DATA ITEM DESCRIPTION

Title: ELECTROMAGNETIC ENVIRONMENTAL EFFECTS (E3) VERIFICATION PROCEDURES (E3VP)

Number: DI-EMCS-81541B
Approval Date: 20100725
AMSC Number: 9155
Limitation:
DTIC Applicable: No
GIDEP Applicable: No
Office of Primary Responsibility: 11
Applicable Forms:
Use/relationship: The E3VP describes the methods of test, analysis, and inspection used by the contractor to verify compliance with the electromagnetic environmental effects (E3) interface and performance requirements of a system. The E3VP provides the means for the government to understand and duplicate verification methods used by the contractor to verify E3 requirements.

a. This DID contains the format and content preparation instructions for data resulting from the work task described by 4.1 of MIL-STD-464 and is intended for airborne, sea, space, and ground systems, including associated ordnance. It is normally applied to the System Design and Development phase of a program, but it can be used in any phase.

b. This DID is related to DI-EMCS-81540B and DI-EMCS-81542B.

c. This DID supersedes DI-EMCS-81295A.

Requirements:

1. Reference documents. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices, or revisions, shall be as cited in the solicitation or contract.

2. Format. The E3VP shall be in contractor format.

3. Content. The E3VP shall describe the overall verification methods being used and shall provide detailed verification procedures (test, analysis, and inspection, as applicable) for each E3 requirement specified in the contract for the system being developed.

3.1 Summary information. The E3VP shall summarize the following:

3.1.1 Introduction, background.

a. System description, including any pertinent information regarding verification issues.
b. Statement of any assumptions and limitations associated with verification.
c. General objectives.

3.1.2 Scope. General description of overall verification matrix being used to demonstrate compliance with requirements, including the relative role of analyses, tests and inspections.

3.1.3 Methods of verification. Abstracts of the procedures used for verifying each E3 requirement listed in 3.2 below.

3.1.4 Engineering factors. Any important engineering factors affecting the verification procedures, such as facilities, resources, safety, reports, and security.

3.2 Detailed information. The E3VP shall provide detailed technical information covering the overall verification methodology (audit trail of various analyses, tests, and inspections and their interrelationships) used to verify compliance for each of the interface requirement areas listed below that are included in contractually imposed requirements. The E3VP shall include detailed procedures (analyses, tests, and inspections, as applicable) for each area, including the types of information listed in the subsequent subsections below.

a. Margins.
b. Intra-system electromagnetic compatibility, including where applicable: ship hull intermodulation interference, shipboard internal electromagnetic environments, and multipaction.
c. External radio frequency electromagnetic environments.
d. High power microwave.
e. Lightning.
f. Electromagnetic pulse.
g. Subsystem and equipment electromagnetic interference, including where applicable: non-developmental items and commercial items, and shipboard direct current magnetic field environments.
h. Electrostatic charge control, including where applicable: vertical lift and in-flight refueling, precipitation static, and ordnance subsystems.
i. Electromagnetic radiation hazards, including where applicable: hazards of electromagnetic radiation to personnel, hazards of electromagnetic radiation to fuel, and hazards of electromagnetic radiation to ordnance.
j. Life cycle E3 hardness.
k. Electrical bonding, including where applicable: power current return path, antenna installations bonding, mechanical interfaces, and shock, fault, and ignitable vapor protection.
l. External grounds, including where applicable: aircraft grounding jacks and servicing and maintenance and equipment grounds.
m. TEMPEST.
n. Emission control.
o. Electromagnetic spectrum compatibility.

3.2.1 Scope.

a. Objective of verification for the particular area.
b. References.

3.2.2 Verification article.

a. Identification of the physical configuration, such as structural features, mechanical and electrical equipment installed, and software status.
b. Description of system functions (or subsystem/equipment functions) that are required or available.
c. Description of provisioned equipment (items that are part of the resultant system operation but are not necessarily developed under the contract), such as weapons, pods, and payloads that are required.
d. Operating details of the system.

3.2.3 Elements of verification.

a. Models, techniques, and tools used for analysis and predictions and their specific application to this system.
b. Step-by-step procedures.
c. Determination of applicable margins and the methods to be used for demonstration.
d. Selection of critical circuits, functions, and subsystems.

e. Pass or fail criteria and methods of quantifying and evaluating degradation.
f. Description of test articles, test facilities, test equipment (including instrumentation on and off the system), support equipment, and calibration techniques.
g. Method of simulating operational performance when actual operation is impractical.

3.3 Other information sources. When other information sources contain data required by this DID, these sources shall be referenced rather than being duplicated within this report.

4. End of DI-EMCS-81541B