (transceiver/transducer combination) to make the parameter file more complete and accurate. The calibration data for the channel will then include all the data from all the pulse lengths.
 -
 - **Replace** is typically used when you wish to keep only the latest parameters for the relevant channel (transceiver/transducer combination).
 - 4 Close the **Calibration Wizard**.
 - 5 Return to normal operation.

Related topics

[Calibration Wizard dialog box \(Page 4\), page 47](#)

[Calibration Description dialog box, page 52](#)

Operational procedures

Topics

Defining the file and folder settings for echogram recordings, page 35

Recording echogram sequences of raw data, page 36

Choosing which echogram data file(s) to replay, page 37

Defining the pulse type for the EK80 transmissions, page 38

Defining the file and folder settings for echogram recordings

The EK80 allows you to record both raw and processed echogram data. The data are saved on the Processor Unit's hard disk according to the preferences you have defined.

Context

The **File Setup** parameters control where the recorded files are saved on the Processor Unit's hard disk. By adding a file name prefix, you can also identify files recorded from any specific mission or survey. Additional limitations may also be specified.

Set up the file and folder parameters before you start the recording.

Note

Data files will normally become very large. If you wish to record large amounts of EK80 data, make sure that you have enough space on your hard disk. Unless your computer is equipped with a very large disk capacity, we recommend that you save the data files to an external storage device.

If the current file size gets too big during recording, use the **Split File** function on the **Record RAW** button. This will close the current file, and then automatically continue recording to a new file.

Procedure

- 1 Click the **Operation** icon.

This icon is located under the **Main** menu. It is used to open the **Operation** menu.

- 2 On the **Operation** menu, click **Outputs**.



Observe that the **Outputs** dialog box opens. This dialog box contains a number of pages selected by the menu on the left side.

- 3 On the left side, click **File Setup** to open the page.

- 4 On the **File Setup** page, define the relevant file and folder properties.
- 5 Click **OK** to save the chosen parameters and close the dialog box.

Related topics

Starting the EK80 calibration, page 29

Recording echogram sequences of raw data

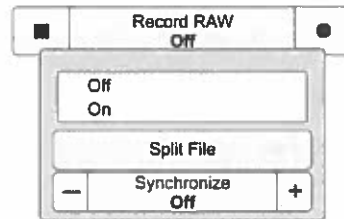
The raw data recording function provided by the EK80 allows you to save sequences of echo data to a file on the Processor Unit hard disk. Each sequence of raw data - often regarded as a "line" during a survey - contains a set of acoustic data saved on digital format.

Prerequisites

Before you start raw data recording, make sure that you have defined the folder you wish to use to store the data files.

Tip

*On the **Operation** menu, click **Outputs** → **File Setup** to define the recording parameters.*



Context

On the EK80, you can save and recall echograms in the following ways.

- Bitmap images are saved whenever you click the **Screen Capture** button on the top bar. These images are recalled by means of the **Screen Captures** tab at the bottom of the EK80 presentation.
- Echogram sequences (raw data) are recorded using the **Record RAW** function on the **Operation** menu. These sequences are played back by placing the EK80 in *Replay* mode.
- A "history file" is recorded automatically and continuously. When the file is full, it will start to overwrite the oldest data, thus creating a "ring buffer". To play back the history file, click the **History** button on the top bar.

You can also save processed echogram data using the **Record Processed** function on the **Operation** menu. These data are only exported, and can not be played back on the EK80.

Note

Raw data files will normally become very large. If you wish to record large amounts of EK80 raw data, make sure that you have enough space on you hard disk. Unless your computer is equipped with a very large disk capacity, we recommend that you save the raw data to an external storage device.

Procedure

- 1 Click the **Operation** icon.

This icon is located under the **Main** menu. It is used to open the **Operation** menu.

- 2 To start raw data recording, click the **Record RAW** button, and select *On*.



The **Record** button on the top bar will change colour to reflect that recording is active.

Tip

Alternatively, simply click the red circle on the right side of the button to start recording.

*To synchronize simultaneous recording of raw and processed data, open the **Record RAW** button, and set **Synchronize** to *On*. With synchronization activated, you will automatically start and stop recording using only the **Record RAW** button on the **Operation** menu, and the **Record** button on the top bar.*

- 3 If you wish to reduce the size of the data file you are recording, open the button, and click **Split File**.

The current file is closed, and a new file is automatically generated.

