

Development of a Portable Acoustic Calibration System (PACS)

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Abstract: Defence R&D Canada – Atlantic has a long history in the development of high performance acoustic transducers. Key tests during the development process are measuring Admittances and Transmit Voltage Responses under various conditions. The transducers are typically tested and calibrated using a system that includes a personal computer, spectrum analyzer and a high power (8 to 48kW) amplifier. The equipment resides in two 19” equipment racks, weighs almost 2000 lbs and requires three-phase power. This system was assembled to support high power transducers. Today, much of the effort is focused on developing “right-size” transducers and maintaining as low a transmit level as practical. Calibration work takes place in a variety of locations, frequently from vessels of opportunity and ease of mobilization is a significant factor.

The Portable Acoustic Calibration System (PACS) is constructed around a Commercial Off The Shelf (COTS) lap top computer. The software application on the computer controls the calibration, generates appropriate frequency sweeps, records and plots the The computer is interfaced to a COTS 180 W audio amplifier which is transformer-coupled to the transducer. The system also has the ability to drive other amplifiers, when required for higher power tests. The resulting system runs off conventional, single-phase power and is easily transported in a couple of suitcase-sized packages.