

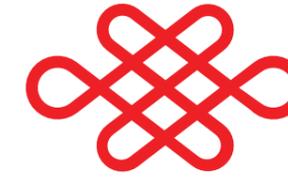


**FRANKONIA**  
GROUP

# **ANECHOIC CHAMBERS**

## **TURNKEY SOLUTIONS**





# FRANKONIA

## GROUP

The **Frankonia Group** was founded in 1987 as a solution provider for EMC laboratories, meeting the increasing demand for highly specialized testing environments for the electronic and automotive industry.

Without limitations in its capabilities, Frankonia develops future-oriented concepts for our complete product range, which guarantee the optimal use of resources, as well as the best possible customized solutions. Frankonia offers complete solutions for the electronic, military and automotive industry, which meet customers' individual requirements.

### **Frankonia at a Glance**

- › Frankonia demonstrates a global presence in cooperation, with a well-structured network of productions, representations and service units.
- › Frankonia provides fundamental knowledge to operate as a complete solution provider.
- › Frankonia implements innovative technologies to enhance efficiency and improve the outcomes and quality along with customers' needs.
- › Frankonia strives to be the preferred partner for customized and state-of-the-art solutions.

The EMC testing industry is a highly technical, innovative and fast-changing niche industry. With more than 30 years of experience to date, Frankonia maintains its leading position in EMC solutions worldwide.

[www.frankoniagroup.com](http://www.frankoniagroup.com)

### Frankonia Group

The unique and trustworthy partner  
for EMC solutions worldwide.

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Within our **Anechoic Chamber** business, that includes a wide range of standardized chambers from pre-compliance up to full compliance and customized chambers, we offer a variety of innovative positioning devices and accessories required in modern testing facilities. This comprises monitoring equipment, antenna masts, turntables, doors and gates, and our unique absorber technology Frankosorb®.

#### Frankonia trusted solutions

- › Unique nano thin-film absorber technology (Frankosorb®)
- › Modular and prefabricated standards
- › Completely dismountable chambers as everything is screwed
- › Stable quality and technology through our own manufacturing and engineering
- › Complete range of products
- › Customized turnkey solutions

Frankonia's Anechoic Chambers are part of testing laboratories in different industries all over the world. Customers from commercial test institutes, manufacturers of electronic devices, as well as customers from the automotive or military industry trust Frankonia's solutions for now more than 30 years.

Within our **Test System** business, we offer a variety of EMC test systems that encompass testing equipment for a broad range of emission and immunity tests. Beside complete test systems Frankonia offers also single components like a wide range of antennas, pre-amplifiers, broadband RF-power amplifiers, software, GTEM cells, strip-lines, open TEM cells, signal generators, RF-power meters, and EMI receivers.

## Frankonia Group

Frankonia is recognized as a highly specialized technology corporation for EMC anechoic chambers and test systems within the automotive and industrial sector for testing the electromagnetic compatibility. With our expertise, flexibility, quality and a high degree of technology, we generate future-proof solutions on a global scale.

Frankonia is the preferred supplier for complete solutions when it comes to the implementation of EMC test facilities. Passionate employees, many of them with longtime affiliation and experience, plan, coordinate, and define customized solutions with and for our customers that meet today's and future standards. Due to our commitment to provide holistic EMC lab solutions, we offer outstanding expertise in every phase of a project.

Frankonia's project business convinces with its in-house project management, engineering and production, a trend-setting research, as well as its own installation and service team. Like this, we make sure to provide a high level of technology and quality.

#### Frankonia **stands for**

- › Customized Anechoic Chambers
- › Individual EMC Test Systems
- › Highest quality
- › Latest technology
- › Reliability
- › Unique absorbers
- › Future-proof solutions

#### Frankonia **provides**

- › Anechoic Chambers and Test Systems
- › Turnkey solutions
- › Expertise in every stage of a project
- › Everything from one source
- › In-house engineering and manufacturing
- › Global presence and worldwide activity

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Messung läuft!  
Test in progress!

Messung läuft!  
Test in progress!

Trusted

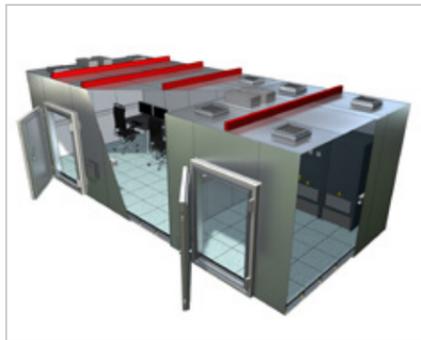
# Shielded Room

## Modular and Prefabricated PAN Type Shielding

Frankonia shielded rooms and anechoic chambers are designed based on a modular construction system. Prefabricated high quality shielding panels guarantee a maximum of flexibility regarding possible dimensions. All PAN type modules allow for easy handling and entry via standard building doors. The standard modules are bolted from inside every 75,0 mm with high conductivity mesh gasket inserted for sealing the joints of the panels. This facilitates an installation close to the walls of the parent building. The small screwing distance and the precise tightening of the screws with predefined torque guarantee long life shielding attenuation characteristics.

### Features

- › PAN Type shielding modules made of 2,0 mm thick galvanized steel
- › Modular and prefabricated standard
- › Self-supporting stability or with static steel structure for any seismic condition
- › Mounted from the inside
- › Reverse installation possible
- › Interior finishing (walls and ceiling) and raised floor systems
- › Long life shielding attenuation characteristics
- › No glue, no welding
- › Dismountable without any damage
- › Easy modifications and maintenance
- › Possibility of complete transfer in future
- › Turnkey solution



Shielded Room  
PAN Type



### Shielding standards

- › Frequency range from 10 kHz to 18 GHz (option 40 GHz)
- › acc. to EN 50147-1 or IEEE-299
- › Equal performance for any kind of feed-through components, honeycombs, doors and gates, filters, etc.
- › Perfectly adapted for Frankosorb® Absorbers
- › Any size of shielding is possible
- › Adapted to seismic conditions
- › Reverse installation option

### Guaranteed Performance

Frequency	Attenuation	Field
10 kHz	≥ 80 dB	Magnetic Field
100 kHz	≥ 100 dB	Magnetic Field
1 MHz	≥ 100 dB	Magnetic Field
100 MHz	≥ 110 dB	Plane Wave
400 MHz	≥ 110 dB	Plane Wave
1 GHz	≥ 110 dB	Plane Wave
18 GHz	≥ 90 dB	Microwave
40 GHz	≥ 90 dB	Microwave

# CHC & CHC Plus

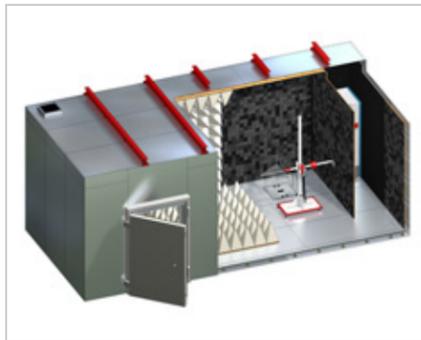
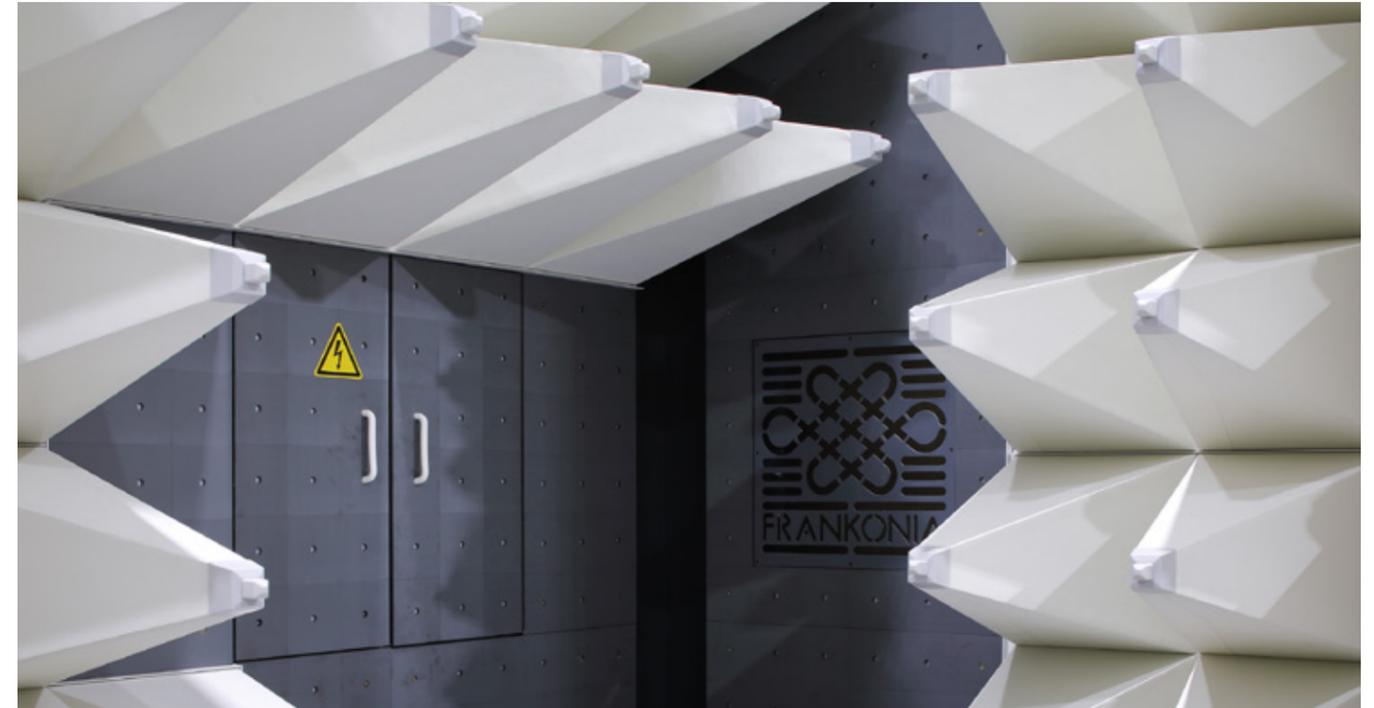
## 3m Compact Hybrid Chamber

The **CHC** is Frankonia's compact hybrid chamber solution at **3,0 m** measuring distance with a Quiet Zone (QZ) of **Ø1,2 m**. It is an optimal solution for both pre-compliance emission tests and full compliance immunity tests at 3,0 m measuring distance. The extended version of the CHC, called CHC-L, includes an absorber-lined partition wall that offers the feature to house and store RF power amplifiers, antennas, or floor absorbers inside the chamber.

The **CHC Plus** is Frankonia's upgrade of the CHC at **3,0 m** test distance with a Quiet Zone (QZ) of **Ø1,2 m** for compliant emission measurements from 1 GHz to 18 GHz, pre-compliant emission measurements from 30 MHz to 1 GHz, and compliant immunity tests.

