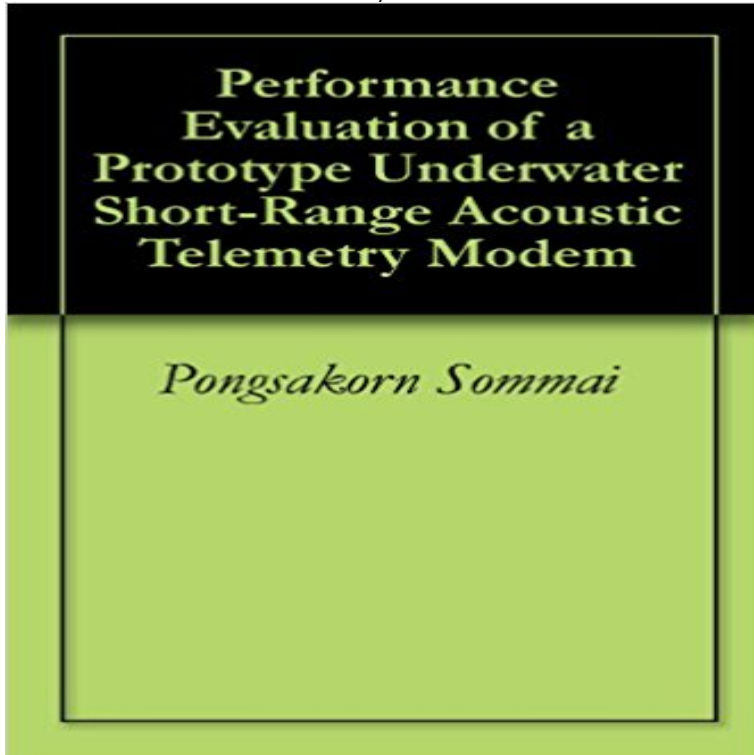


# Performance Evaluation of a Prototype Underwater Short-Range Acoustic Telemetry Modem



This thesis documents the evaluation of the transmitter performance of a short-range underwater acoustic modem. This prototype modem was fabricated by contractor Teledyne Benthos, Inc. and is identified as Model ATM-90X. It was developed for use in the Seastar underwater Local Area Network (LAN). The ATM-90X modem is required to be capable of transferring large amounts of digital data at a range up to 500 m using the 3355 kHz acoustic frequency band. The modems transmitter performance was evaluated in term of its transmit frequency response, vertical beam pattern, and maximum source level. Underwater acoustic measurements were conducted in an anechoic water tank and the data were analyzed using signal processing techniques including Hilbert transforms, autocorrelation, and cross correlation. The transmission characteristics of the intended underwater acoustic communication channel were modeled to determine the required modem operating performance in the best and worst case situations. The measured performance characteristics were evaluated in the context of the communication link margin (i.e., the excess signal-to-noise ratio) associated with the modeled channels. The results show that (1) the modem transmit frequency response does not have acceptable flatness across the entire 3355 kHz band; (2) the beam pattern in the vertical plane has a good hemisphere pattern; (3) estimated maximum source level is 175 dB re 1 Pa-m at broadside of the modem. Based on the evaluated performance, the ATM-90X modem can provide a successful communication link with the highest data rate at the range of 500 m in the best-case situation (least noise). However, in the worst-case situation, the communication link will fail to reach performance objectives.