- 4 To stop raw data recording, click the **Record RAW** button, and select *Off*.

Tip

Alternatively, simply click the black rectangle on the left side of the button to stop recording.

Related topics

[Starting the EK80 calibration, page 29](#)

Choosing which echogram data file(s) to replay

Every time you record echogram data, the information is stored on the harddisk. These files can be retrieved, and played back on the EK80.

Context

Playback is controlled by the replay bar.



A Stop

Click this button to stop the playback.

B Play/Pause

Click this button to start the playback, or to pause it.

C Replay speed

Click this slider and move it sideways to adjust the replay speed.

D Select playback file

This button shows which file you are currently playing, Click the button to open the **Replay File** dialog box.

E Progress

This bar shows you the replay progress of the current file. If you have chosen to loop the replay file(s), the green indicators will start from left every time the start of the file appears.

Procedure

- 1 Click the **Operation** icon.

This icon is located under the **Main** menu. It is used to open the **Operation** menu.

- 2 Click **Operation** to open it, then click **Replay File**.



Observe that the **Replay File** dialog box opens.

The **Replay File** dialog box contains file(s) to be used for playback. The file names listed have been generated automatically during recording, and each file is identified with the time and date it was made.

- 3 Click **Add** to select new replay file(s).

A standard operating system dialog box is used to locate and select the files you wish to use.

- 4 If you wish to replay the selected files in an "endless" loop, click **Loop**.

- 5 Click **OK** to save the chosen parameters and close the dialog box.

- 6 To start playback, click **Normal**→**Replay**, and use the controllers in the replay bar.

Related topics

Starting the EK80 calibration, page 29

Defining the pulse type for the EK80 transmissions

The **Pulse Type** function allows you to select which type of pulse transmission you wish to use; *CW* or *FM*.


Context

"CW" means "continuous wave", while "FM" means "frequency modulated".

Note

In order to use the frequency sweep ("chirp") functionality, you must use frequency modulated (FM) pulses.

Procedure

- 1 Click the **Operation** icon.
This icon is located under the **Main** menu. It is used to open the **Operation** menu.
- 2 Click **Normal Operation**.
A rectangular button with a thin border. On the left side, there is a double left-pointing arrow symbol «. To the right of the arrow, the text "Normal Operation" is centered.

Observe that the **Normal Operation** dialog box opens.
- 3 For the relevant channel, set **Pulse Type** to *CW* or *FM*.
- 4 Click **OK** to save the chosen parameters and close the dialog box.

Related topics

[Starting the EK80 calibration, page 29](#)

Functions and dialog boxes

Topics

Calibration Wizard dialog box (Page 1), page 40

Calibration Wizard dialog box (Page 2), page 41

Calibration Wizard dialog box (Page 3), page 42

Calibration Wizard dialog box (Page 4), page 47

Sphere Administration dialog box, page 50

Calibration Description dialog box, page 52

Single Target Detection dialog box, page 53

Calibration Wizard dialog box (Page 1)

The first page in the **Calibration Wizard** allows you to either start a new calibration process, or return to a previous calibration process reusing saved data.

Prerequisites

The **Calibration Wizard** dialog box can only be opened within the calibration process. In order to start the wizard, the EK80 must be in either *Normal* or *Replay* mode.

How to open

To open the first page in the **Calibration Wizard**, place the EK80 in either *Normal* or *Replay* mode, and click **Calibration** on the **Setup** menu.



Description

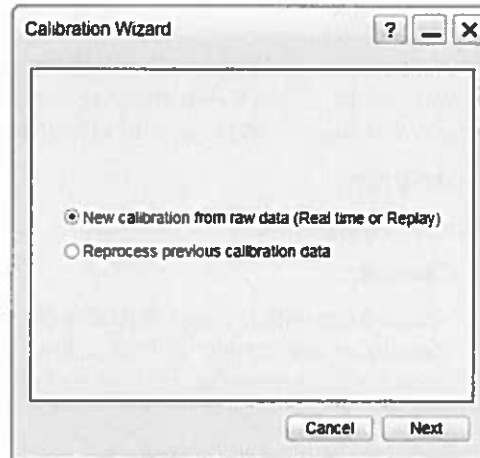
The following options are provided:

- **New calibration from raw data (Real time or Replay)**

Select this option if you are starting a new calibration process from scratch. You can either use "live data" for the calibration, or data that are previously recorded.