### Features

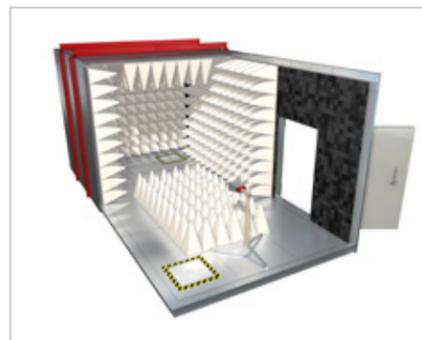
- › **CHC:** Pre-compliant EMI from 30 MHz to 1 GHz acc. to CISPR 16-1-4
- › **CHC Plus:** Full compliant EMI from 1 GHz to 18/40 GHz, pre-compliant from 30 MHz to 1 GHz acc. to CISPR 16-1-4
- › Full compliant and cost saving solution for EMS measurements acc. to IEC/EN 61000-4-3
- › Compact chamber design with advanced absorber lining with long-lasting Frankosorb® absorbers (Frankonia technology)



**CHC**  
Pre-compliant EMI  
Full compliant EMS



**CHC Plus**  
Semi-compliant EMI  
Full compliant EMS



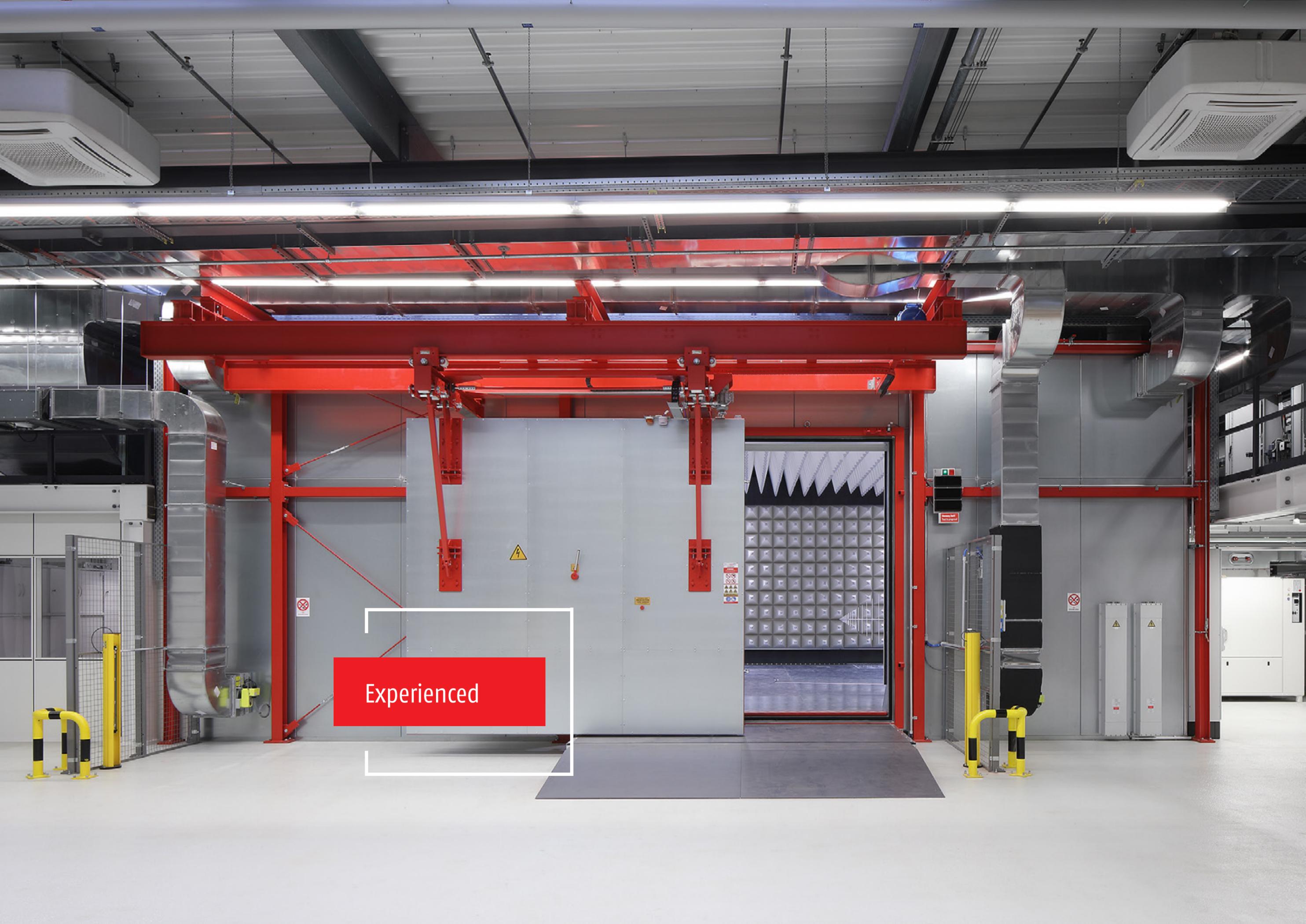
CHC	7,355 x 3,755 x 3,300 m (L x W x H) QZ Ø1,2 m at 3,0 m test distance
CHC L	8,255 x 3,755 x 3,300 m (L x W x H) QZ Ø1,2 m at 3,0 m test distance Feature: e.g., amplifier can be stored in the chamber
CHC Plus	7,355 x 3,755 x 3,300 m (L x W x H) QZ Ø1,2 m at 3,0 m test distance Feature: Semi-compliant due to adapted absorber lining
CHC Plus L	7,580 x 4,655 x 4,350 m (L x W x H) QZ Ø1,2 m at 3,0 m test distance Feature: Turntable Ø2,0
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H450 or H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 – s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › **CHC:** Pre-compliant emission (EMI) according to CISPR 16-1-4 from 30 MHz- 1 GHz (limited height scan)
- › **CHC Plus:** Full compliant emission (EMI) according to CISPR 16-1-4 from 1 GHz- 18 GHz, pre-compliant emission (EMI) from 30 MHz- 1 GHz (limited height scan)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)



Experienced

# FAC-3 & FAC-3 L

## 3m Fully Anechoic Chamber

The **FAC-3** is Frankonia's compact fully anechoic chamber solution at **3,0 m** measuring distance for EMC tests on **table-top positioned EUT's** with a Quiet Zone (QZ) of **Ø1,5 m** (H= 1,5 m). The **FAC-3 L** is the extended version of Frankonia's fully anechoic chamber solution at **3,0m** measuring distance with a Quiet Zone (QZ) of **Ø1,5 m** (H= 2,0 m) for EMC tests on **table-top positioned** as well as on **floor-standing EUT's**.

Both are designed as full compliant chamber for measurements under free-space conditions and are based on CISPR 16-1-4 as a test site without ground plane. Without the reflections from the floor, a height scan is no longer necessary. With its specific requirements for the test site, Frankonia's FAC-3 and FAC-3 L are supremely prepared to meet our customers' demands.

### Features

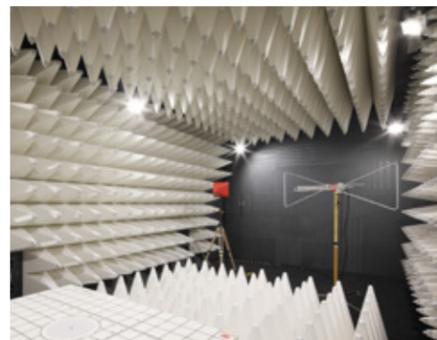
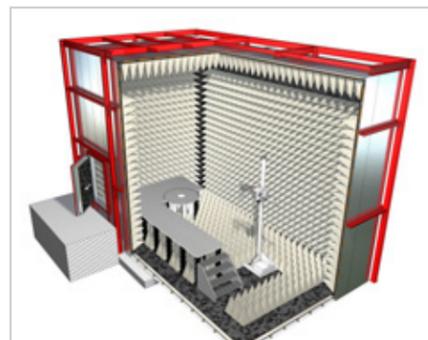
- › **FAC-3**: Test site for table-top EUT's
- › **FAC-3 L**: Test site for table-top and floor-standing EUT's
- › Full compliant EMI acc. to CISPR 16-1-4, IEC/EN 61000-4-22, and ETSI (ANSI adaptation)
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Cost-effective solution for free-space measurements
- › Compact chamber design with advanced absorber lining with long-lasting Frankosorb® absorbers (Frankonia technology)
- › Double test axis option



**FAC-3**  
Table-top EUT's



**FAC-3 L**  
Floor-standing &  
table-top EUT's



FAC-3	8,705 x 4,655 x 3,750 m (L x W x H) QZ Ø1,5 m (H= 1,5 m) at 3,0 m test distance Table-top EUT's
FAC-3 L	9,380 x 5,780 x 5,550 m (L x W x H) QZ Ø1,5 m (H= 2,0 m) at 3,0 m test distance Floor-standing & table-top EUT's
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4  
Deviation FS NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)
- › Full compliant immunity (EMS) and emission (EMI) according to IEC/EN 61000-4-22  
Deviation SdB c ≤ 1,8 dB

# SAC-3 Plus

## 3m Semi Anechoic Chamber in Dome Design

The **SAC-3 Plus** is Frankonia's most versatile full compliant EMC testing solution at **3,0 m** measuring distance with a Quiet Zone (QZ) **up to  $\varnothing 2,0$  m**. It is adapted for full compliant emission and immunity testing. The innovatively shaped roof, called dome design, with its optimized absorber layout leads to minimized reflections and offers outstanding performance for NSA, SVSWR and FU.

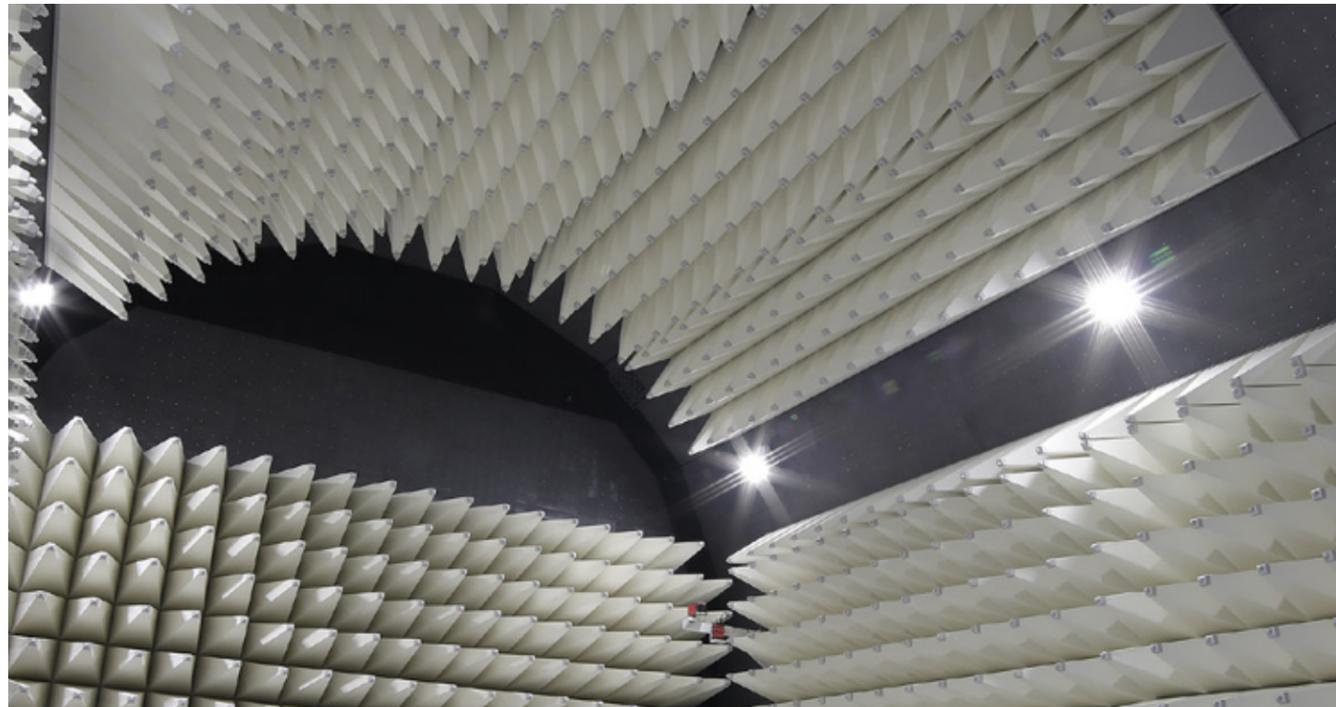
### Features

- › Cost-effective high-performance solution for a 3,0 m measuring distance and QZ from  $\varnothing 1,2$  m of up to  $\varnothing 2,0$  m
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4 (ETSI upgradeable)
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Adapted lightweight steel structure and optimized RF-shielding
- › Innovative dome-shaped roof design
- › Upgradeable for E-Drive (load machine, BlueBox, battery test system)
- › Ingenious hybrid absorber lining with Frankosorb®
- › Outstanding performance with long-lasting Frankosorb® non-combustible absorbers
- › Useable for automotive and military standard tests
- › Turnkey solution

Since its introduction, the SAC-3 Plus has been the undisputed most selected chamber in its class. Through the innovative concept, customization and the excellent performance, it represents an efficient and economical solution that fully satisfies our customers.



