Adjusting Detection levels in the ESN series.

Contents

Introduction

The ESN System may change characteristics over time, or from area to area. The Auto system can be optimized for different conditions

The ESN has some parameters which instruct the systems bottom detection algorithm of how sensitive the system should be. The main factor for this is Signal to Noise Ratio limit (SNR) This value in dB results in smaller signal being rejected or allowed.

If set too low the algorithms may jump to noise, fish or other unwanted signals. If set too high it can miss the bottom pulses when the signal is weak.

The signal might be weak due to the bottom type (Rocks gives strong, Mud gives weak signals) the water quality (amount of particles/pollution to block the sound).

The system can be made to detect the current optimal values using a calibration procedure. The values can also be adjusted manually in the diagnostic scope screen.

The effect of lowering the value is to give more sensitivity, both to the algorithm, but also to the screen echogram. Raising this level will block more signals, and give less noise on the screen.

SKIPPERs current recommendation for limits for this parameter is 28 (very sensitive) to 42 (least sensitive) with a normal average being from 30-38dB

If the calibration is run and gives values above this, we recommend to use values within the limits.

If the system is losing the bottom often (other than during thrusters) we recommend lowering the value.

From experience Changing TVG in manual mode, may make the screen picture better, but does not help detection.

SNR limit calibration

To do a calibration place the vessel in the area with bad signal, preferably stopped.

Go to diagnostic screen and press SNR Calibrate 'START'
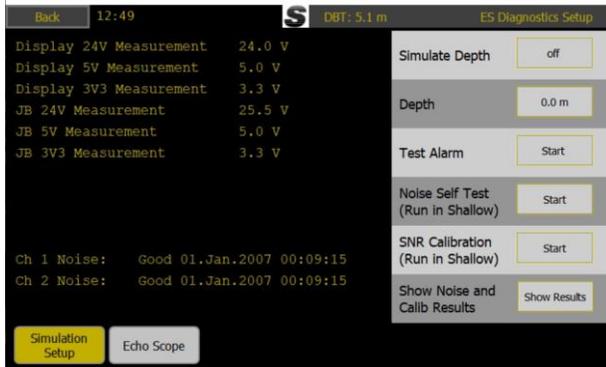
Enter the current depth to help the system find the real signal

Press start calibration
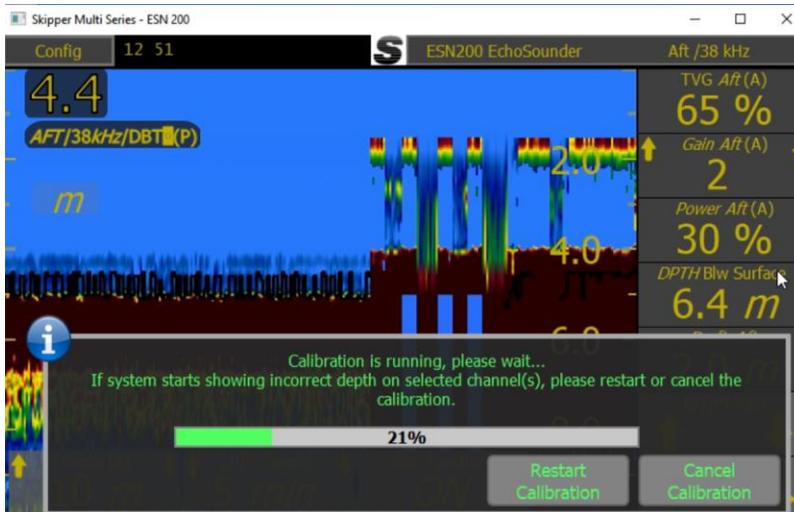
The system will try many different ping types and in the end suggest a new level
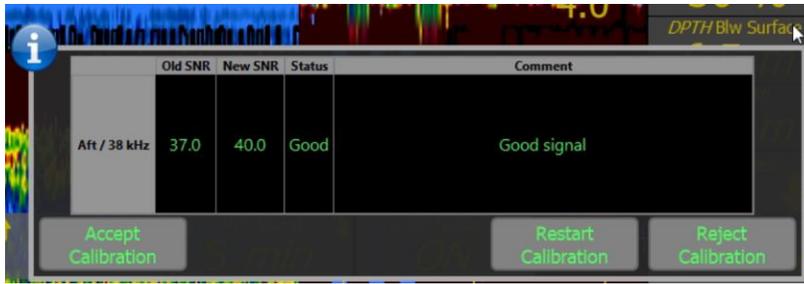
If this level is lower than the old, accept it. If higher then it does not need changing unless you see the system is making false detections in normal use (Fish etc.)