Note

It is possible to calibrate the EK80 using recorded data instead of live data. However, we recommend that you use live data, as this allows you to monitor the echoes in the beam while importing the data. If you wish to restart the whole calibration process later, you can use the raw data recording made during the calibration.



- **Reprocess previous calibration data**

Select this option if you have a previous calibration XML data file available for the calibration.

Note

If you remove or add a transducer from a calibrated EK80 system, the transceiver must be calibrated one more time. However, you may use the measured target strength (TS) from a previous calibration, as well as the reference target strength for the calibration sphere you used.

Related topics

Starting the EK80 calibration, page 29

Calibration Wizard dialog box (Page 2)

The second page in the **Calibration Wizard** allows you to select the channel and the calibration target (sphere) that are used. You can also add or delete spheres, and modify their parameters.

Prerequisites

The **Calibration Wizard** dialog box can only be opened within the calibration process. In order to start the wizard, the EK80 must be in either *Normal* or *Replay* mode.

How to open

To open the second page in the **Calibration Wizard**, place the EK80 in either *Normal* or *Replay* mode. Click **Calibration** on the **Setup** menu, select *New calibration from raw data (Real time or Replay)*, and click **Next**.

Description

The following options are provided:

- **Channel**

Select from which channel (transceiver, transducer and frequency) the echoes from the calibration target (sphere) are taken.

If you work with "live data", it is very important that you choose the correct channel, and that all the other channels are switched off in the **Normal Operation** dialog box.

If you calibrate with replay data, the channel identification is recorded as a part of the raw data. You must still make sure that the correct channel is used.

- **Sphere**

Select which calibration target (sphere) that is used for the calibration.

If you need to make changes to the sphere properties, or wish to add a new sphere, click **Sphere Administration** to open the dedicated dialog box.

Tip

The reference target is normally a metal sphere. Simrad can supply a variety of copper and tungsten spheres dedicated for different operational frequencies. Each sphere diameter is selected for minimum temperature dependence.

Related topics

[Sphere Administration dialog box, page 50](#)

[Starting the EK80 calibration, page 29](#)

Calibration Wizard dialog box (Page 3)

The third page in the **Calibration Wizard** allows you to import the echo data into the calibration process. You can make changes to the target strength detection, and add a brief description, but you are not permitted to do anything with the echo data.

(No title. Used only if the dialog box or function is opened as a result of clicking a screen menu button.)



Prerequisites

The **Calibration Wizard** dialog box can only be opened within the calibration process. In order to start the wizard, the EK80 must be in either *Normal* or *Replay* mode.

How to open

To open the third page in the **Calibration Wizard**, place the EK80 in either *Normal* or *Replay* mode. Click **Calibration** on the **Setup** menu, select *New calibration from raw data (Real time or Replay)*, and click **Next** to proceed to the second dialog box in the **Calibration Wizard**. On the second page, click **Next**.

Description

The third page in the **Calibration Wizard** offers the following fields:

a Target Position

The left side of the *Target Position* field shows all the individual echoes that are imported into the calibration program. All are placed inside a circle to reflect their locations in the beam.

The right side of the field shows the calibration layer that is automatically created once the calibration starts.

b Frequency/Target Detection

The *Frequency/Target Detection* field shows a curve reflecting the target strength of the sphere for individual frequencies. This is the same curve as you can see in the **Sphere Administration** dialog box, but with a few additional features.

c Numerical

The *Numerical* field provides three tabs.

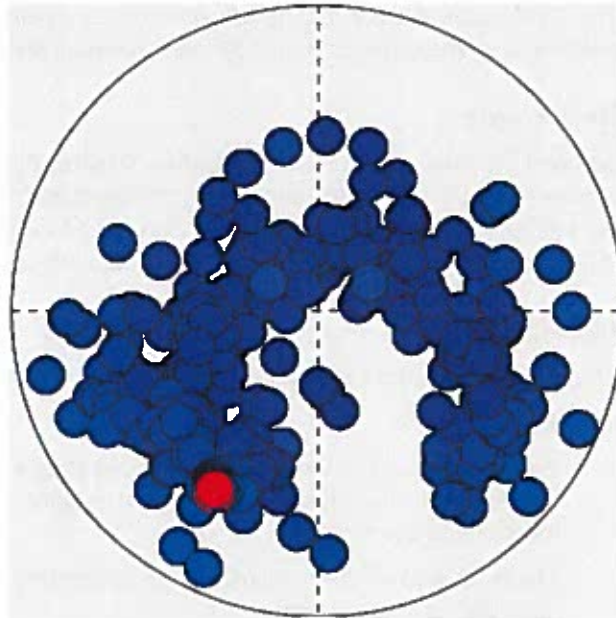
- The **General** page displays numerical parameters related to the calibration target (sphere) and the target strength detection.
- The **Channel Data** page displays numerical parameters related to the transceiver channel that was used to record the echo data.
- The **TS Data** page displays the numerical parameters related to each individual echo. You can select a single echo in the **TS Data** list to identify it (in red colour) in the *Target Position* field.