**SAC-3 Plus**  
Unique dome design



SAC-3 Plus S	8,480 x 6,530 x 6,000 m (L x W x H) QZ $\varnothing 1,2$ m at 3,0 m test distance
SAC-3 Plus M	8,780 x 6,530 x 6,000 m (L x W x H) QZ $\varnothing 1,5$ m at 3,0 m test distance
SAC-3 Plus L	9,230 x 6,530 x 6,000 m (L x W x H) QZ $\varnothing 2,0$ m at 3,0 m test distance
SAC-3 Plus	9,680 x 6,530 x 6,000 m (L x W x H) QZ $\varnothing 2,0$ m at 3,0 m test distance
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA  $\pm 3,5$  dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

# SAC-5 Plus

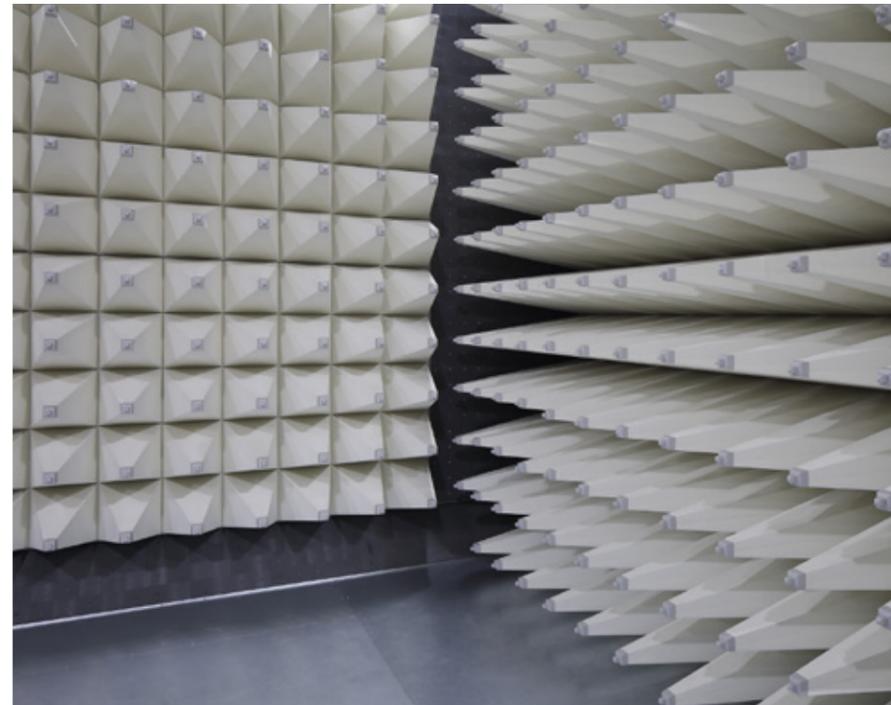
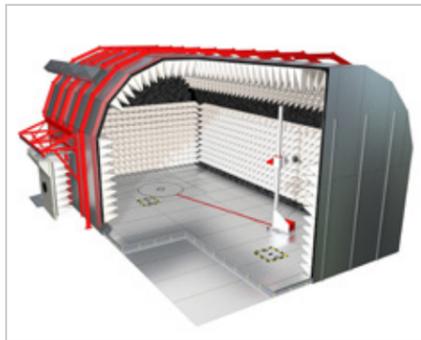
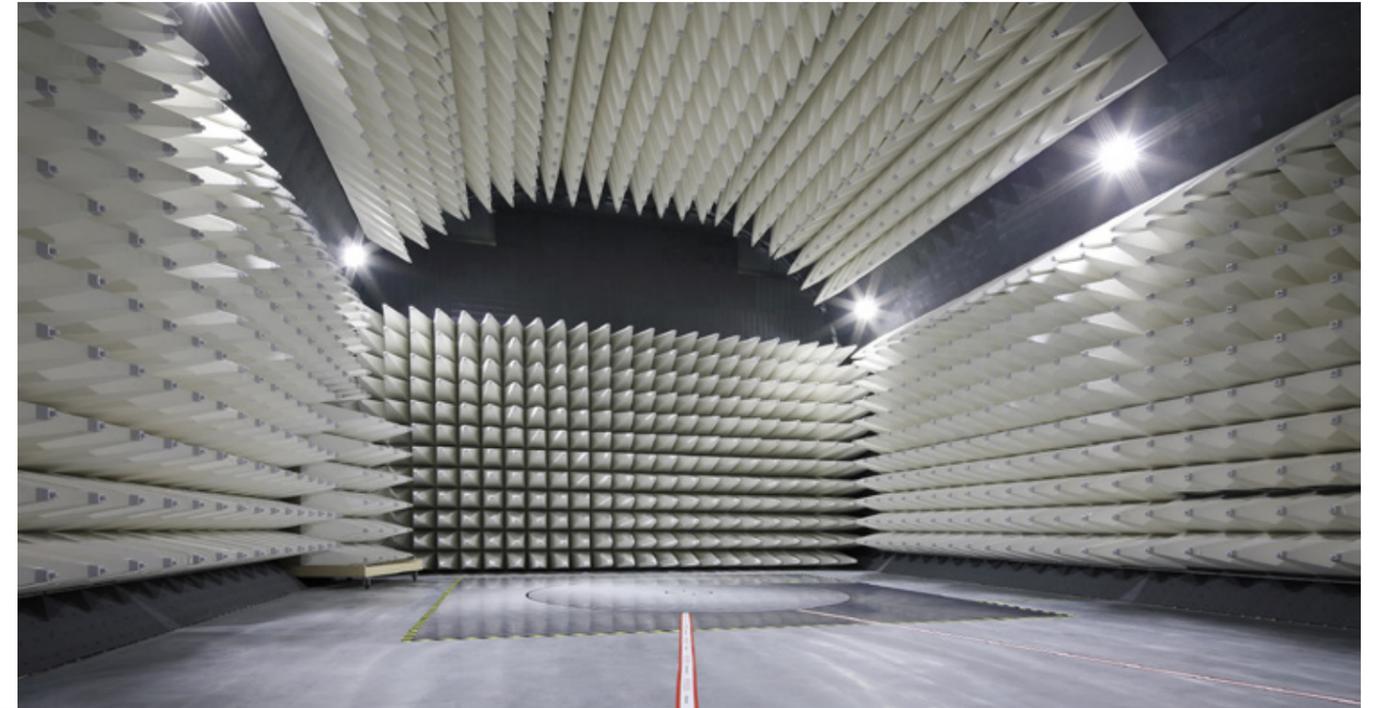
## 5m Semi Anechoic Chamber in Dome Design

The **SAC-5 Plus** is Frankonia's full compliant EMC testing solution at **3,0 m and 5,0 m** measuring distance with a Quiet Zone (QZ) **up to  $\phi$ 3,0 m**. The SAC-5 Plus offers an innovative concept with its dome shaped roof, customization and performance, and therefore represents an efficient and economical solution that fully satisfies our customers.

### Features

- › Efficient high-performance solution for a 3,0 m and 5,0 m measuring distance and QZ from  $\phi$ 2,0 m of up to  $\phi$ 3,0 m
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4 (ETSI upgradeable)
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Adapted lightweight steel structure and optimized RF-shielding
- › Innovative dome-shaped roof design
- › Upgradeable for E-Drive (load machine, BlueBox, battery test system)
- › Ingenious hybrid absorber lining with Frankosorb®
- › Outstanding performance with long-lasting Frankosorb® non-combustible absorbers
- › Useable for automotive and military standard tests
- › Turnkey solution
- › Double test axis option

Following the success of the SAC-3 Plus, the SAC-5 Plus with its 5,0 m measuring distance is based on the same innovative concept. Herewith, it represents as well an efficient and economical solution that fully satisfies our customers needs.



**SAC-5 Plus**  
Unique dome design

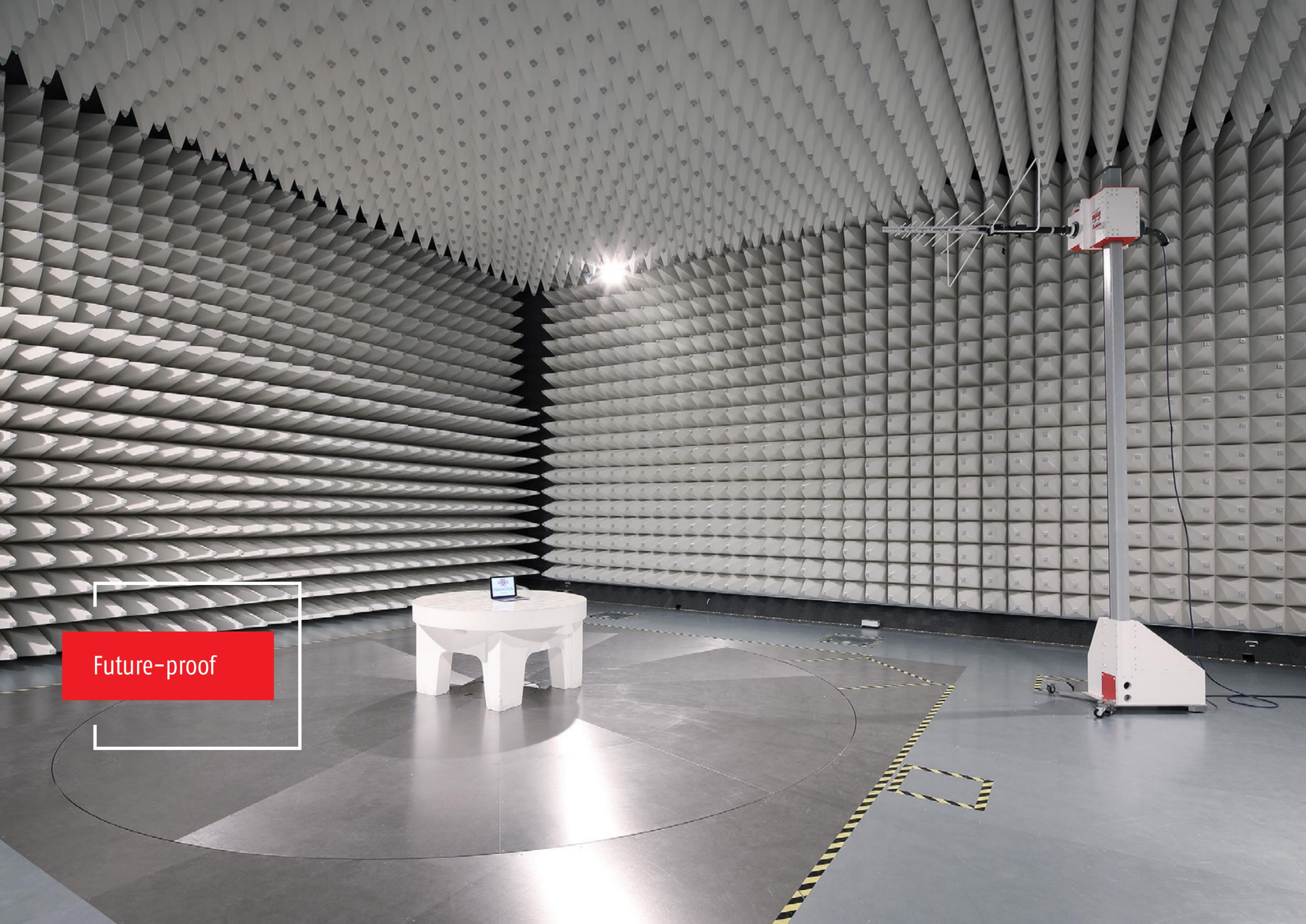
SAC-5 Plus	12,680 x 7,730 x 6,300 m (L x W x H) QZ $\phi$ 2,0 m at 3,0 m & 5,0 m test distance
SAC-5 Plus L	12,680 x 8,180 x 6,300 m (L x W x H) QZ $\phi$ 3,0 m at 3,0 m & 5,0 m test distance
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA  $\pm$ 3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)



Future-proof

# SAC-3 Square

3m Semi Anechoic Chamber in Square Design

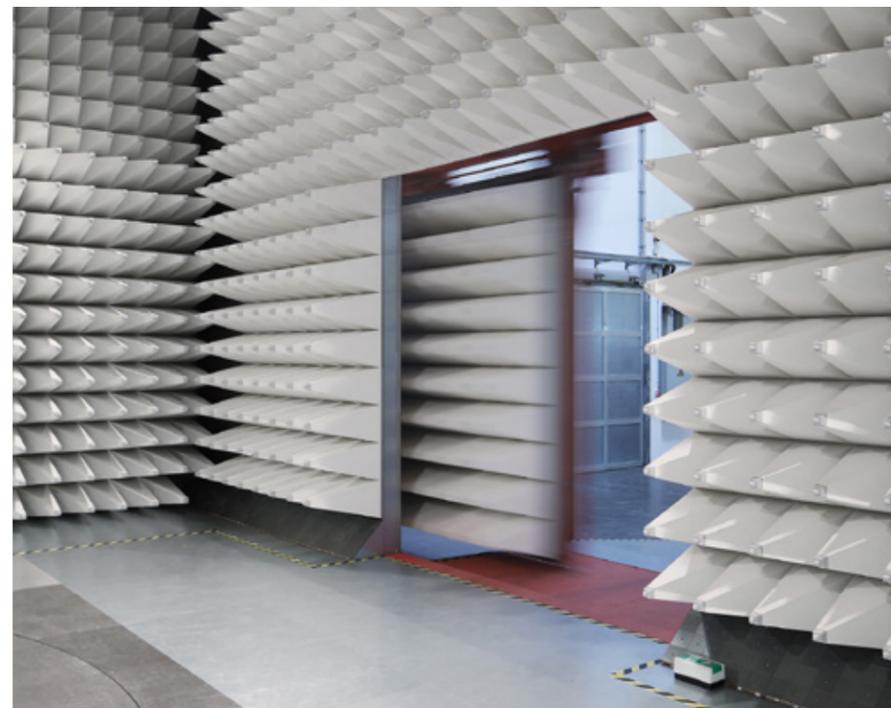
The **SAC-3 Square** is Frankonia's versatile full compliant EMC testing solution at **3,0 m** measuring distance, whereas the **SAC-5 Square** offers a **5,0 m** measuring distance. Both models are available with a Quiet Zone (QZ) of **ø2,0 m** or **ø3,0 m** and come with a traditional square design.