Manually adjusting SNR limits

If you wish to adjust manually to see the difference, go to the Diagnostics - scope screen
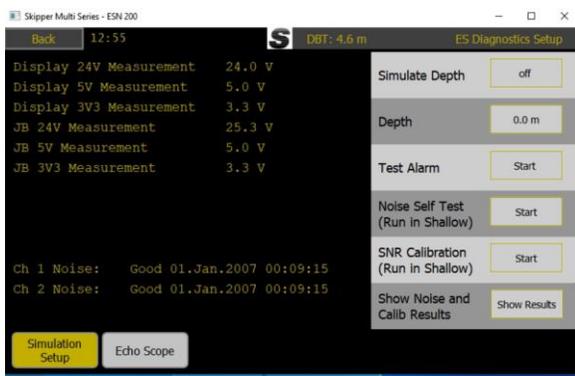
And press Show options until you see the SNR value. This can be changed manually.
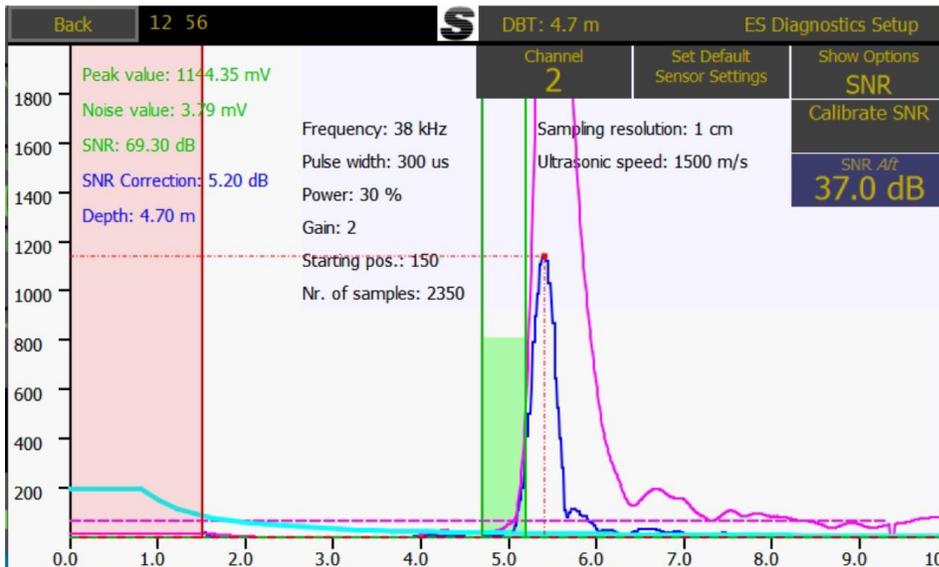
Noise test

Another reason for lost bottom issues is that the system has too high noise, Noise should be checked by

Running the noise Self test in the diagnostics page
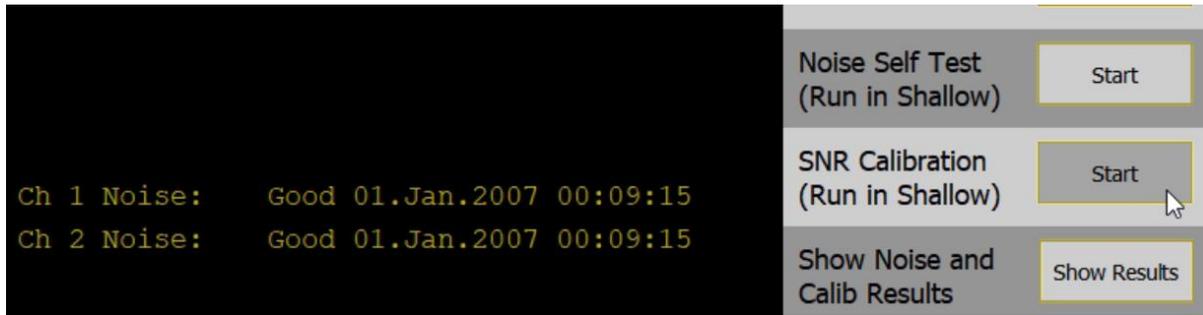
The test is best run in <45m depth