Target Position field

Each and every echo received from the calibration target(sphere) are placed within the circular beam model on the left side of the *Target Position* field.

The echoes are compensated for their positions within the beam, so that echoes from the outer edge appear with the same echo strength as those in the middle of the beam.

If you click on a single echo on the **TS Data** list (in the *Numerical* field), the relevant echo is shown with a red colour in the *Target Position* field.



Note

*You will not be able to do anything with the echoes at this time. The **TS Data** page only provides the list. However, on the fourth page of the **Calibration Wizard** you will be able to remove the echoes that you do not wish to be included in the calibration.*

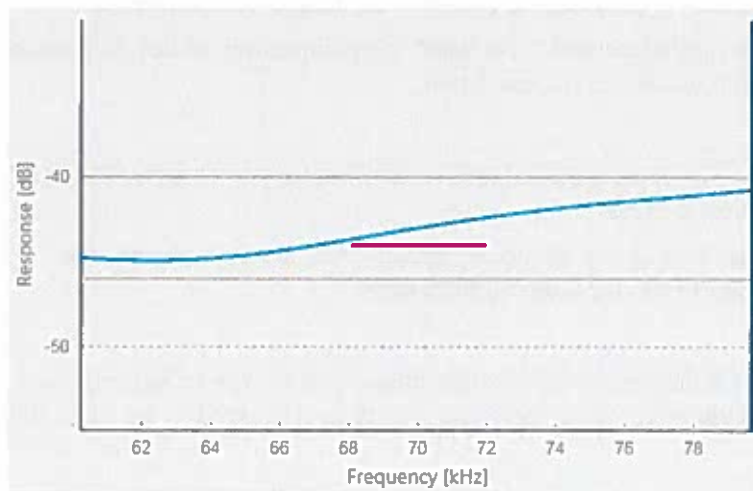
On the right side of the circular beam model you can see how each individual echo is received within the calibration layer. This calibration layer is automatically established when the **Calibration Wizard** is started. Its purpose is to remove echoes over and below the calibration target(sphere). You can easily see the layer in the echogram, as it is identified with two red horizontal lines.



If you see that many echoes are in fact falling outside the layer, you can adjust its size by clicking on the red lines and moving them up or down. The red lines in the echogram will be moved accordingly, but the lines in the *Target Position* field will assume their original position once you release the mouse button..

Frequency/Target Detection field

The *Frequency/Target Detection* field is located immediately below the *Target Position* field.



The field show the relationship between the frequency and the target detection for the sphere that is in current use.

- A** This blue line represents the relationship curve.
- B** The two grey lines reflect the current limits defined by the **Max Deviation** setting in the bottom right corner of the dialog box. Echoes over and below these lines will not be imported into the calibration process.
- C** The purple line reflects the bandwidth of the current "ping". The bandwidth is inverse proportional with the pulse length.

Numerical field

The *Numerical* field offers three tabbed pages.

- The **General** page displays numerical parameters related to the calibration target (sphere) and the target strength detection.

- The **Channel Data** page displays numerical parameters related to the transceiver channel that was used to record the echo data.
- The **TS Data** page displays the numerical parameters related to each individual echo. You can select a single echo in the **TS Data** list to identify it (in red colour) in the *Target Position* field.

Note

*You will not be able to do anything with the echoes at this time. The **TS Data** page only provides the list. However, on the fourth page of the **Calibration Wizard** you will be able to remove the echoes that you do not wish to be included in the calibration.*

Details

Start/Stop

This button starts (and stops) the import of echo data to the calibration program. While the import is active, each echo is drawn in the *Target Position* field.