The SAC-3 and the SAC-5 in square design offer an innovative concept with its usability, customization and performance, and therefore represent efficient and economical solutions.

## Features

- › Traditional square design and high-performance solution for a 3,0 m or 5,0 m measuring distance and QZ from ø2,0 m of up to ø3,0 m
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4 (ETSI upgradeable)
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Immunity floor absorber storage in the chamber on trolley's
- › Upgradeable for E-Drive (load machine, BlueBox, battery test system)
- › Ingenious hybrid absorber lining with Frankosorb®
- › Outstanding performance with long-lasting Frankosorb® non-combustible absorbers
- › Useable for automotive and military standard tests
- › Turnkey solution

SAC-3 Square  
Traditional design



# SAC-5 Square

5m Semi Anechoic Chamber in Square Design



SAC-5 Square  
Traditional design

SAC-3 Square	9,680 x 6,530 x 6,000 m (L x W x H) QZ ø2,0 m at 3,0 m test distance
SAC-3 Square L	10,880 x 6,980 x 6,000 m (L x W x H) QZ ø3,0 m at 3,0 m test distance
SAC-5 Square	12,680 x 7,730 x 6,000 m (L x W x H) QZ ø2,0 m at 3,0 m & 5,0 m test distance
SAC-5 Square L	12,680 x 8,180 x 6,000 m (L x W x H) QZ ø3,0 m at 3,0 m & 5,0 m test distance
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

## Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

## Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

# SAC-3/FAC-3 Transformer

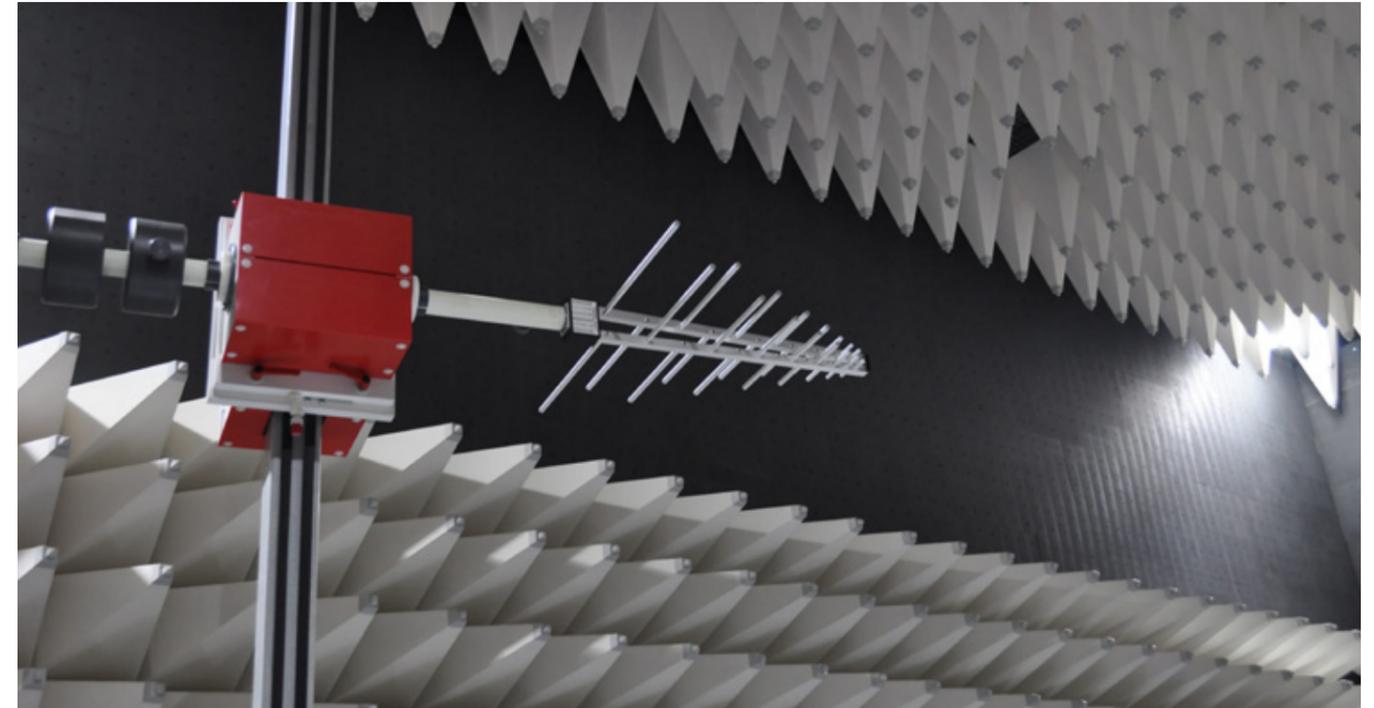
## Semi & Fully Anechoic Chamber

The **SAC-3/FAC-3 Transformer** is Frankonia's full compliant EMC testing solution at **3,0 m** measuring distance offering semi as well as fully conditions. The SAC configuration provides a Quiet Zone (QZ) of **ø2,0 m** and is compliant with CISPR 16-1-4 as well as ANSI C63.4. The FAC configuration provides a Quiet Zone (QZ) of **ø1,5 m** and is compliant with CISPR 16-1-4. The SAC-3/FAC-3 Transformer model is adapted for full compliant emission and immunity testing with a traditional square design.

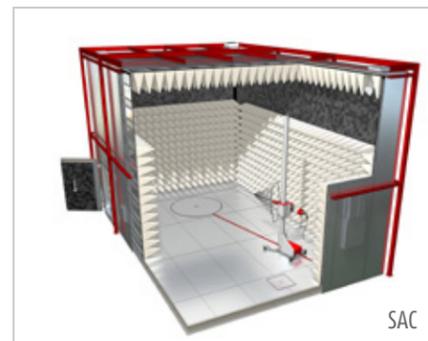
The SAC-3/FAC-3 Transformer focuses on conditions with ground plane. With added floor absorber modification kit, it considers FAC conditions for table-top EUT tests and is hence compliant with ETSI for the complete frequency range.

### Features

- › Cost-effective and high-performance solution for a 3,0 m measuring distance and a QZ of ø2,0 m in semi setup (SAC), and a QZ of ø1,5 m in fully setup (FAC)
- › Full compliant EMI acc. to CISPR 16-1-4, ANSI C63.4, IEC/EN 61000-4-22, and ETSI
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Upgradeable for E-Drive (load machine, BlueBox, battery test system)
- › Compact chamber design with advanced absorber lining
- › Outstanding performance with long-lasting Frankosorb® non-combustible absorbers
- › Useable for automotive and military standard tests
- › Turnkey solution



**SAC-3**  
Transformed to a semi chamber  
with ground plane



SAC-3/FAC-3 Transformer	9,680 x 6,530 x 6,000 m (L x W x H) SAC: QZ ø2,0 m (H= 2,0 m) at 3,0 m test distance FAC: QZ ø1,5 m (H= 1,5 m) at 3,0 m test distance
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

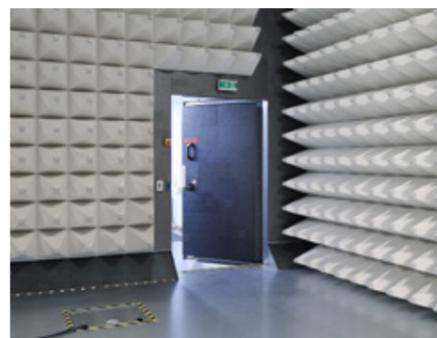
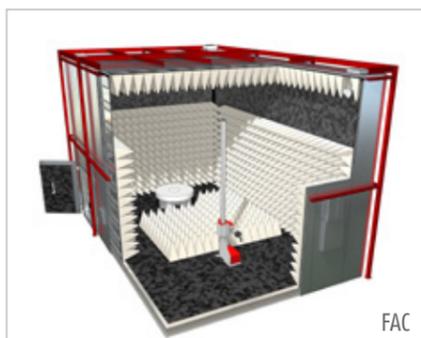
### Performance & Compliance SAC Semi Configuration

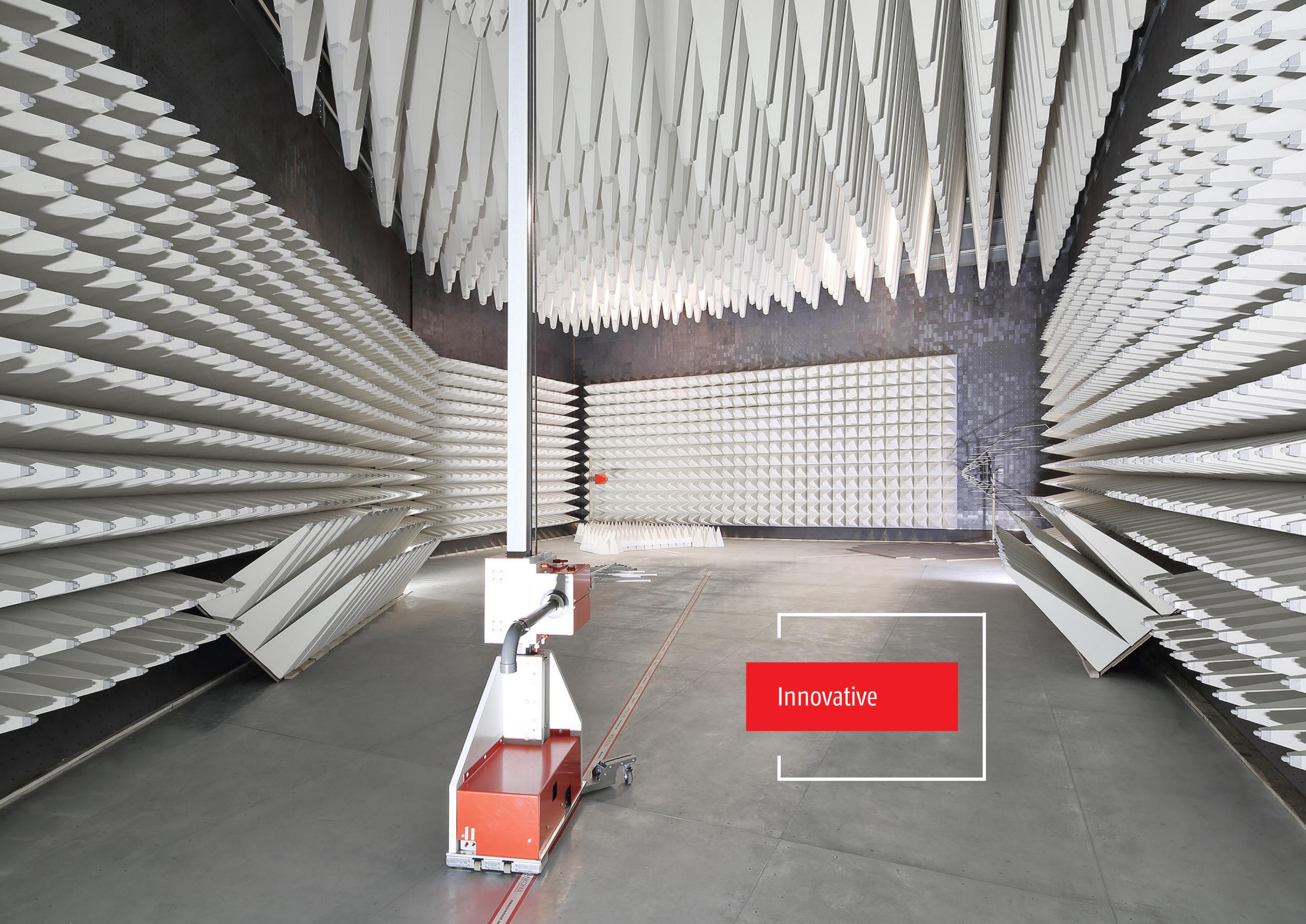
- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

