



13 August 2018

To: Electrical Safety Inspector
From: Lubell Labs Inc.
Subject: UW speaker safety



Re: Electrical Inspection of in-wall pool speakers

Dear Sir/Madam,

The Lubell Labs underwater loudspeaker was designed and patented (Pat # 3391385) by Alan H. Lubell M.S.E.E on 2 July 1968, and has been manufactured in-house by Lubell Labs Inc. of Columbus Ohio since 1970. The Lubell underwater speaker is installed per NEC 680.23 and IRC 4106.9.3 in Hayward SP0604C4 stainless steel light niche, and meets code requirement for being covered and enclosed by a mechanically fastened corrosion resistant stainless steel grill. Niches are UL approved, UW speakers are CE approved, and the Bosch Plena or InterM low-voltage amplifiers (power supplies) powering the speakers are UL or ETL approved. This system has been utilized successfully and safely in hotel, college, military, NASA NBL, and institutional pools throughout the world for over 49 years. Our earliest installations (and current customers) include the Marriott Tenaya Lodge, NASA Neutral Buoyancy Laboratory (NBL), and every Olympic game since 1970.

The Lubell 9484 in-wall speaker kit includes a CE marked Lubell LL916 underwater speaker with attached UL listed PVC jacketed cable, AC205B isolation transformer box, 21007 speaker support, A9022 stainless steel grill, and a Hayward UL listed stainless steel wet-niche. The LL916 U/W speaker is a low-voltage passive device having an average cable voltage of 5 Vrms during musical playback, and a maximum cable voltage of 20 Vrms full sine-wave drive. The LL916 has a 360 degree corrosion resistant forming shell that is encapsulated in 150 mil pool-grade PVC, and utilizes redundant bonded and clamped seals around the central perimeter. The LL916 comes with choice of 3-conductor cable length (50', 100', 150', or 200') that penetrates and seals within the forming shell, and is then externally grounded to the pool ground. The LL916 is certified to CE directive 89/336/EEC under standards EN50081-1 and EN50082-1.

The LL916 is installed in a UL listed corrosion resistant forming shell (Hayward SP0604C4 wet-niche) that is bonded and grounded in accordance with NEC680 and IRC 4106.9.3. The wet-niche is then covered by a mechanically fastened corrosion resistant stainless steel grill (Lubell A9022) in accordance with NEC and IRC directives.

The passive LL916 U/W speaker is connected to the UL listed (UL813) low-voltage commercial sound amplifier via included AC205B isolation transformer box (located in equipment rack). The amplifier is connected to a GFCI protected outlet via grounded power cord in accordance with NEC and IRC, and meets all "Pool Audio" requirements. UL listing of the low-voltage underwater speaker is not required providing that the amplifier (power supply) is UL813 listed and GFCI protected, and the niche & grill is installed and inspected per NEC 680 and IRC 4106.9.3 directives.

The LL916 has a frequency response of 200Hz - 20kHz as tested and certified by the US Navy, and does not exceed the maximum safe sound level for swimmers of 180dB/uPa/m as established by the US Navy.

Sincerely,

A handwritten signature in blue ink that reads "Brian Lubell".

Brian Lubell

712 S Yearling Road
Columbus, Ohio 43213 U.S.A.
(614) 725-2701 - (614)725-2702 Fax
<http://www.lubell.com> sales@lubell.com