If you are doing the calibration with "live data", keep importing echoes until these are evenly distributed inside the circular beam.

Save/Save AS

These buttons allow you to save the calibration data before you continue to page four in the Calibration Wizard.

Note that you are not saving raw data here, but an XML file that contains the information necessary to run the calibration process.

Calibration Description

This button opens a dedicated dialog box that allows you to type in information about the current calibration. The information you type in is saved in the XML file.

Single Target Detection

This button opens the **Single Target Detection** dialog box.

The **Single Target Detection** parameters are used to control the operational settings for the detection of single targets. In order to detect single fish correctly, these parameters must be defined to suit the target characteristics.

Max Deviation

This parameter allows you to control the maximum permitted deviation for the echoes from the calibration target (sphere). Echoes outside the defined limits will not be imported.

The limit you define is shown in the *Frequency/Target Detection* field.

Related topics

[Calibration Description dialog box, page 52](#)

[Single Target Detection dialog box, page 53](#)

[Importing the echo data, page 31](#)

Calibration Wizard dialog box (Page 4)

The fourth page in the **Calibration Wizard** allows you to manually "clean" the echo data before you process it to calibrate the EK80. When the processing is finished, you can save the results, and update the calibration data used by the EK80.

Prerequisites

The **Calibration Wizard** dialog box can only be opened within the calibration process. In order to start the wizard, the EK80 must be in either *Normal* or *Replay* mode.

How to open

To open the fourth page in the **Calibration Wizard**, place the EK80 in either *Normal* or *Replay* mode. Click **Calibration** on the **Setup** menu, select *New calibration from raw data (Real time or Replay)*, and click **Next** to proceed to the second dialog box in the **Calibration Wizard**. On the second and third pages, click **Next**.

If you select *Reprocess previous calibration data* on the first page of the **Calibration Wizard**, **Next** will take you straight to the fourth page.

Description

The fourth page in the **Calibration Wizard** offers the following fields:

a Target Position

The left side of the *Target Position* field shows all the individual echoes that are imported into the calibration program. All are placed inside a circle to reflect their locations in the beam.

The right side of the field shows the calibration layer that is automatically created once the calibration starts.

b Frequency/Target Detection

The *Frequency/Target Detection* field shows a curve reflecting the target strength of the sphere for individual frequencies. This is the same curve as you can see in the **Sphere Administration** dialog box, but with a few additional features.

c Numerical

The *Numerical* field provides five tabs.

- The **General** page displays numerical parameters related to the calibration target (sphere) and the target strength detection.
- The **Channel Data** page displays numerical parameters related to the transceiver channel that was used to record the echo data.
- The **TS Data** page displays the numerical parameters related to each individual echo. You can select a single echo in the **TS Data** list to identify it (in red colour) in the *Target Position* field.
- The **Results** page displays the numerical parameters that are created by the calibration processing.

- The **Error Analysis** page displays the shows all the individual echoes that are imported into the calibration program. Each echo is shown using a colour to indicate the individual target strength.

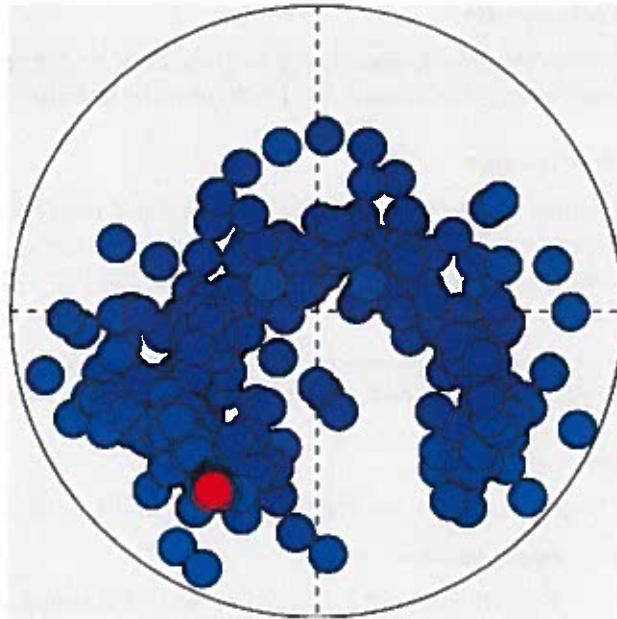
Target Position field

Each and every echo received from the calibration target(sphere) are placed within the circular beam model on the left side of the *Target Position* field.