### Performance & Compliance FAC Fully Configuration

- › Full compliant emission (EMI) according to CISPR 16-1-4  
Deviation FS NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

**FAC-3**  
Transformed to a fully chamber  
with floor absorbers





Innovative

# SAC-10 Plus

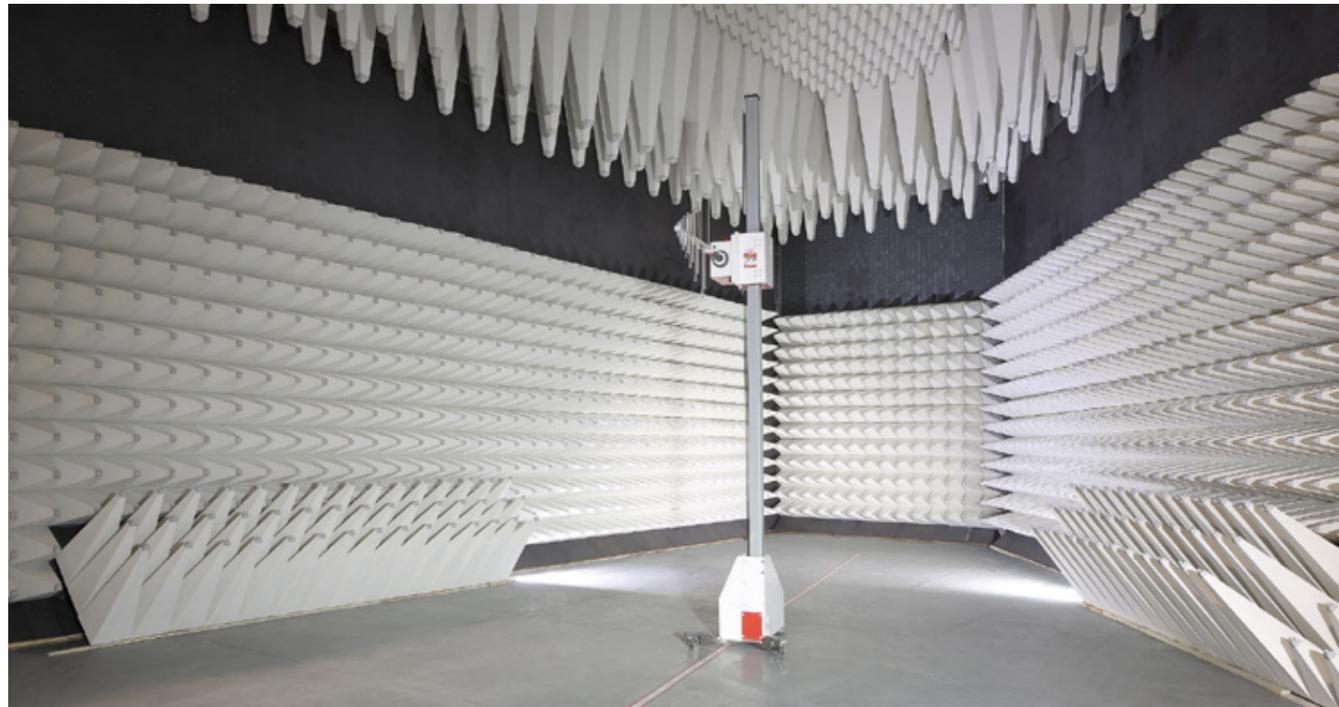
10m Semi Anechoic Chamber with Single Test Axis

The **SAC-10 Plus** is Frankonia's full compliant state-of-the-art EMC testing solution with single or multiple test axes at **10,0 m, 5,0 m & 3,0 m** measuring distances with a Quiet Zone (QZ) of **ø3,0 m**. The innovative polygonal shape along with its optimized absorber layout is a space-saving, cost-saving and efficient solution with either a **single test axis** (SAC-10 Plus) or **multiple test axes** (SAC-10 Plus Triton).

Both, the SAC-10 Plus and SAC-10 Plus Triton are the most compact 10 m chamber and are full compliant for emission tests validated according to CISPR 16-1-4 and ANSI C63.4, as well as full compliant for immunity tests according to IEC/EN 61000-4-3.

### Features

- › **SAC-10 Plus:** Single test axis up to 10,0 m with a Quiet Zone of ø3,0 m
- › **SAC-10 Plus Triton:** Multiple test axes up to 10,0 m with a Quiet Zone of ø3,0 m
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Space-saving and compact chamber design with polygonal shape
- › Floor absorbers and antennas remain connected in the chamber
- › Reproducibility and stable performance
- › Time-saving test setup with improved workflow and efficiency
- › Ingenious lining with long-lasting Frankosorb® non-combustible absorbers
- › Cost-saving and future-proof investment
- › Useable for automotive and military standard tests



# SAC-10 Plus Triton

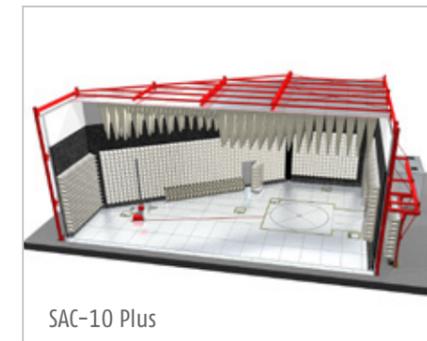
10m Semi Anechoic Chamber with Multiple Test Axes



SAC-10 Plus Triton  
Multiple test axes



SAC-10 Plus Triton



SAC-10 Plus

SAC-10 Plus  
Single test axis

### SAC-10 Plus Triton Features

- › With the use of three independent test axes dedicated to each EMI and EMS test, all antennas and floor absorbers will remain connected in the chamber
- › The Triton works like a regular 10m SAC chamber without any limitations
- › Thanks to the guided floor absorber arrangement, the test setup preparation time reduces enormously, while reproducibility and quality of each testing remain stable

SAC-10 Plus Triton	19,205 x 12,080 x 8,325 m (L x W x H) QZ ø3,0 m with multiple test axes 1x 10,0 m test distance (axis 1=EMI) 2x 3,0 m test distance (axis 2=EMI/EMS; axis 3=EMS)
SAC-10 Plus	19,205 x 12,080 x 8,325 m (L x W x H) QZ ø3,0 m at 10,0 test distance and single test axis
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600 on the walls, and long-pyramid P2400 absorbers mixed with hybrids on the ceiling
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

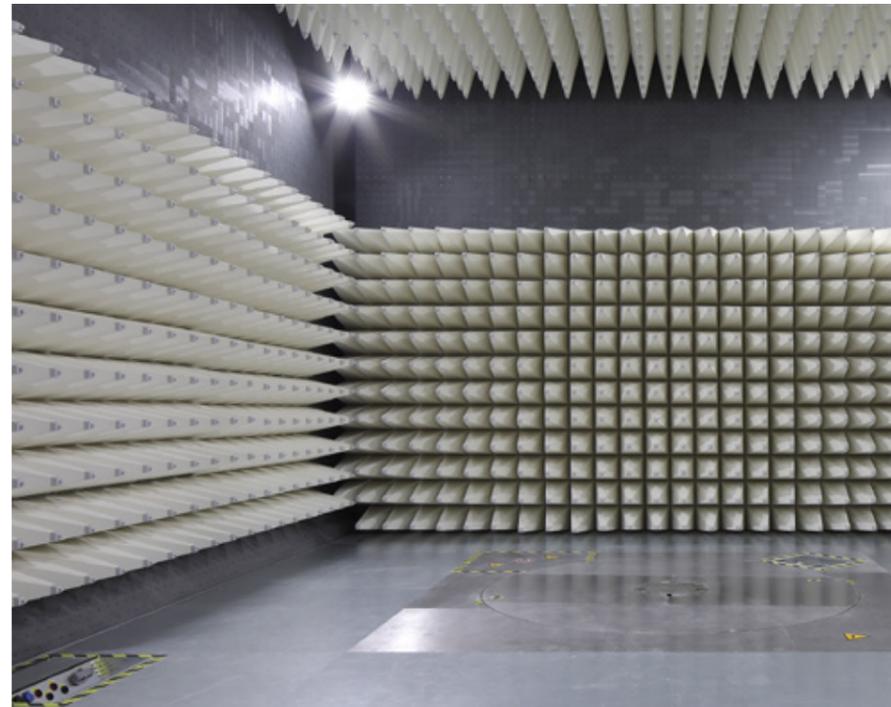
# SAC-10/H

## 10m Semi Anechoic Chamber with Hybrid Absorbers

The **SAC-10/H** is Frankonia's full compliant and customizable EMC testing solution at **10,0 m** measuring distance with a Quiet Zone (QZ) of **Ø3,0 m** up to **Ø6,0 m** with **hybrid** absorber layout. Due to the high grade of customization reflecting the demands of our customers, this semi anechoic chamber is adaptable in size and offers several configuration possibilities. The impressionable hybrid absorber layout achieves exceptional performance for emission measurements and immunity testing.

### Features

- › Frankosorb® hybrid absorber lining
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Highly customizable solution for any kind of EMC testing and limitless integration of individual applications; as single or double test axis option
- › Notably adjustable anechoic chamber size, characteristics and configuration due to different EUT requirements
- › Advanced lining with long-lasting and non-combustible Frankosorb® absorbers (Frankonia technology)
- › Specialized for 'out-of-the-range' EMC test environments
- › Useable for automotive and military standard tests
- › Turnkey solutions



SAC-10/H  
Hybrid Absorbers

SAC-10-3/H	18,380 x 12,830 x 8,550 m (L x W x H) QZ Ø3,0 m at 10,0 m test distance
SAC-10-4/H	19,280 x 13,280 x 8,550 m (L x W x H) QZ Ø4,0 m at 10,0 m test distance
SAC-10-5/H	21,380 x 15,380 x 9,000 m (L x W x H) QZ Ø5,0 m at 10,0 m test distance
SAC-10-6/H	21,980 x 15,980 x 9,000 m (L x W x H) QZ Ø6,0 m at 10,0 m test distance
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600, or the H1300 Turbine absorbers
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

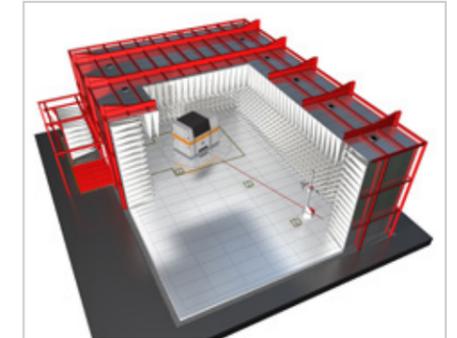
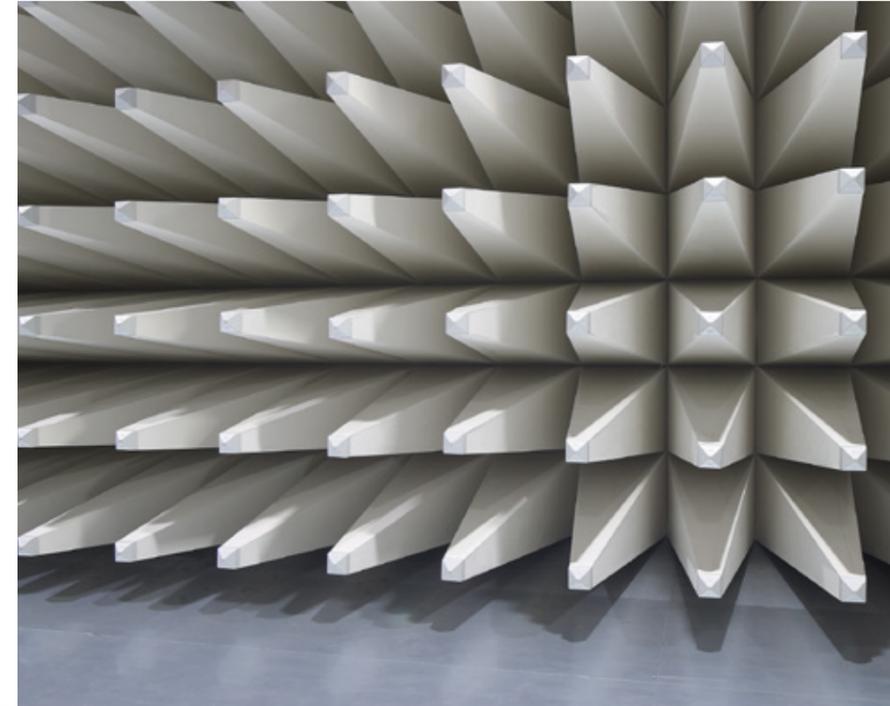
# SAC-10/P

