



AEROSPACE RECOMMENDED PRACTICE

ARP 935

Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

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SUGGESTED EMI CONTROL PLAN OUTLINE

PREFACE

This outline was prepared for use as a guide in preparing Electromagnetic Interference (EMI) Control Plans. This outline may be abbreviated for small subsystems or expanded for complex aerospace systems.

1. INTRODUCTION

- 1.1 **Scope:** Include a brief discussion covering the scope of the EMI Control Program with respect to contractual Electromagnetic Compatibility (EMC) requirements.
- 1.2 **Purpose:** State the objectives of the EMI Control Program and the purpose of the EMI Control Plan. Identify the originator of the Plan and the organization to whom the Control Plan is to be submitted.

2. APPLICABLE DOCUMENTS

List all EMI Control Specifications applicable to the program. Include Military Specifications, company documents, special requirements, any letters or other documents that may modify basic specification guidelines, and source for classified or special documents.

3. DESCRIPTION OF EQUIPMENT OR SYSTEM

Give a brief description including block diagram of the equipment or subsystem. Discuss the intended function, physical size, specific operating characteristics such as frequency, power, sensitivity, and operational environment.

4. PROGRAM RESPONSIBILITIES

- 4.1 **Management:** Discuss management support required for the effective implementation of the EMI Control Program. Responsible management and project personnel should be identified. An organizational chart should be included that illustrates lines or responsibility for EMI Control. Discuss the management controls, techniques and EMI objectives to be achieved. Define EMI Control responsibility of all Subcontractors. If the EMI Control Engineering is to be subcontracted to a consulting firm, identify the firm and the individual who will be the EMI Control Engineering Contact or Consultant.
- 4.2 **Engineering:** EMI Control Engineering personnel assigned to the program should be identified, specific responsibilities described, and a brief summary of experience as pertains to EMC included. Discuss engineering objectives to be achieved.
- 4.3 **Milestones:** Identify the EMI Control Program Schedule Milestones. Pertinent events may be used as milestones.
- 4.4 **Customer Coordination:** Discuss plans for coordinating EMI Control Program with the customer. Note the degree of responsibility for subsystem interfaces and EMI characteristics where GFE and other existing equipment are concerned.

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5. TECHNICAL PROGRAM

- 5.1 Exceptions to EMC Requirements: Identify and state reasons for any exceptions to the EMI Control requirements that are applicable to the program.
- 5.2 EMC Concepts: Discuss the EMI Control concepts to be used to attain electromagnetic compatibility. This discussion should include methods of grounding, bonding, shielding, filtering, lead routing, ground/return criteria, packaging, component selection, finishes, connectors and other pertinent factors. EMI Control concepts described must be compatible with the equipment or system operational environment such as ground operation, pre-launch, launch and in-flight. Discuss other EMI Control techniques.
- 5.3 Specific Design Considerations: Identify and characterize interference source. Discuss EMI reduction techniques and susceptibility control procedures.
- 5.3.1 Transients: Discuss the method of classifying switching transients describing the transient source (relay, solid state switch, manual switch), function and occurrence rate.
- 5.4 Design Reviews: Discuss areas to be covered at EMI Design Reviews and proposed scheduling.
- 5.5 Safety - Radiation Hazards: Discuss any precautions to be taken during the program in regard to equipment or system operation, RF power levels, possible radiation hazards, and associated Electro Explosive Devices (EED's).
- 5.6 Frequency Management: Discuss any frequency management requirements applicable to the equipment or system involved.
- 5.7 Vendor EMI Control Program: Stipulate that Vendors must meet the specification requirements of the procurement EMI Specifications.
- 5.7.1 Identify Engineers responsible for the Vendor EMI Control Program.
- 5.7.2 Establish requirements, including dates, for reviewing EMI Control Program. Design reviews, test witnessing, and approval requirements for documents such as Control Plans, Test Procedure and Test Reports should be discussed.
- 5.8 GFE and Commercial Equipment: EMI Test Reports of any GFE or Commercial Equipment that interfaces with other equipment or within the system should be requested for analysis to determine if additional suppression is required where GFE or Commercial equipment does not comply with EMI specification requirements.

6. TEST PROGRAM

- 6.1 Test Facilities: Describe the EMI facilities and test equipment available for this program.
- 6.2 Test Plan: Include a test plan briefly describing the test program. This plan should identify the major items of the test program and briefly discuss the scope of effort to be accomplished. The test should include but not be limited to the following areas:
- 6.2.1 Engineering Design EMI Evaluation Tests
- 6.2.2 EMI Qualification Test Procedures
- 6.2.3 EMI Qualification Tests. (1) Equipment (2) Subsystem (3) Systems
- 6.2.4 Production EMI Test
- 6.2.5 EMI Test Reports