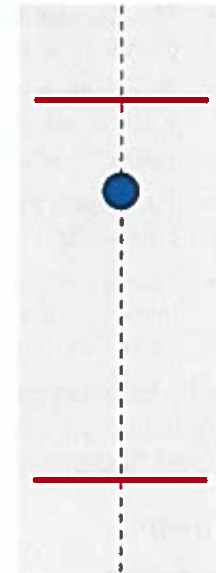
The echoes are compensated for their positions within the beam, so that echoes from the outer edge appear with the same echo strength as those in the middle of the beam.

If you click on a single echo on the **TS Data** list (in the *Numerical* field), the relevant echo is shown with a red colour in the *Target Position* field.

On this list, you can select each individual echo on the left side of the table (**Suspended**), and remove it from the calibration processing.



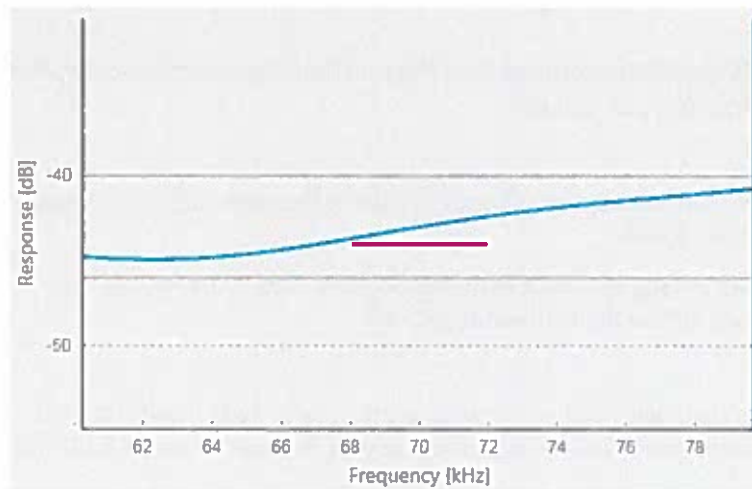
On the right side of the circular beam model you can see how each individual echo is received within the calibration layer. This calibration layer is automatically established when the **Calibration Wizard** is started. Its purpose is to remove echoes over and below the calibration target(sphere). You can easily see the layer in the echogram, as it is identified with two red horizontal lines.



If you see that many echoes are in fact falling outside the layer, you can adjust its size by clicking on the red lines and moving them up or down. The red lines in the echogram will be moved accordingly, but the lines in the *Target Position* field will assume their original position once you release the mouse button..

Frequency/Target Detection field

The *Frequency/Target Detection* field is located immediately below the *Target Position* field.



The field show the relationship between the frequency and the target detection for the sphere that is in current use.

- A** This blue line represents the relationship curve.
- B** The two grey lines reflect the current limits defined by the **Max Deviation** setting in the bottom right corner of the dialog box. Echoes over and below these lines will not be imported into the calibration process.
- C** The purple line reflects the bandwidth of the current "ping". The bandwidth is inverse proportional with the pulse length.

Numerical field

The *Numerical* field offers five tabbed pages.

- The **General** page displays numerical parameters related to the calibration target (sphere) and the target strength detection.

- The **Channel Data** page displays numerical parameters related to the transceiver channel that was used to record the echo data.
- The **TS Data** page displays the numerical parameters related to each individual echo. You can select a single echo in the **TS Data** list to identify it (in red colour) in the *Target Position* field.
- The **Results** page displays the numerical parameters that are created by the calibration processing.
- The **Error Analysis** page displays the shows all the individual echoes that are imported into the calibration program. Each echo is shown using a colour to indicate the individual target strength.

The **TS Data** page allows you to remove echoes that you do not wish to use in the calibration. Click on the titles in the top row of the table to sort the various columns. Click **Suspend** in the left column to remove the echo from the calibration.

Details

Reprocess

This button starts the calibration processing. The function stops automatically. You can calibrate as many times as you like.

Save/Save AS

These buttons allow you to save the calibration data before you continue to page four in the Calibration Wizard.

Note that you are not saving raw data here, but an XML file that contains the information necessary to run the calibration process.

Calibration Description

This button opens a dedicated dialog box that allows you to type in information about the current calibration. The information you type in is saved in the XML file.