## 10m Semi Anechoic Chamber with Long-pyramid Absorbers

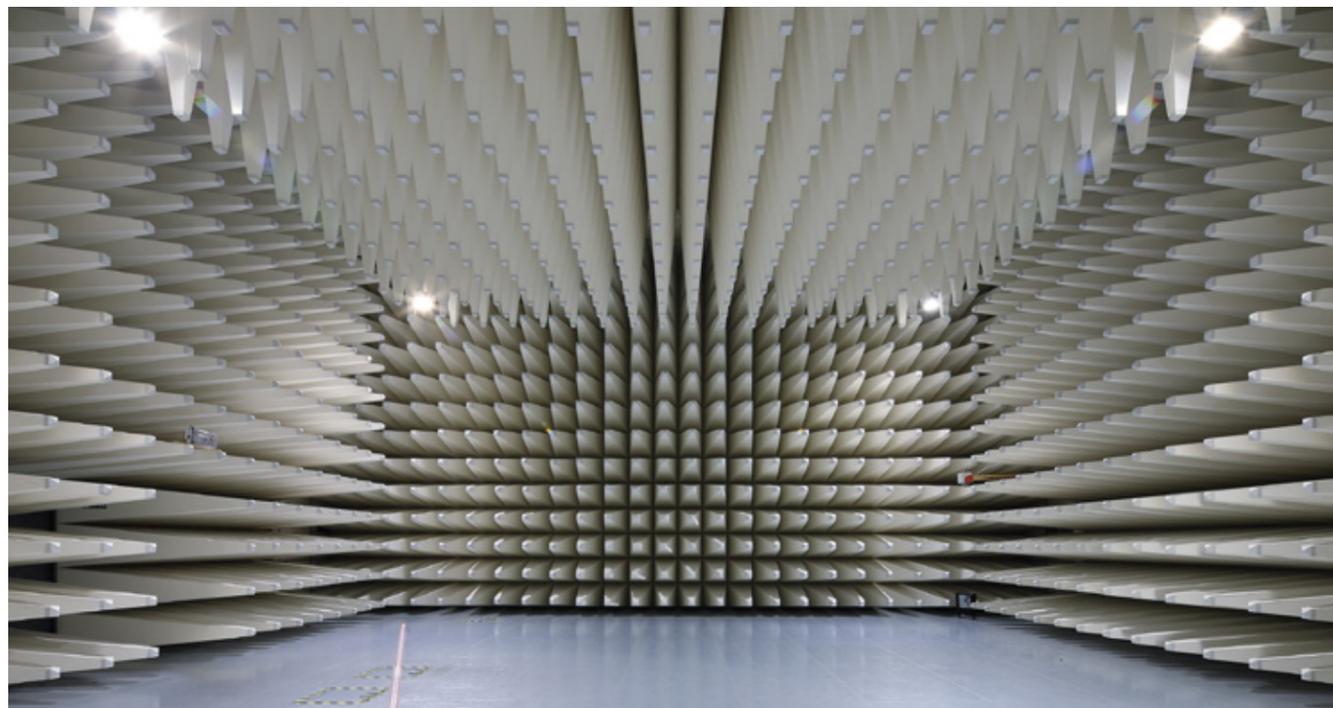
The **SAC-10/P** is Frankonia's full compliant and customizable EMC testing solution at **10,0 m** measuring distance with a Quiet Zone (QZ) of  $\varnothing$ **3,0 m** up to  $\varnothing$ **6,0 m** and the unique Frankonia **long-pyramid** absorber layout. Due to the high grade of customization reflecting the demands of our customers, this semi-anechoic chamber is adaptable in size and offers several configuration possibilities.

### Features

- › Frankosorb® long-pyramid absorber lining
- › Cost-efficient alternative to hybrid absorber lining without limitations
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Highly customizable solution for any kind of EMC testing and limitless integration of individual applications; as single or double test axis option
- › Noteably adjustable anechoic chamber size, characteristics and configuration due to different EUT requirements
- › Advanced lining with long-lasting and non-combustible Frankosorb® absorbers (Frankonia technology)
- › Specialized for 'out-of-the-range' EMC test environments
- › Useable for automotive and military standard tests
- › Floor absorbers storage below the pyramids
- › Turnkey solutions



**SAC-10/P**  
Long-pyramid Absorbers



The innovative long-pyramid absorber technology achieves exceptional performance for emissions and immunity testing and offers highest homogeneity and impedance accuracy for the complete frequency range.

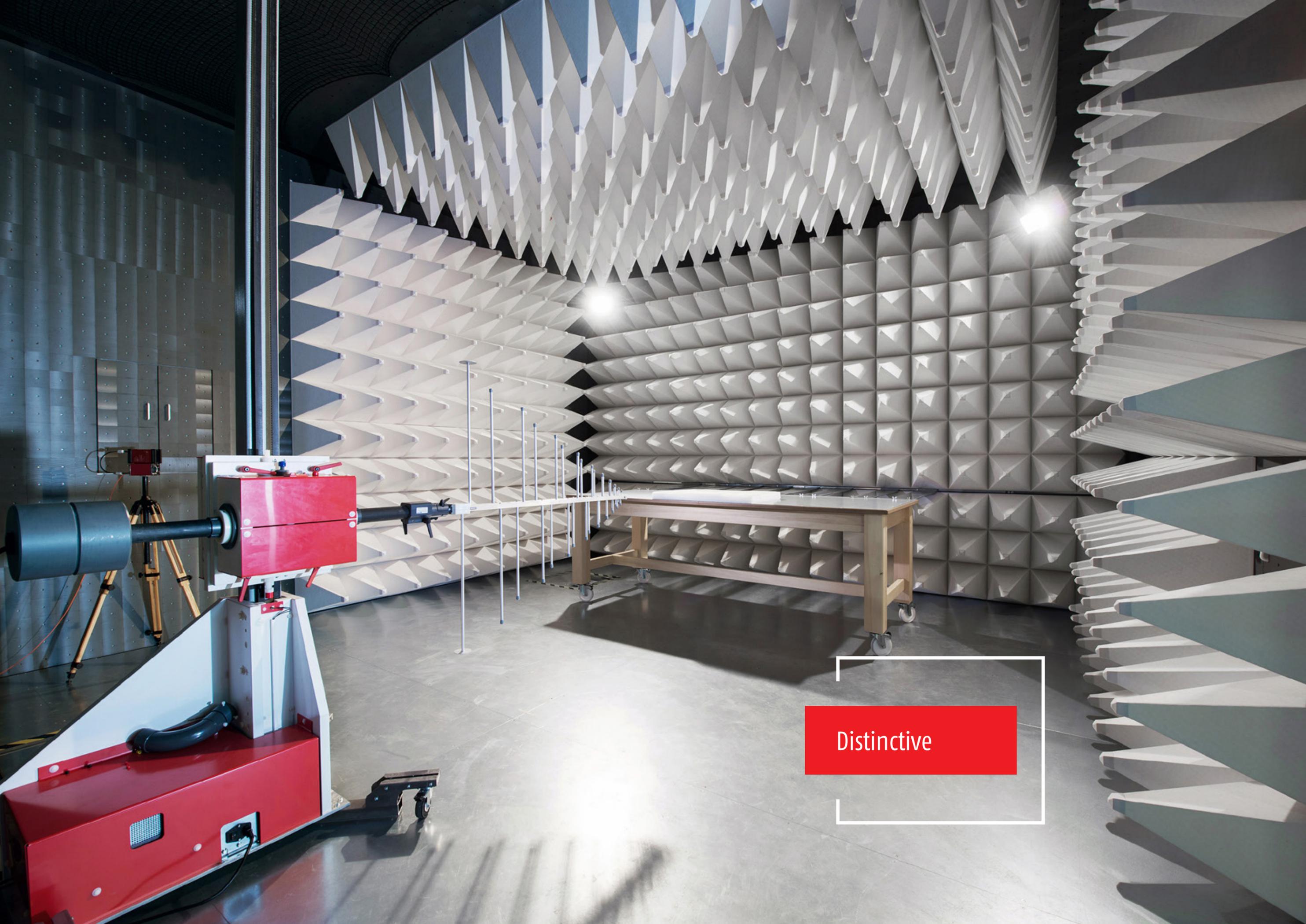
SAC-10-3/P	21,680 x 13,730 x 8,550 m (L x W x H) QZ $\varnothing$ 3,0 m at 10,0 m test distance
SAC-10-4/P	21,680 x 13,730 x 8,550 m (L x W x H) QZ $\varnothing$ 4,0 m at 10,0 m test distance
SAC-10-5/P	23,480 x 16,580 x 9,000 m (L x W x H) QZ $\varnothing$ 5,0 m at 10,0 m test distance
SAC-10-6/P	24,980 x 17,180 x 9,000 m (L x W x H) QZ $\varnothing$ 6,0 m at 10,0 m test distance
Frequency range	9 kHz/ 30 MHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized long-pyramid absorber lining with P2400
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA  $\pm$ 3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)



Distinctive

# ACTC

## CISPR 25 Automotive Component Testing Chamber

The **ACTC** is Frankonia's automotive component testing chamber solution at **1,0 m** measuring distance. This chamber solution is adapted to **full compliant** tests of automotive components according to CISPR 25 and ISO 11452. A permanent plug-in contact strip is installed between the absorbers to ensure the electrical connection of the test table to the shielding, and includes the test table as required per CISPR 25. The typical chamber is lined with ferrite absorbers and partially lined with Frankosorb® hybrid absorbers.

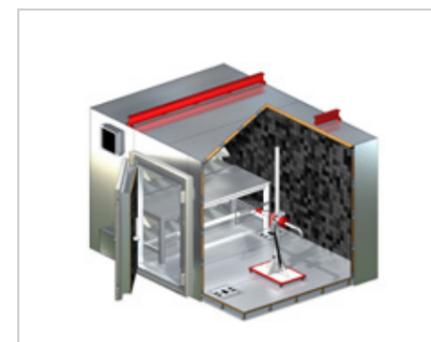
The **UCC** is Frankonia's ultra-compact hybrid solution at **1,0 m** measuring distance. The chamber is designed for **pre-compliance** radiated emission and immunity tests, conducted tests, and pre-compliance tests for automotive components as per the CISPR 25 method. It is an alternative solution for the GTEM cell for pre-compliance testing as well as for research and scientific purposes in all sectors.

### Features

- › **ACTC:** Full compliant EMI/EMS per CISPR 25
- › **UCC:** Pre-compliant EMI/EMS per CISPR 25 (alternative to GTEM cell)
- › Compact chamber solution for automotive component testing
- › Upgradeable for E-Drive (load machine, BlueBox, battery test system)
- › Advanced lining with long-lasting and non-combustible Frankosorb® absorbers (Frankonia technology)

# UCC

## CISPR 25 Pre-compliance Testing Chamber



ACTC	6,380 x 5,480 x 3,750 m (L x W x H) CISPR 25 component level at 1,0m test distance
ACTC L	11,480 x 6,580 x 4,500 m (L x W x H) CISPR 25 component level & vehicle at 1,0 m test distance
UCC	4,580 x 3,080 x 2,550 m (L x W x H) Pre-compl. component level at 1,0 m test distance
Frequency range	150 kHz/ 26 MHz to 18 GHz (option 40 GHz)

### Performance & Compliance ACTC

- › Full compliant emission (EMI) according to CISPR 25 Ed.4 (ALSE verification acc. to long-wire method recommended)
- › Full compliant immunity (EMS) according to ISO 11452
- › Compliant immunity (EMS) according to IEC/EN 61000-4-3 Uniform filed 0,5 x 0,5 m at 1,0 m measuring distance Deviation FU 0 dB/+6 dB at 100 % (26/ 80 MHz to 18 GHz)

### Performance & Compliance ACTC L

- › Full compliant emission (EMI) according to CISPR 25 Ed.4 (ALSE verification acc. to long-wire method recommended)
- › Full compliant immunity (EMS) according to ISO 11452
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3 Uniform field 1,5 x 1,5 m at 3,0 m measuring distance Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)

### Performance & Compliance UCC

- › Pre-compliant emission (EMI) according to CISPR 25 Ed.4
- › Pre-compliant immunity (EMS) according to ISO 11452

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite and H450
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 – s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

# AVTC

## 3m Automotive Vehicle Testing Chamber

The **AVTC** is Frankonia's automotive anechoic chamber solution at **3,0 m** or **5,0 m** measuring distance offering a Quiet Zone (QZ) of **Ø3,0 m** up to **Ø5,0 m** for commercial testing combined with a focus on automotive component and vehicle tests.

