

Tech Note 4: TL8085 防护罩

TC4014 / TC4032 水听器防护罩的声学影响实测

Protective Cage TL8085 for TC4014, TC4032

中文翻译版

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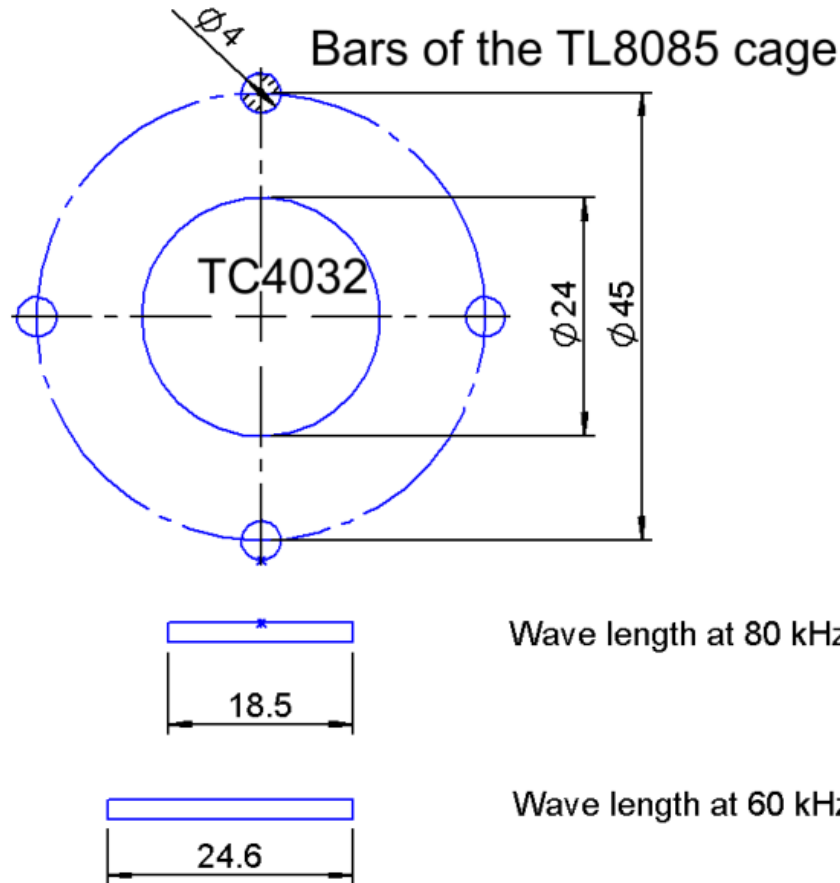
说明

本文档为 Teledyne RESON 官方英文资料的中文译稿，由普思海洋翻译整理，仅供技术参考；文中图表均摘自原厂资料，如有歧义以英文原文为准。产品规格如有变更，恕不另行通知。



结论先行

只要防护罩的尺寸远小于波长，从声学角度看防护罩就是“透明”的。实测表明：在 80 kHz 以下，TL8085 防护罩不影响水听器性能（计算取声速 1480 m/s）。

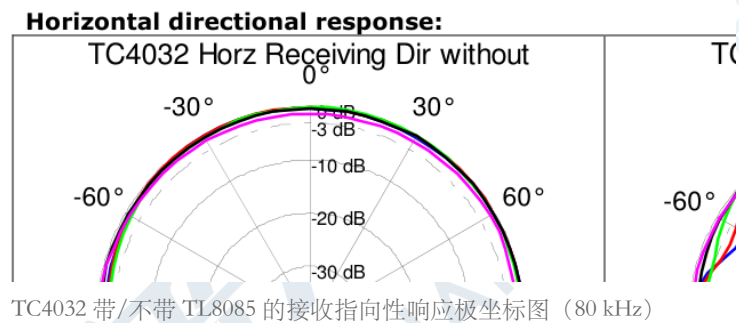
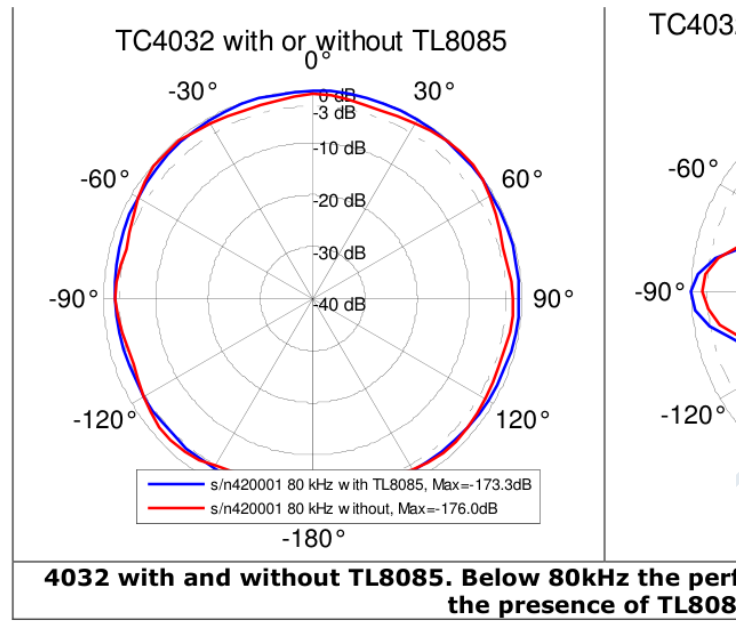