Related topics

[Calibration Description dialog box, page 52](#)

[Processing the echo data, page 33](#)

Sphere Administration dialog box

The **Sphere Administration** dialog box allows you to add or remove calibration spheres, and to modify their parameters.

Prerequisites

The **Sphere Administration** dialog box can only be opened in the **Calibration Wizard**. In order to access this wizard, the EK80 must be in either *Normal* or *Replay* mode.

How to open

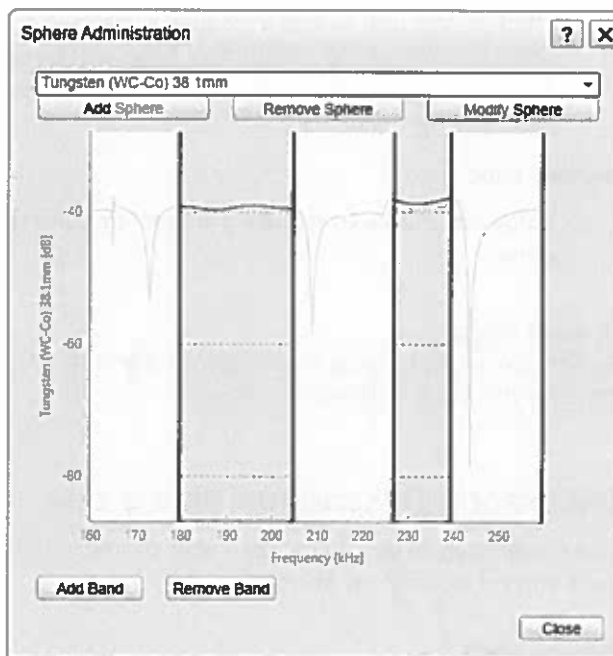
To open the **Sphere Administration** dialog box, place the EK80 in either *Normal* or *Replay* mode.

Click **Calibration** on the **Setup** menu, select *New calibration from raw data (Real time or Replay)*, and proceed to the second dialog box in the **Calibration Wizard**.

Description

Calibration spheres are provided in different sizes to fit different operational frequencies. They are also manufactured from different materials, mainly Copper (Cu) and Tungsten (WC-Co).

For the currently selected sphere, the **Sphere Administration** dialog box presents a curve that shows the relationship between the operational frequency and the sphere's target strength. The shape of the curve tells you if the characteristics of the selected sphere disqualifies it from use within specific frequency bands due to low target strength.



The functionality of the curve allows you to adjust the frequency band(s), while the **Add Band** and **Remove Band** buttons allow you to establish a new sphere or delete an existing sphere from the list.

Details

Select Sphere

By default, the **Sphere Administration** dialog box opens with the sphere selected in the second dialog box in the **Calibration Wizard**. You can use this function to select another sphere.

Add Sphere

Click this button to add a new sphere (calibration target) to the list. A dedicated dialog box is used to accept the necessary parameters.

Remove Sphere

Click this button to remove the currently selected sphere (calibration target) from the list.

Modify Sphere

Click this button to modify the parameters of the currently selected sphere (calibration target). A dedicated dialog box is used to accept the necessary parameters.

Add Band

Click this button to add a frequency band to the target strength/frequency curve. Only the frequencies inside this band will be used for calibration. The size of the frequency band can be adjusted by clicking the right or left border of the rectangle, and moving it sideways.

Remove Band

Click this button to remove a frequency band from the the target strength/frequency curve.

Related topics

[Calibration Wizard dialog box \(Page 2\), page 41](#)

[Starting the EK80 calibration, page 29](#)

Calibration Description dialog box

The **Calibration Description** dialog box allows you to record meta-information about your current calibration operations.

How to open

The **Calibration Description** dialog box is opened from the third and fourth pages in the **Calibration Wizard**.

To open the **Calibration Wizard**, place the EK80 in either *Normal* or *Replay* mode.

Click **Calibration** on the **Setup** menu, select *New calibration from raw data (Real time or Replay)*, and proceed to the third and fourth pages in the **Calibration Wizard**.

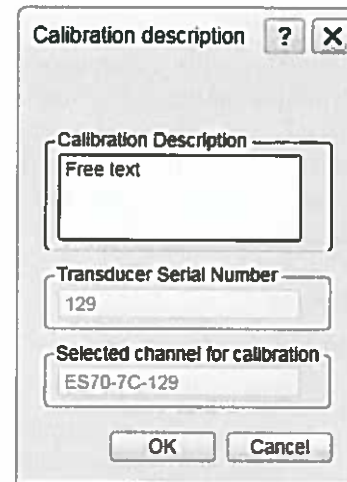
Description

You can type in any kind of relevant information into the **Calibration Description** text field.

