

OUTLINE OF SPECIFICATION FOR RF SHIELDED ENCLOSURES

The implementation of the requirements of this document is the responsibility of the supplier unless exceptions are explicitly identified.

1. SCOPE

1.1 *Scope.* This specification details the minimum requirements for a shielded enclosure.

1.2 *Classification.* Shielded enclosures of this specification encompass the following types in combination, not more than one from each column for both performance and construction. (Not all performance requirements are obtainable from all construction features.)

a. Performance (Steady-State)

Shielding		
Effectiveness	Frequency Range	Standing Waves
(1) 40 dB	(1) 14 kHz-400 MHz	(1) Unsuppressed
(2) 70 dB	(2) 14 kHz-1 GHz	Standing Waves
(3) 120 dB	(3) 14 kHz-10 GHz	(2) Suppressed
(4) Other	(4) Other	(3) Mode-Stirred
		(4) Other

b. Construction

Type	Shielding		Material	Form
	Arrangement	Kind		
(1) Modular	(1) Single	(1) Steel	(1) Plate	
(2) Welded	Layer	(2) Copper	(2) Sheet	
(3) Soldered	(2) Cell-Type	(3) Aluminum	(3) Screen	
	or Hybrid	(4) Bronze		
	(3) Isolated			
	Double			

2. APPLICABLE DOCUMENTS

2:1 One of the following documents (according to type of procurement) of the issue in effect on the date of invitation for bids forms a part of this specification.

MILITARY

MIL-STD-285 — Method of Attenuation Measurements for Enclosures, Electromagnetic Shielding for Electronic Test Purposes.

non-MILITARY

IEEE Standard 299 — Recommended Practice for Measurement of Shielding Effectiveness of High Performance Shielding Enclosures.

3. REQUIREMENTS

3.1 *Performance.* The shielded enclosure to be procured shall provide a minimum of (100) dB of shielding effectiveness against low-impedance magnetic fields at 14 kHz, rising to (120) dB at 1 MHz. It shall provide a minimum of (120) dB of shielding effectiveness against plane electromagnetic waves from 1 MHz to (10) Ghz.

Standing waves shall be (suppressed by 20 dB for frequencies above 200 MHz).

3.2 *Construction.* (If performance is the only requirement, the kind of construction need not be specified. Restrictions on the kind of construction should be made only on the basis of additional considerations.)

3.2.1 *Classification.* The construction type shall be (modular) of (cell-type) shielding with (copper sheet) material.

3.2.2 *Doors.* (Many types of doors, both single and double leaf, are used in shielding enclosures. They are available with a variety of special features; those given here are simply illustrative.) (1) The door shall be of a size suitable for

personnel passage and shall open outward using hinges on the (left) edge as viewed from outside the room. (2) No finger stock shall be exposed to breakage. (3) The door shall incorporate a no-latch system with pull handles to operate with a pull between 5 and 20 lbs.

3.2.3 *Filters.* Powerline filters for (single)-phase, 60-Hz, 120-volt supply shall be provided to carry powerline currents up to (100) amperes. They shall provide a minimum RF attenuation at least as great as the shielding enclosure provides over the same frequency range.

3.2.4 *Power-Factor Correction Coils.* Power-factor correction coils shall be provided to assure a power factor no worse than 0.95, unless they are unnecessary for the powerline filters used.

3.2.5 *Coaxial Feedthrough Connectors.* A feedthrough connector panel shall be provided and shall contain the following connectors: _____

3.2.6 *Air Vents.* Air vents of the waveguide-below-cutoff type shall be provided for both air intake and exhaust and shall have a maximum head loss of 0.1-inch water at 1200 ft/min air velocity. RF attenuation shall not compromise the enclosure shielding effectiveness over the operating frequency range.

3.2.7 *Floor.* (1) Floor loading shall be capable of (3000) lbs/sq ft. (2) Floor covering shall be (vinyl tile).

3.2.8 *RF Absorbers.* Interior surfaces of the enclosure, except for the floor, shall be covered with RF-absorbing material.

4. QUALITY ASSURANCE

4.1 *Test Procedures.* Test procedures shall conform to those of the applicable test standard (Section 2).

4.2 *Pre-Delivery.* A report on the RF performance of an earlier enclosure prepared by an independent testing organization shall be submitted by the manufacturer to substantiate his claims.

4.3 *Post-Delivery.* Following installation of the shielding enclosure, measurements of performance shall be made as follows:¹

Frequency	Type of Measurement
14 kHz	Low-impedance magnetic field
1 MHz	Low-impedance magnetic field
1 MHz	Plane wave
100 MHz	Plane wave
Highest specified	Plane wave

5. PREPARATION FOR DELIVERY

(As required.)

6. NOTES

(As required.)

REFERENCE

1. P. Corona et al, "Use of a Reverberating Enclosure for Measurements of Radiated Power in the Microwave Range", IEEE Transactions on Electromagnetic Compatibility, Vo. EMC-18, No. 2, May 1976. Corrections to this paper appear in Vol. EMC-18, No. 4, November 1976.

¹Low-frequency electric-field measurements have been omitted because they are normally satisfactory when the specified measurements are satisfactory.

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