It is adapted for radiated emissions on vehicles acc. to CISPR 12 and components acc. to CISPR 25 as well as for commercial product tests acc. to CISPR 16-1-4 and ANSI C63.4. Furthermore, it is adapted to radiated immunity acc. to IEC/EN 61000-4-3, ISO 11451 and ISO 11452.

### Features

- › Frankosorb® hybrid absorber lining
- › Automotive component tests, vehicle tests, and commercial tests in a single solution
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Full compliant with CISPR 25, CISPR 12, ISO 11452, ISO 11451 and ECE R10.5 with integrated or dynamometer on turntable up to 3,0 m test distance
- › Cost-effective and high-performance solution for 3,0 m or 5,0 m measuring distance
- › Floor-absorberboard for an efficient and fast modification of the test setup
- › Upgradeable with EDTC components (load machine, BlueBox, battery test system)
- › Highly customizable solution for any kind of EMC testing and limitless integration of individual applications
- › Useable for commercial and military standard tests



**AVTC**  
Compact Vehicle Test Chamber



AVTC	11,480 x 9,380 x 6,000 m (L x W x H) QZ Ø3,0 m at 3,0 m test distance with turntable up to Ø5,0 m
AVTC L	14,780 x 11,480 x 6,300 m (L x W x H) QZ Ø3,0 m at 3,0 m and 5,0 m test distance with turntable up to Ø6,0 m
AVTC XL	16,280 x 12,680 x 6,300 m (L x W x H) QZ Ø3,0 m at 3,0 m and 5,0 m test distance with integrated dynamometer Ø6,7 m
Frequency range	9 kHz/ 150 kHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 – s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant emission (EMI) according to CISPR 25 Ed.4  
(ALSE verification acc. to long-wire method recommended)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)
- › Full compliant immunity (EMS) according to ISO 11452 and ISO 11451
- › ECE R10 at 3,0 m test distance with dyno

# SAC-10V

## 10m Semi Anechoic Chamber for ECE R10 Vehicle Testing

The **SAC-10V** chamber is Frankonia's full compliant and customizable EMC testing solution at **10,0 m** measuring distance offering various sizes of Quiet Zone (QZ) and are dedicated to automotive full vehicle testing with integrated dynamometer. Due to the high grade of customization reflecting the demands of our customers, this semi anechoic chamber is adaptable in size and offers several configuration possibilities. The innovative concept with its impressionable absorber layout achieves exceptional performance for emission and immunity testing.

### Features

- › **SAC-10V-6/P**: Frankosorb® long-pyramid P2400 lining
- › **SAC-10V-6/H**: Frankosorb® hybrid absorber lining
- › **SAC-10Vx**: Frankosorb® hybrid absorber lining
- › Full compliant EMI acc. to CISPR 16-1-4 and ANSI C63.4
- › Full compliant EMS acc. to IEC/EN 61000-4-3
- › Full compliant with CISPR 25, CISPR 12, ISO 11452, ISO 11451 and ECE R10.5 with integrated dynamometer at 10,0 m test distance
- › Highly customizable solution for any kind of EMC testing and limitless integration of individual applications
- › Advanced lining with long-lasting and non-combustible Frankosorb® absorbers (Frankonia technology)
- › Specialized for 'out-of-the-range' EMC test environments
- › Useable for commercial and military standard tests



**SAC-10V**  
Vehicle Test Chamber with  
Dynamometer



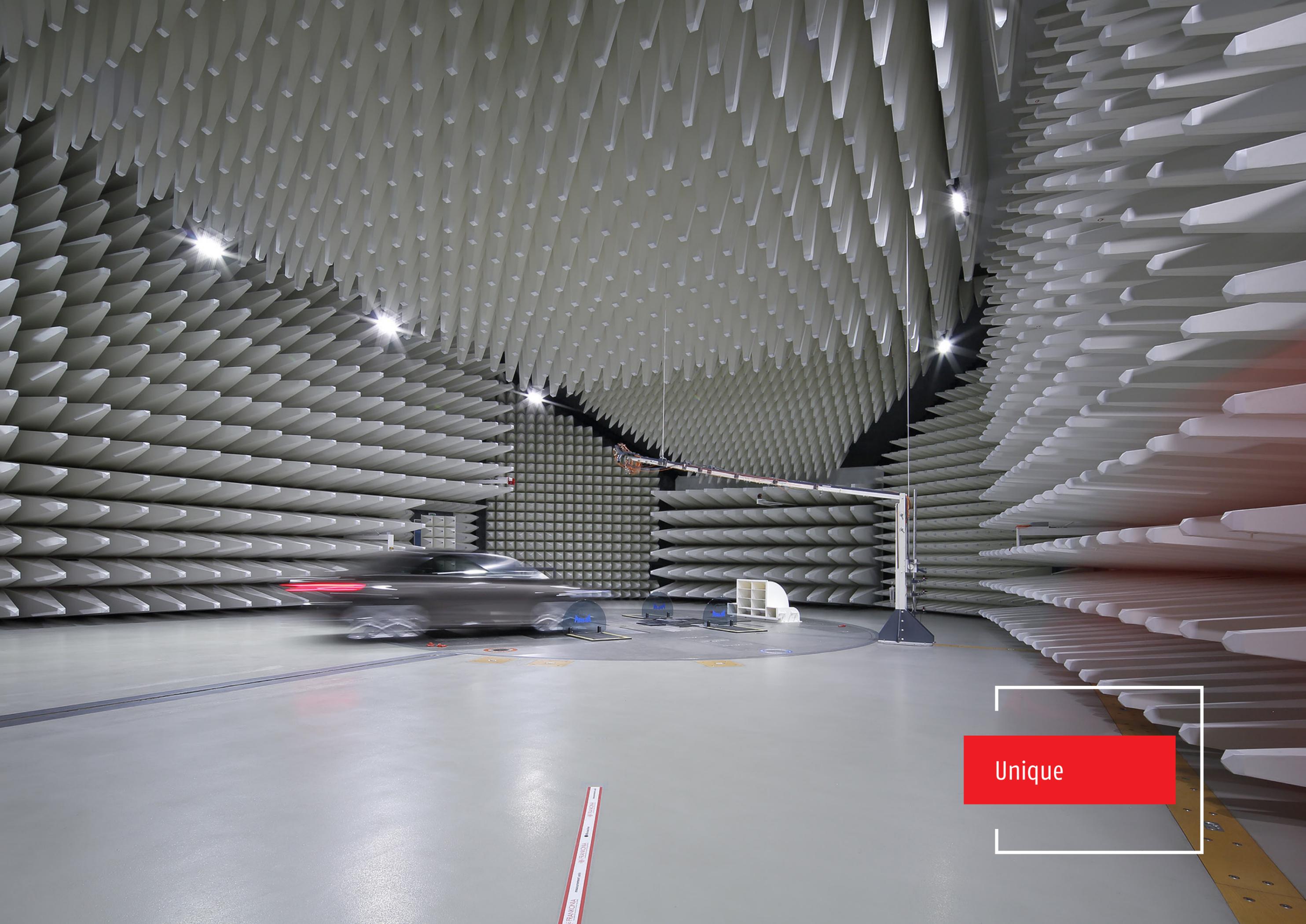
SAC-10V-6/P	26,480 x 20,180 x 10,500 m (L x W x H) QZ ø6,0 m at 10,0 m test distance integrated dynamometer, long-pyramid absorber lining
SAC-10V-6/H	22,580 x 15,680 x 8,700 m (L x W x H) QZ ø6,0 m at 10,0 m test distance integrated dynamometer, hybrid absorber lining
SAC-10Vx	28,205 x 18,080 x 11,850 m (L x W x H) QZ ø6,0 m at 10,0 m test distance integrated dynamometer, hybrid absorber lining, 2 <sup>nd</sup> turntable for car-to-car & car-to-infrastructure tests
Frequency range	9 kHz/ 150 kHz to 18 GHz (option 40 GHz)

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H1000 and H600, or the H1300 Turbine absorbers
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA ±3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant emission (EMI) according to CISPR 25 Ed.4  
(ALSE verification acc. to the long-wire method recommended)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)
- › Full compliant immunity (EMS) according to ISO 11452 and ISO 11451
- › ECE R10 at 10,0 m test distance with dyno



Unique

# EMC-BlueBox & EDTC

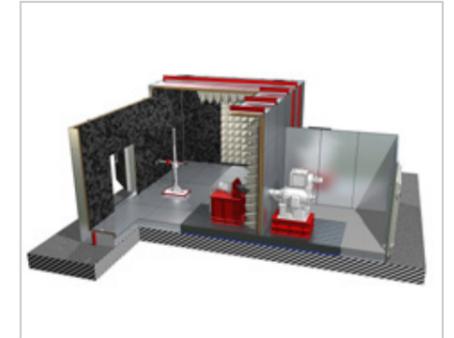
## E-Drive Test Solution with Mobile Load Machine BlueBox or External Load Machine

**E-Drive Solutions** are Frankonia's dedicated test sites for powertrain components and facilities related to hybrid, electric, fuel cell and battery drive systems. They offer superior conditions for radiation testing according to CISPR 25 Ed.4 and ISO 11452. The typical chamber is lined with ferrite absorbers and partially lined with Frankosorb® non-combustible hybrid absorbers.

The **EDTC-BB** is the adapted chamber solution that includes the **EMC-BlueBox** mobile load machine for dynamic EMC tests of electrical powertrain units in a shielded enclosure. The BlueBox works in a four-quadrant operation; any EUT stress situation can be simulated. Similar to the external load machine with a fixed shaft, it includes braking, driving, direction of rotation (right/left), speed regulation, torque control and a mix out of this range.

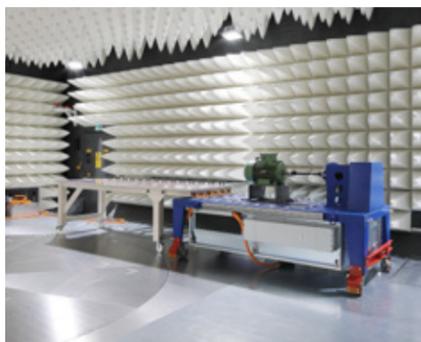
### Features

- › Fully compliant with CISPR 25 Ed.4
- › Component or system test level
- › Mobile, flexible and adjustable to any kind of EUT
- › 360° view when placed on a turntable (extended testing range)
- › Combination with battery tests
- › Integration kit for existing chambers
- › Incl. EUT e-motor power source and water cooling system



EDTC  
External Load Machine

EMC-BlueBox  
Mobile Load Machine



### EMC-BlueBox

Type	BlueBox-30	BlueBox-40	BlueBox-65	BlueBox-120
Power	30 kW	44 kW	63 kW	120 kW
Revolution speed	up to 11.000 RPM	up to 9.000 RPM	up to 6.500 RPM	up to 6.000 RPM

The **EDTC** is the chamber solution that is specifically prepared for an **external load machine** with fixed shaft. Similar to the EMC-BlueBox, the system can be used for dynamic EMC tests of electrical powertrain units in a shielded enclosure. It includes, for instance, braking, driving, direction of rotation (right/left), speed regulation, torque control and a mix out of this range.

