Acoustic Interface Gluing Procedure for Chirp Ultrasonic Sensing Modules

1 INTRODUCTION

This document provides information on gluing an acoustic interface on to a Chirp sensor module assembly. Recommendations are included for adhesives, gluing instructions and basic verification after installation of horn to the module. The scope of this document includes the following ultrasonic transceiver products:

- CH101
- CH201
- ICU-10201
- ICU-20201

Figure 1. Chirp sensor module with acoustic horn

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2   HORN GLUING INSTRUCTIONS

It is recommended to use the adhesive listed, or similar non-gassing and non-expanding UV cured adhesive. Care must be taken when gluing an acoustic interface to the sensor module. The glue may have too thin of viscosity or adhesive outgassing that could wick into the device and damage the transceiver.

- Dymax 9-911-REV-A Ultra-Light Weld
- Solarez Thick, Hard Formula

Figure 2. UV Cured Adhesives

- To mount horn, place 0.6ml dots of adhesive on each corner of acoustic interface horn flanges as shown in the left image of the picture in Figure 3 below.
- The prescribed amount of adhesive will provide enough strength for standard handling of the module.
- Place the horn over the sensor and check to ensure the horn is seated perfectly flat in relation to the PCB. Cure the adhesive with a UV light source.
- Verify the horn is seated parallel to the PCB and test horn for functionality.

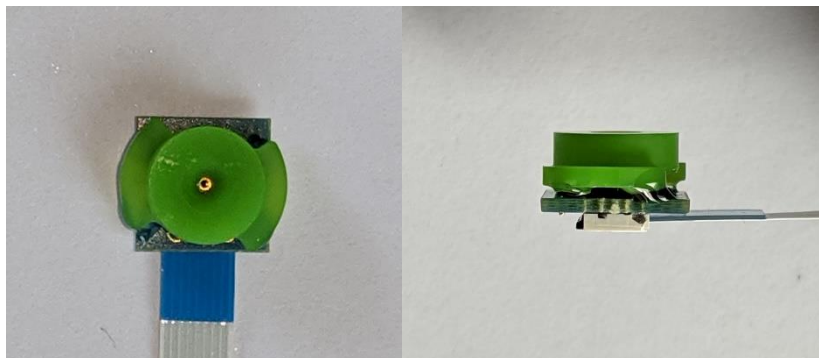**Figure 3. UV Cured Glue Applied to Horn**
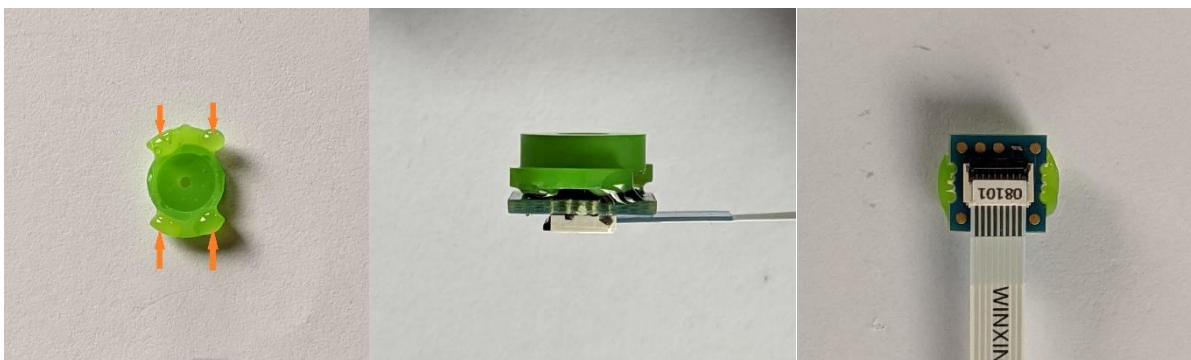
3   VERIFY ACOUSTIC HOUSING

Physical check for cap alignment

- Poor placement will result in a long ring-down which will be visible as an elevated second peak on the A-Scan. It can also trigger false positives on the target detection.
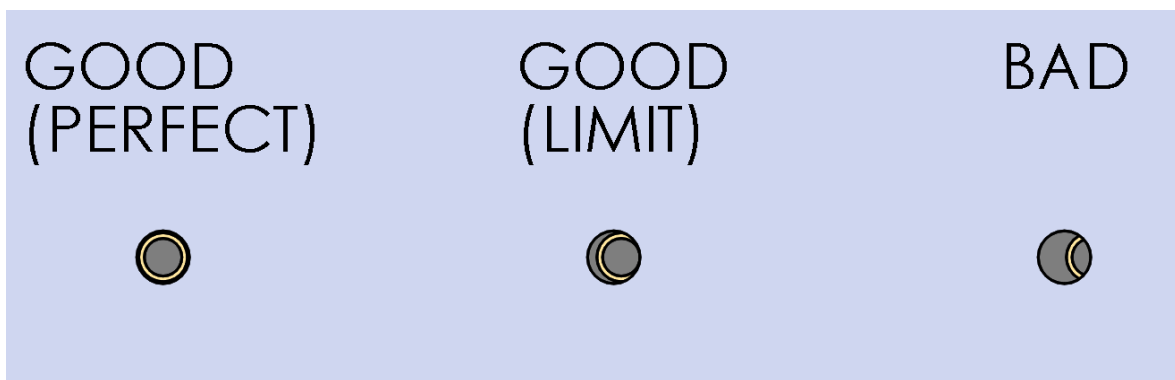
Figure 4. Physical Alignment of Horn

Sensor to Acoustic Interface

- Chirp recommends a sensor-to-Acoustic Interface assembly concentric tolerance of 0.1 mm or better such that the sensor port is not blocked or occluded by the Acoustic Interface (see Figure 5).
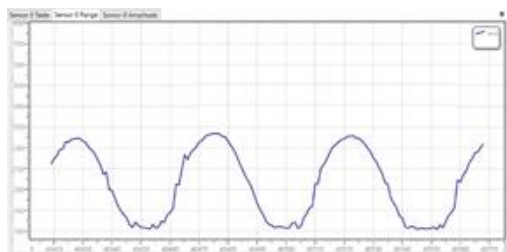
Figure 5. Acoustic Interface Alignment

Signal amplitude check

- Check the intensity of a target (e.g., a hand). The hand should be high intensity on axis and should be able to track range to your hand movements using the Range plot in the SonicLink GUI as shown in figure below.

Figure 6. Example of output range plot

4   REVISION HISTORY

Revision Date	Revision	Description
7/14/2020	1.0	Initial release
10/6/2021	1.1	Updated document scope to include ICU-10201 and ICU-20201.

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