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A STATISTICAL DESCRIPTION OF SHIPBOARD ENVIRONMENT AND
EMITTER SIGNALS WITHIN A 250 MHZ BAND AT 1 GHZ(U) NAVAL
OCEAN SYSTEMS CENTER SAN DIEGO CA W R CROWYN DEC 87

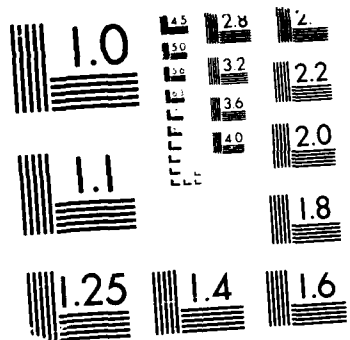
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<p>Measurements are being taken to achieve and ensure Electromagnetic Compatibility between the shipboard Joint Tactical Information Distribution System, scheduled for introduction into the U.S. Navy in the 1990's, and existing shipboard radar, beacon and identification systems. The description of the electromagnetic environment in time and frequency is complicated by the inherent structure of the emitted signals because they are pulsed, some at irregular pulse periods, and radiated from rotating antennas. The signal level distribution is further complicated by reflections off other rotating antennas. The complex time/frequency structure of the signals and the statistical nature of the JTIDS system suggested that the signal level measurements should be statistical. The shipboard system used for the measurements presented in this paper is configured around a Hewlett-Packard 8566B spectrum analyzer/85685A preselector operating at a 3 MHz bandwidth, which is comparable to the RF bandwidth of the JTIDS signal. The transducer is a circular array of eight vertical dipoles which can be wrapped around a ship's mast. The instruments are HP-IB controlled with an HP9816 computer which also does real-time processing and transfers data to an HP9133H hard/floppy disc drive. A logging record is maintained on an HP ThinkJet printer with both alphanumeric and graphical data displayed. Statistical measurements with a dynamic range in excess of 160 dB can be made through hard-wired connections to individual emitters with a notch filter centered at the emitter frequency. Both the hard-wired individual emitter and shipboard electromagnetic environment results are presented as cumulative distribution functions of the measured signal levels for each of the 86 3 MHz channels between 960 and 1215 MHz. EMC problems are clearly and quantitatively identified. This statistical approach to the measurement of EMI is applicable to other EM environments if the emitters of the victims operate in a statistical fashion.</p> <p>Presented at International Conference and Workshop on Electromagnetic Interference and Compatibility (INCEMIC), Bangalore, India, 10-11 Sep 1987.</p>			
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Statistical Description of Shipboard Environment and
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