TL8085 防护罩杆条尺寸与 80 kHz / 60 kHz 波长对比示意——罩体尺寸远小于波长，声学上等效“透明”

TC4032 有无防护罩的对比 (80 kHz)

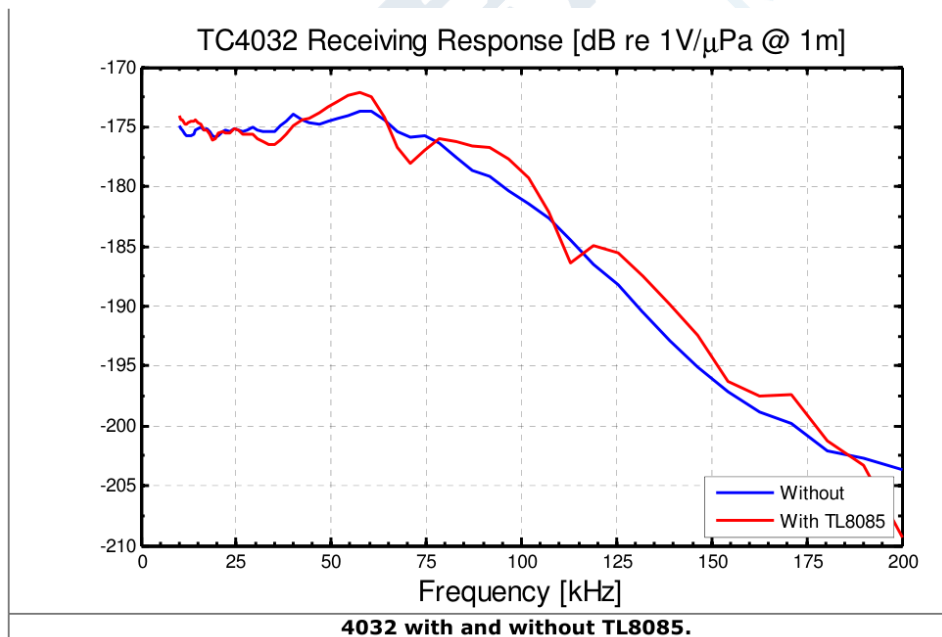
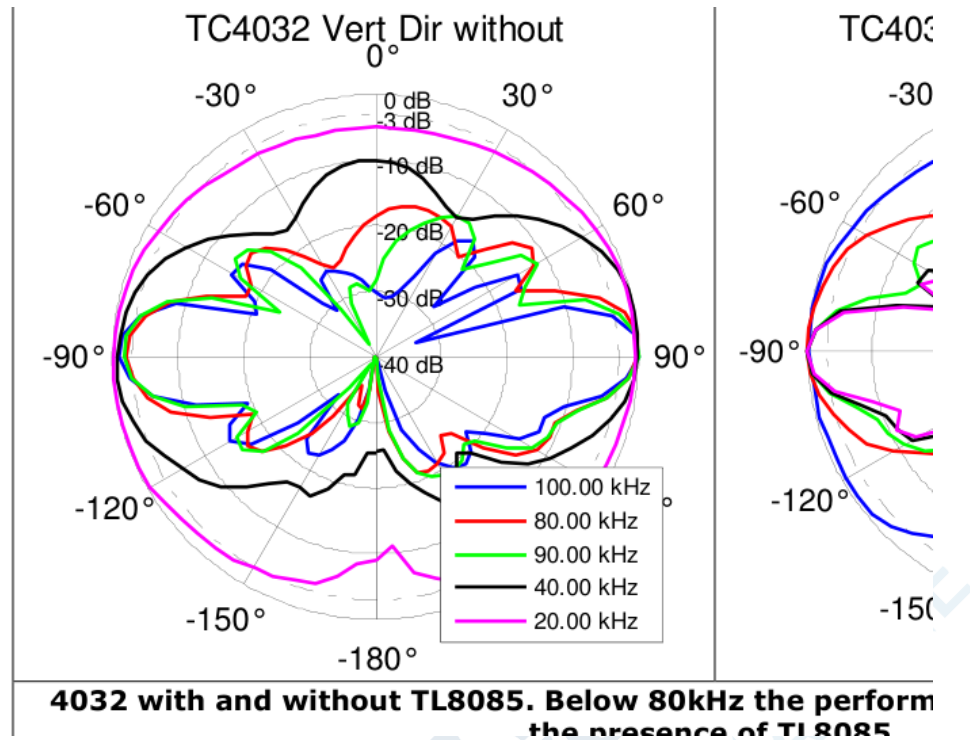
下图为 TC4032 在 80 kHz 下的接收指向性响应对比：装 TL8085 时最大值为 -173.3 dB，不装时为 -176.0 dB。80 kHz 以下，水听器性能几乎不受 TL8085 影响。