Results will be shown on diagnostic screen or by pressing the the Show results, for more details
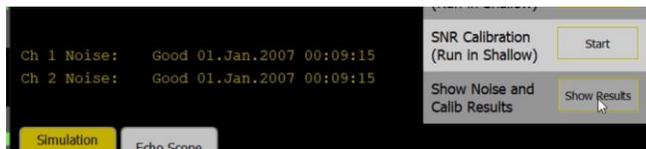
Noise below 10mV is good, the peak mV is showing some acoustic spikes coming from a different system)

External or internal, give a different range of values internal showing values that are measured internally, external includes cabling, transducers and acoustics

If support is required take a picture of these values

Manually checking noise

To manually check the noise levels, put the system in auto functions OFF, set the gain to 12 and power to max. Range to max.

In Diagnostics - Scope screen, look at the level of noise in the deep water region (in shallow you will see acoustic signals
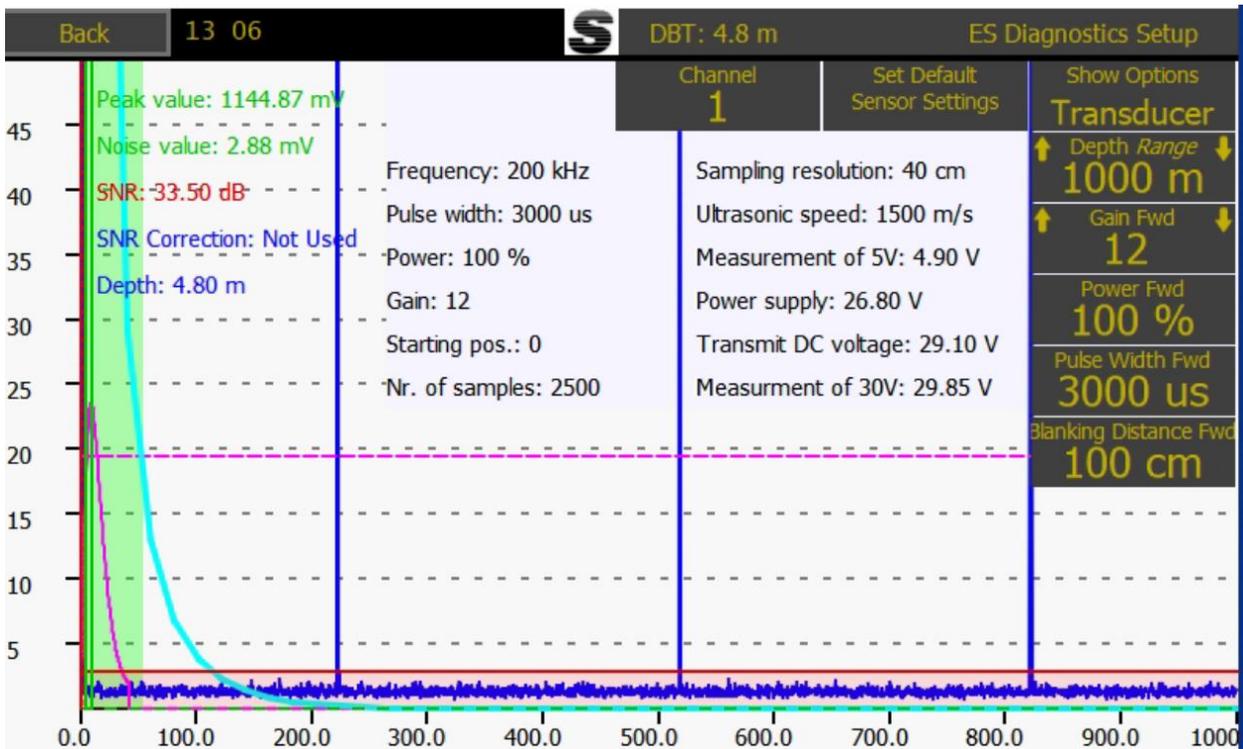
The red area in the bottom of the screen shows the detected noise range.

We expect noise to be <10mV with this test. If above try changing grounding on the cabling to reduce, or use AC power.