This can be for example the vessel's location, weather conditions, or the name of the people who did the calibration. The date and time of the calibration are automatically added to the XML file names.

The information you type in is added to the XML file with the calibration data.

The **Calibration Description** dialog box also shows you the serial number of the transducer that is used on the channel that is calibrated, as well as the name of the channel you are calibrating. This information is retrieved automatically.



Related topics

[Calibration Wizard dialog box \(Page 3\), page 42](#)

[Calibration Wizard dialog box \(Page 4\), page 47](#)

[Importing the echo data, page 31](#)

[Processing the echo data, page 33](#)

Single Target Detection dialog box

How to open

The **Single Target Detection** dialog box can be opened from several places in the EK80 user interface.

- The **Single Target Detection** dialog box can be opened (as a page) from the **Information Pane Options** dialog box. To open this dialog box, click the **Setup** button in an information pane, or the menu button on the **Active** menu.
- The **Single Target Detection** dialog box can be opened from the third and fourth page in the **Calibration Wizard**. In order to start this wizard, the EK80 must be in either *Normal* or *Replay* mode.

Description

Several specific parameters are available for studies of single fish. In order to detect single fish correctly, these parameters must be defined to suit the target characteristics.

Details

Min(imum) Threshold

The target strength for a single target must exceed this threshold to be accepted.

Min(imum) Echo Length

For a single target detection to occur the normalized echo length must exceed this parameter.

Max(imum) Echo Length

A single target detection requires the normalized echo length to be less than the maximum echo length setting.

Max(imum) CW Phase Deviation

Average electrical phase jitter between samples inside an echo from a single target must not exceed the maximum phase deviation setting where maximum phase deviation is set in units of phase steps (128 phase steps = 180 electrical degrees). Recommended setting is 2 to 3 for normal conditions. For weak echoes in noisy conditions you should allow for more jitter (4 to 10).

Max(imum) Sweep Phase Deviation

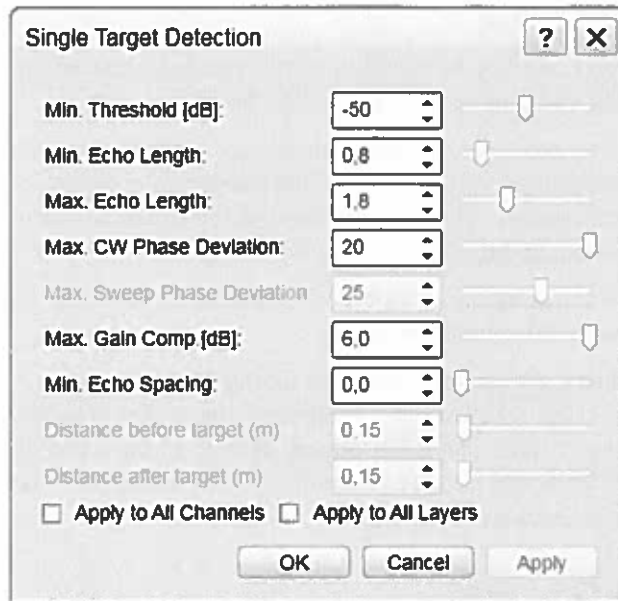
TBD

Max(imum) Gain Compensation

The correction value returned from the transducer gain model must not exceed the maximum gain compensation setting. (This is the one-way maximum gain compensation. The two-way maximum compensation will be 12 dB). All single targets outside the angle corresponding to the chosen gain compensation are skipped. Thus you can reduce the sample volume (beam angle) by choosing a lower value for maximum gain compensation.

Min(imum) Echo Spacing

The is the minimum spacing between two single echoes required for acceptance.



Distance Before Target

TBD

Distance After Target

TBD

Apply to All Channels

Select this option to apply your single target detection parameters to all the channels in use on the EK80.

Apply to All Layers

Select this option to apply your single target detection parameters to all the layers in use on the EK80.

Related topics

[Calibration Wizard dialog box \(Page 3\), page 42](#)

[Importing the echo data, page 31](#)

©2015 Kongsberg Maritime