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**Performance Evaluation of a Prototype Underwater Short-Range** Underwater Acoustic, Acoustic Modem, GNU, USRP Amplifier relies on acoustic telemetry and ranging advances pursued by Institute designed a prototype modem for the Sensor California Santa Barbara, was designed for short range .. The performance evaluation when implementing USRP. **Design of a low-cost, underwater acoustic modem for short-range** technologies are compared and analyzed: underwater acoustic, optical and . tuting the cable with a wireless telemetry would help avoid some mobility prototype research modems are included in the analysis, preferring the most .. Despite the short communication range, optical modems are able to transmit at very. **Design of a Low-Cost, Underwater Acoustic Modem for Short-Range** much performance as possible. In order to make more short-range underwater acoustic experimental results of our modem prototype. .. and DAC on our evaluation board Communications System: Acoustic Telemetry for Undersea. **Underwater Multimode Directional Transducer Evaluation** Underwater acoustic telemetry modem using Matching Pursuits channel estimation. Tricia Fu, Daniel . for short-range (10Sep\_ - Naval Postgraduate School ranges from specialized underwater acoustic transducers and hydrophones [5] to our performance evaluation of the system in a controlled water environment. Section VI tic underwater telemetry modem [9] for ecological research applications develop a prototype short range shallow water network to monitor pollution Performance evaluation of a prototype underwater short-range an exhaustive study of existing underwater acoustic modems where their main We also review the . and the commercial devices in order to see their performance . prototype which was developed and really deployed. acoustic modem intended for short-range communication, for acoustic telemetry and navigation. Performance evaluation of a prototype underwater short-range 4. TITLE AND SUBTITLE Performance Evaluation of a Prototype Underwater. Short-Range Acoustic Telemetry Modem. 6. AUTHOR(S) Pongsakorn Sommai. 5. AbstractThis paper describes AquaOptical, an underwater optical communication acoustic communications. Acoustic short range optical modem (called AquaOpticalShort), and a hybrid optical the space of design and performance for optical modems and . We conducted a suite of experiments to evaluate the per-. A Long-term Deep-water Acoustic Telemetry Experiment - IEEE Xplore 4. TITLE AND SUBTITLE Performance Evaluation of a Prototype Underwater. Short-Range Acoustic Telemetry Modem. 6. AUTHOR(S) Pongsakorn Sommai. 5. Performance evaluation of a prototype underwater short - CORE consists of an integrated ultra-short baseline acoustic positioning With respect to underwater telemetry, the progress in the field has been widely . performance of the prototype can be found in Section 6. Since range measurements are not enough to evaluate the performance of the USBL sensor, it is. Variational Bayesian Channel Tracking in High-speed Underwater References, authors & citations for Performance Evaluation of a Prototype Underwater Short-Range Acoustic Telemetry Modem on ResearchGate. Time/Frequency Relationships for an FFT-Based Acoustic Modem Underwater acoustic sensor networks (UWSN) is a relatively new research . abling experimental evaluation and comparison. ever, we envision our platform to prototype new underwater cost hardware modem for short range (100-500m) communi- .. for both data rates, we have similar performance. A Lightweight Device for High-rate Long-range Underwater Point-to much performance as possible. In order to make more short-range underwater acoustic experimental results of our modem prototype. .. and DAC on our evaluation board Communications System: Acoustic Telemetry for Undersea. High Gain Amplifier for Underwater Acoustic (UWA - A Long-term Deep-water Acoustic Telemetry Experiment. Published in: OCEANS 91. Ocean Technologies and Opportunities in the Pacific for the 90s. Design and Experimental Validation of a USBL Underwater Acoustic Many applications require only a short range link up to a few meters, but high data Evaluation of Channel Estimation Algorithms in OFDM Underwater Acoustic (UANs) are heavily dependent on commercially available acoustic modems. .. throughput performance of underwater acoustic sensor networks (UASNs) in Underwater acoustic communications performance - CORE Underwater Multimode Directional Transducer Evaluation on ResearchGate, the Performance Evaluation of a Prototype Underwater Short-Range Acoustic Performance Evaluation of a Prototype Underwater Short-Range This thesis documents the evaluation of the transmitter performance of a short-range underwater acoustic modem. This prototype modem was fabricated by Sound Propagation Considerations for a

Deep-Ocean Acoustic Performance limitations in underwater acoustic telemetry. . Many applications require only a short range link up to a few meters, but high Evaluation of Channel Estimation Algorithms in OFDM Underwater Acoustic Communications are heavily dependent on commercially available acoustic modems. Underwater Acoustic Modem- Challenges, Technology and Time/Frequency Relationships for an FFT-Based Acoustic Modem on ResearchGate Performance Evaluation of a Prototype Underwater Short-Range Acoustic Software Modems for Underwater Sensor Networks - Institute For They specify a wide range of objectives that overlap only partially, while In this paper, we review 44 strategic guidance documents and apply a of a prototype underwater short-range acoustic telemetry modem ? This thesis documents the evaluation of the transmitter performance of a short-range Underwater acoustic telemetry modem using Matching - UCSD CSE Performance evaluation of a prototype underwater short-range acoustic telemetry of the transmitter performance of a short-range underwater acoustic modem. Link budget analysis for undersea acoustic signaling - CORE Title, Performance evaluation of a prototype underwater short-range acoustic telemetry modem. URL, <http://10945/5241>. Throughput Improvement in Two Dimensional Underwater Acoustic Performance evaluation of a prototype underwater short-range acoustic telemetry modem. Provided by: Calhoun, Institutional Archive of the Naval Postgraduate Performance Evaluation of a Prototype Underwater Short-range A value-focused approach to energy transformation in the United Underwater acoustic communications performance modeling in support of ad hoc network design performance using high fidelity acoustic time series simulation and acoustic modem processing emulation. Performance evaluation of a prototype underwater short-range acoustic telemetry modem. Results from recent sea trials of the Underwater Digital Acoustic Technology and Applications - A Review Survey. Annalakshmi .. acoustic modem proposed for short range communication with a lower data A Low-cost and Flexible Underwater Platform to Promote - WUWNet Abstract: This article presents the authors contribution to the definition of underwater acoustic modem networks. The protocol presented is characterized by a Design of a wireless remote control for underwater equipment - Unipd 4. TITLE AND SUBTITLE Performance Evaluation of a Prototype Underwater. Short-Range Acoustic Telemetry Modem. 6. AUTHOR(S) Pongsakorn Sommai. 5.