

## MCCIA Electronic Cluster Proposal

### Specifications for 10m Semi Anechoic Chamber + Control Room + Amplifier Room + Shielded Room

#### **10m Semi Anechoic Chamber (SAC)**

##### **Maximum External Dimensions of 10m Semi Anechoic Chamber**

- Length: 23m
- Width: 20m
- Height: 9m

##### **Frequency range of Semi Anechoic Chamber: 9 KHz to 40 GHz**

- Emission test (EMI): Full compliance according to the latest CISPR 16-1-4 and ANSI C63.4 standards
- Immunity test (EMS): Full compliance according to IEC/EN 61000-4-3

##### **Maximum Measurement Distance:**

- Radiated Emissions @ 1m, 3m & 10m
- Radiated Immunity @ 1m, 3m

##### **Quiet Zone and Turn Table:**

- Diameter of turn table: 5m
- Diameter of Quiet Zone: 5m
- Load Capacity of turn table: 5000 Kg

##### **Load Capacity of complete SAC raised floor (Except Turntable):**

- Upto 2000 kg/m<sup>2</sup>

##### **Antenna Mast**

- Bore Sighted Antenna Masts to meet recent ANSI C.63 standard requirements
- Antenna Mast capable of 1m – 4m scanning with Horizontal and Vertical polarization

##### **Absorbers and / or Ferrites:**

- Frequency Absorption from 9Khz – 40Ghz
- High power immunity handling up to 200V/m Continuous and 600V/m Pulse

##### **Doors:**

- One Door for People and small equipment movement
  - One Big automatic door for heavy & Large equipment movement
-

**Power Supply inside SAC:**

- All power within SAC will be through a high performance power filters typically
  - AC 100-240V, Single Phase/ 32A/ 50Hz and/or 60Hz
  - AC 385 – 440V, 3+N Phase / 100A / 50Hz and/or 60Hz
  - DC 0-500V / 200A

**Signal line filters inside SAC:**

- 2 line Analog Phone / ISDN phone filter & 8 wire RJ45

**Visual Display:**

- High resolution visual display inside SAC near the turn table to help the engineering and re-engineering process and to increase the efficiency.

**High Resolution IP Cameras:**

- High Resolution cameras to monitor the test equipment during emission and immunity.

**Additional Items within Chamber (But not limited to):**

- Complete raised floor
  - Waveguides
  - RFI Traps
  - Floor Connection panels
  - Penetration Panels
  - Honeycombs for Air Conditioning
  - CISPR 25 Metallic Table with Grounding contacts to Vertical or Horizontal plane
  - Non-Metallic table
  - Fire/Smoke Detection System
  - Floor Absorbers for High frequency emission measurement
  - Floor Absorbers for Radiated Immunity tests
  - Portable video camera
  - LED / Halogen Lights to have the luminance between 400 to 700 Lux
  - Manual Wooden Ramp
  - Exhaust system
  - Compressor
  - RF connectors
-

**Guaranteed Normalized Site Attenuation (NSA)**

Applicable Standards	CISPR 16-1-4 & ANSI C.63.4
Distance	10m & 3m
Polarization	Horizontal and vertical
Measured Positions of Antenna	The transmitting antenna to be located in four positions (center, front, left and right) within the test volume.
Guaranteed NSA deviation	±3.0dB for 4 points or better
Remarks	Test with Ground Plane

**Guaranteed Site VSWR (sVSWR)**

Applicable Standards	CISPR 16-1-4
Height of receiving antenna	1m and 2m above ground plane
Height of transmitting antenna	1m and 2m above ground plane
Distance	3m fixed distance from turntable front point
Polarization	Horizontal and vertical
Guaranteed sVSWR deviation	±5.0dB or better
Remarks	Test with Floor Absorbers in place

**Guaranteed Field Uniformity (FU)**

Frequency Range	20MHz – 18GHz
Applicable Standards	EN/IEC 61000-4-3
Test distance	3m
Transmitting antenna	Biconical/log. Periodical antenna or broadband antenna.
Receiving antenna	Broadband, isotropic probe, 16 positions, measured area of 4,5 x 3m to cover complete turn table area Uniform Area 3X2 windows: Total surface 4.5mX3m.
Polarization	Horizontal and vertical

**Guaranteed Shielding Effectiveness (SE)**

Frequency	Shielding Attenuation	Field	Method
9KHz	≥80dB	Magnetic	EN 50147-1
100KHz	≥100dB	Magnetic	EN 50147-1
1MHz	≥100dB	Magnetic	EN 50147-1
100MHz	≥110dB	Plane wave	EN 50147-1
400MHz	≥110dB	Plane wave	EN 50147-1
1GHz	≥110dB	Plane wave	EN 50147-1
18GHz	≥100dB	Microwave	EN 50147-1
40GHz	≥90dB	Microwave	EN 50147-1

---

## Supported Standards

IEC 60601-1-2	EN/IEC 61547
EN 60601-1-2	EN/IEC 61000-6-1
EN 300386	EN/IEC 61000-6-2
EN 55011	EN/IEC 61000-6-3
CISPR11	EN/IEC 61000-6-4
EN 55014-1	EN/IEC 61326-1
CISPR14-1	EN 301489-1
EN 55014-2	FCC Part 15
CISPR14-2	ECR10
EN 55015	IEC 61000-4-3
CISPR15	
EN 55022	
CISPR22	
CISPR24	
EN 55024	
EN 55025	
CISPR25	
EN 55032	
CISPR32	
CISPR35	