水平指向性响应



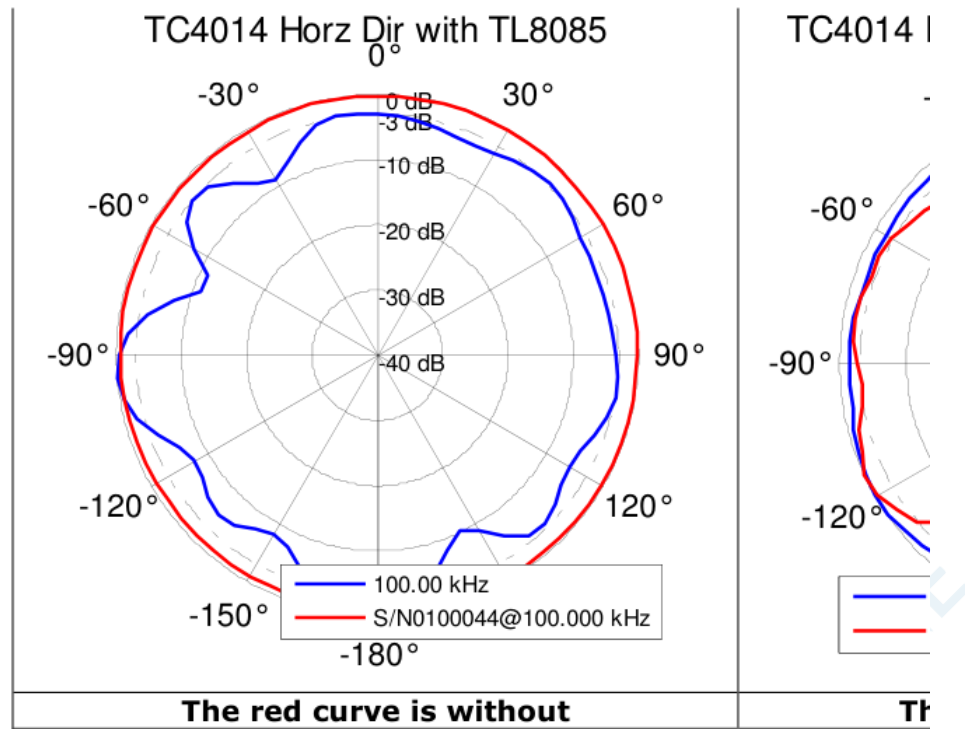


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TC4032 水平接收指向性: 带 TL8085 (20 – 100 kHz)。80 kHz 以下性能几乎不受影响

OCR 频率响应对比





TC4032 接收响应 (OCR) 频率曲线: 带/不带 TL8085 对比, 两条曲线基本一致

TC4014 带 TL8085 的指向性 (100 kHz)

下图为 TC4014 配 TL8085 在 100 kHz 下的水平指向性响应: 序列号 0100041 实测最大 -184.5 dB, 序列号 0100044 实测最大 -185.2 dB, 两只个体一致性良好。



Calibrations are done with respect to a reference hydrophone. The reference hydrophone is calibrated by the reciprocity method and this is undertaken by the National Physical Laboratory (NPL) in the United Kingdom. For more details on calibrations and related uncertainties please see: (www.teledynemarine.com/hydrophone-faq). Teledyne RESON calibrations use pulse-gated measurement techniques are used to avoid reflections in the tank. Voltage, current, and impedance are all measured within the same gated pulse. The pulse width is limited by its wavelength and the size of the tank. We also perform a pistonphone calibration test at 250Hz. Every Hydrophone and Transducer that leaves our facility is quality checked and individually calibrated. Each unit has its own serial number and ships with its own receive, impedance and transmit (when applicable) calibration plots.

TC4014 带 TL8085 在 100 kHz 下的水平指向性响应 (S/N 0100041 与 S/N 0100044)

注：原文图中红色与蓝色曲线均为不带防护罩的参考曲线。