---

## Shielded Control Room (CR)



### Maximum External Dimensions of Shielded Control Room

- Length: 7m
- Width: 5m
- Height: 3m

### Frequency range of Shielded Control Room: 9 KHz to 40GHz

### Raised floor load capacity:

- Upto 500kg/m<sup>2</sup>

### Doors:

- One Door for People and small equipment movement

### Power Supply inside Shielded control Room:

- All power within the room will be through a high performance power filters
-

- AC 100-240V, Single Phase/ 32A/ 50Hz and/or 60Hz
- AC 385 – 440V, 3+N Phase / 32A/ 50Hz and/or 60Hz
- DC 0-500V / 100A

**Signal line filters inside Shielded control Room:**

- 2 line Analog Phone / ISDN phone filter & 8 wire RJ45

**Visual Display:**

- High resolution visual display for test monitoring

**Additional Items within Shielded control Room (But not limited to):**

- Complete raised floor
- Waveguides
- Penetration Panels
- Honeycombs for Air Conditioning
- Fire/Smoke Detection System
- LED / Halogen Lights
- Manual Wooden Ramp
- Automation / control system for Turntable and Antenna Masts
- RF connectors

**Guaranteed Shielding Effectiveness (SE)**

Frequency	Shielding Attenuation	Field	Method
9KHz	≥80dB	Magnetic	EN 50147-1
100KHz	≥100dB	Magnetic	EN 50147-1
1MHz	≥100dB	Magnetic	EN 50147-1
100MHz	≥110dB	Plane wave	EN 50147-1
400MHz	≥110dB	Plane wave	EN 50147-1
1GHz	≥110dB	Plane wave	EN 50147-1
18GHz	≥100dB	Microwave	EN 50147-1
40GHz	≥90dB	Microwave	EN 50147-1

**Shielded Amplifier / Accessory Room (AR)  
(Below Turntable)**



**Maximum External Dimensions of Shielded Amplifier / Accessory Room**

- Length: 6m
- Width: 4m
- Height: 3m

**Frequency range of Shielded Room: 9 KHz to 40 GHz**

**Raised floor load capacity:**

- Upto 500kg/m<sup>2</sup>

**Doors:**

- One Door for People and small equipment movement

**Power Supply inside Shielded Room:**

- Power within Shielded room will be through a high performance power filters
    - AC 100-240V, Single Phase/ 32A/ 50Hz and/or 60Hz
-

- AC 385 – 440V, 3 + N Phase / 100A/ 50Hz and/or 60Hz
- DC 0-500V / 200A

**Signal line filters inside Shielded Room:**

- 2 line Analog Phone / ISDN phone filter & 8 wire RJ45

**Visual Display:**

- High resolution visual display for test monitoring

**Additional Items within Shielded Room:**

- Complete raised floor
- Waveguides
- Penetration Panels
- Honeycombs for Air Conditioning
- Fire/Smoke Detection System
- LED / Halogen Lights
- Manual Wooden Ramp
- RF connectors

**Guaranteed Shielding Effectiveness (SE)**

Frequency	Shielding Attenuation	Field	Method
9KHz	≥80dB	Magnetic	EN 50147-1
100KHz	≥100dB	Magnetic	EN 50147-1
1MHz	≥100dB	Magnetic	EN 50147-1
100MHz	≥110dB	Plane wave	EN 50147-1
400MHz	≥110dB	Plane wave	EN 50147-1
1GHz	≥110dB	Plane wave	EN 50147-1
18GHz	≥100dB	Microwave	EN 50147-1
40GHz	≥90dB	Microwave	EN 50147-1



## Shielded Conducted Emission Room



### Maximum External Dimensions of Shielded Room

- Length: 7m
- Width: 5m
- Height: 4m

### Frequency range of Shielded Room: 9 KHz to 18 GHz

### Raised floor load capacity:

- Upto 1000kg/m<sup>2</sup>

### Doors:

- One Double Door for People and equipment movement

### Power Supply inside Shielded Room:

- All power within the room will be through a high performance power filters
    - AC 100-240V, Single Phase/ 32A/ 50Hz and/or 60Hz
    - AC 385 – 440V, 3+N Phase / 100A/ 50Hz and/or 60Hz
    - DC 0-500V / 200A
-

**Signal line filters inside Shielded Room:**

- 2 line Analog Phone / ISDN phone filter & 8 wire RJ45

**Additional Items within Shielded Room:**

- Complete raised floor
- Waveguides
- Penetration Panels
- Honeycombs for Air Conditioning
- Fire/Smoke Detection System
- LED / Halogen Lights
- Manual Wooden Ramp

**Guaranteed Shielding Effectiveness (SE)**

Frequency	Shielding Attenuation	Field	Method
9KHz	≥80dB	Magnetic	EN 50147-1
100KHz	≥100dB	Magnetic	EN 50147-1
1MHz	≥100dB	Magnetic	EN 50147-1
100MHz	≥110dB	Plane wave	EN 50147-1
400MHz	≥110dB	Plane wave	EN 50147-1
1GHz	≥110dB	Plane wave	EN 50147-1
18GHz	≥100dB	Microwave	EN 50147-1

---