### Features

- › Fully compliant with CISPR 25 Ed.4
- › Motor adapter and connection to a CISPR 25 test table
- › Combination with battery tests
- › Vibration-free and non-interacting solid basement (floating slab)
- › Incl. EUT e-motor source and water cooling system

EDTC	7,880 x 5,480 x 3,750 m (L x W x H) for fixed-shaft version with external load machine
EDTC-BB	7,880 x 6,380 x 3,750 m (L x W x H) for mobile load machine EMC-BlueBox
Frequency range	150 kHz to 18 GHz (option 40 GHz)

### External Load Machine

Type	EDTC-125	EDTC-160	EDTC-250	EDTC-350
Power	125 kW	160 kW	250 kW	350 kW
Revolution speed	up to 12.000 RPM			

# MEDET

## Hydraulic Load Machine

The **MEDET** system is one of the new power train setups using a hydraulic system for testing electric motors. A power converter outside the chamber produces the oil pressure for the EUT power converter placed inside the chamber. The chamber solution is adapted for full compliant tests of automotive components according to CISPR 25 and ISO 11452.

### Features

- › The connection of the power adaption unit (inside EMC facility) with flexible hoses, provides more installation options
- › Multiple EMC test facilities in parallel; one power unit can feed multiple EMC facilities
- › The scalable setup of the MEDET system allows to adjust the size of the system perfectly to the customer's need
- › Low oscillating weight of the adaption unit at the EUT for a fast adjustment
- › Protection of EUT and test setup by using torque shock attenuations
- › Easy adaptation as the EUT module weighs less than 20 kg (FMM-70) and can easily be installed with standardized mechanical fittings
- › The connection to the power module is made with a quick coupling system
- › Control via industrial touch panel and dedicated software. The basic adjustments before testing (torque mode, repetition mode) are made quickly
- › The MEDET system allows all kinds of power flow (passive mode: test setup drives EUT; active mode: EUT drives test setup). The system automatically synchronizes with the EUT.

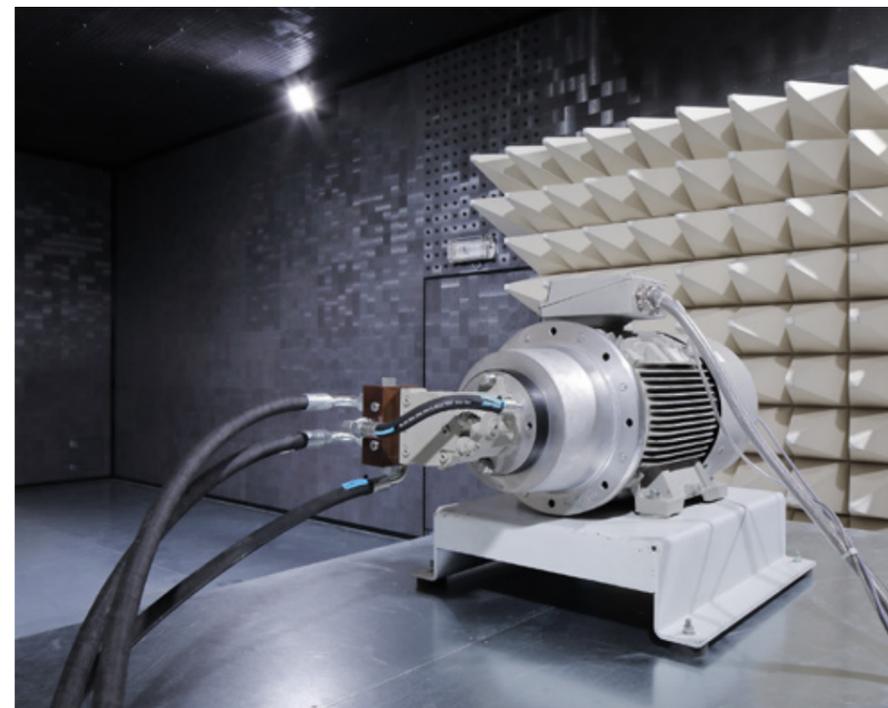
# Battery Testing & Charging Systems

## Battery Testing and High-Power Charging Solutions



## Battery Testing & Charging Systems

## MEDET Hydraulic Load Machine



Type	FMM-45	FMM-70	FMM-140
Power	45 kW	70 kW	140 kW
Revolution speed	up to 1.500 RPM	up to 1.500 RPM	up to 3.000 RPM
Torque	286 Nm	445 Nm	445 Nm

The **Battery Testing Solution** enables the simulation and testing of batteries in several configurations, as well as in combination with a load machine, like the EMC-BlueBox. It allows a maximum of flexibility in testing e-drive components and, moreover, ensures a correct implementation into an EMC environment.

The **High-Power Charging Solution** consists of a charging station, which is placed in the immediate range of the vehicle to be charged, and of a power unit, which provides the necessary charging voltage and current. The charging station is modular equipped with four international charging standards CCS1, CCS2, CHAdeMO and GB/T. Both combined charging systems can be implemented with uncooled or cooled charging cables, depending on the maximum charging power.

Type	FA-CCS2c	FA-CCS2uc	FA-CC1c	FA-CCS1uc	FA-CHA	FA-GBT
Protocol	CCS2 (PLC)		CCS1 (PLC)		CHAdeMO	GB/T
Cooling	cooled	uncooled	cooled	uncooled	uncooled	uncooled
Voltage (DC)	50 ... 1.000 V				50 ... 500 V	
Max. Current	500 A	200 A	500 A	200 A	125 A	250 A
Max. Power	400 kW	200 kW	400 kW	200 kW	62 kW	185 kW

### Features

- › Integration in any kind of EMC chamber
- › Real-time monitoring and testing using PLC, GB/T or CHAdeMO charging protocols
- › Shielded interface station useable within an EMC chamber
- › Turnkey solution (power electronic, charging box and standards, filters, chamber integration, control panel, European safety standards)



aselsan

Passionate

# MIL CHC

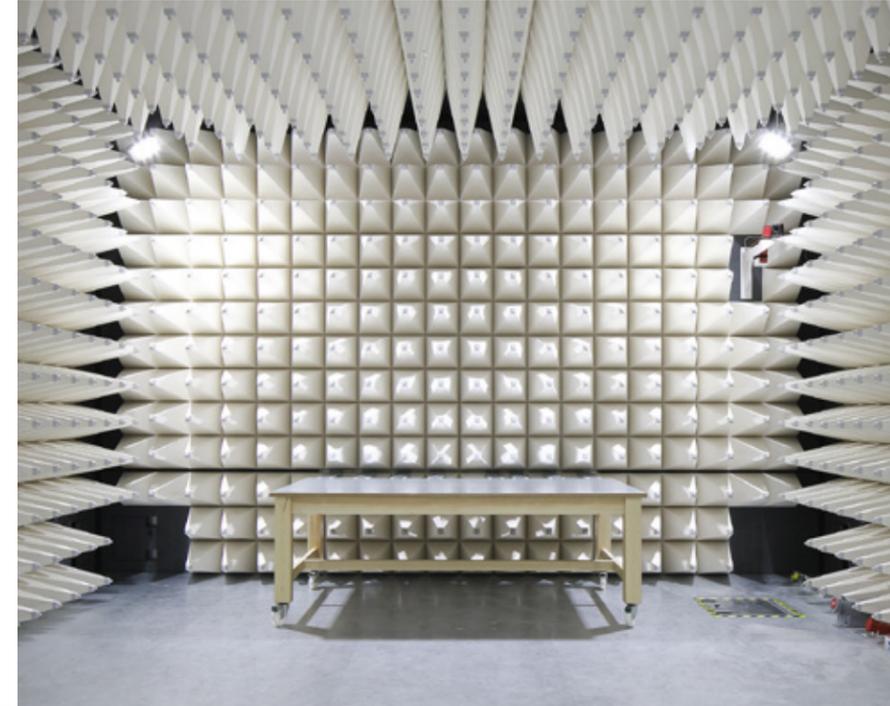
## Military Component Testing Chamber

The **MIL CHC** is Frankonia's compact hybrid chamber solution according to MIL-STD 461 and D0-160 for component tests. To meet D0-160, the chamber is slightly longer due to the absorber lining.

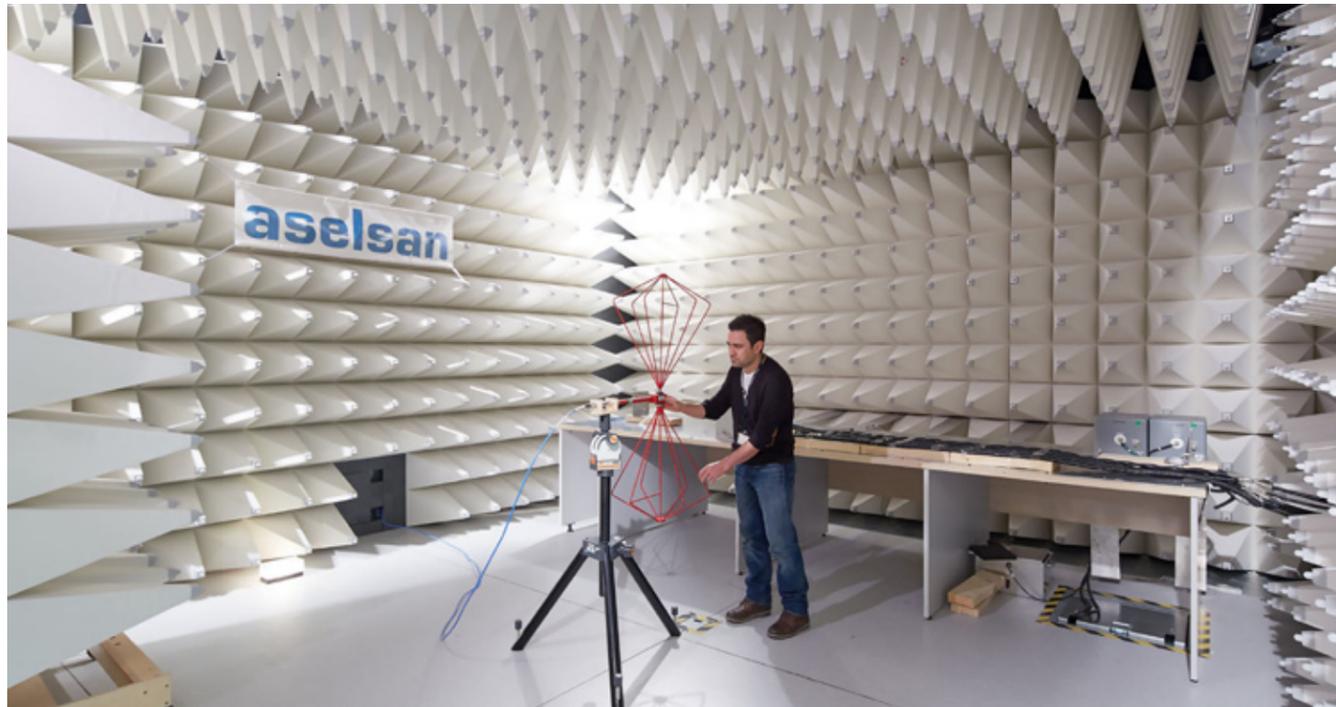
These chamber solutions are adapted for radiated emission and immunity tests at 1,0 m measuring distance.

### Features

- › Compact chamber design for military applications
- › Full compliant EMI/EMS as per MIL-STD 461, or in combination with D0-160
- › Advanced lining with long-lasting Frankosorb® absorbers (Frankonia technology)
- › Optimized hybrid absorbers
- › In accordance with the requirements of MIL STD 461, we use a partial pyramid lining
- › MIL test table
- › Turnkey solution



**MIL CHC**  
Military Component Testing



MIL CHC	4,880 x 4,880 x 3,000 m (L x W x H)
MIL CHC/ D0-160	5,330 x 4,880 x 3,000 m (L x W x H)
Frequency range	9 kHz/ 30 MHz to 40 GHz

### Absorbers

- › Frankosorb® optimized hybrid absorber lining with F006 Ferrite, H450 or H600
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 - s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

### Performance & Compliance

- › Full compliant emission (EMI) according to MIL-STD 461 and D0-160
- › Full compliant immunity (EMS) according to MIL-STD 461 and D0-160
- › Absorption at normal incidence:
  - 80 MHz to 250 MHz  $\geq$  6 dB, as per standard requirements
  - above 250 MHz  $\geq$  10 dB, as per standard requirements

# MIL STD

## Military Standard Anechoic Chamber for large EUT's & Vehicles

The **MIL STD Chamber** is Frankonia's large chamber solution at **1,0 m** measuring distance according to MIL-STD 461 adapted for radiated emission and immunity tests for large EUT's or vehicles.

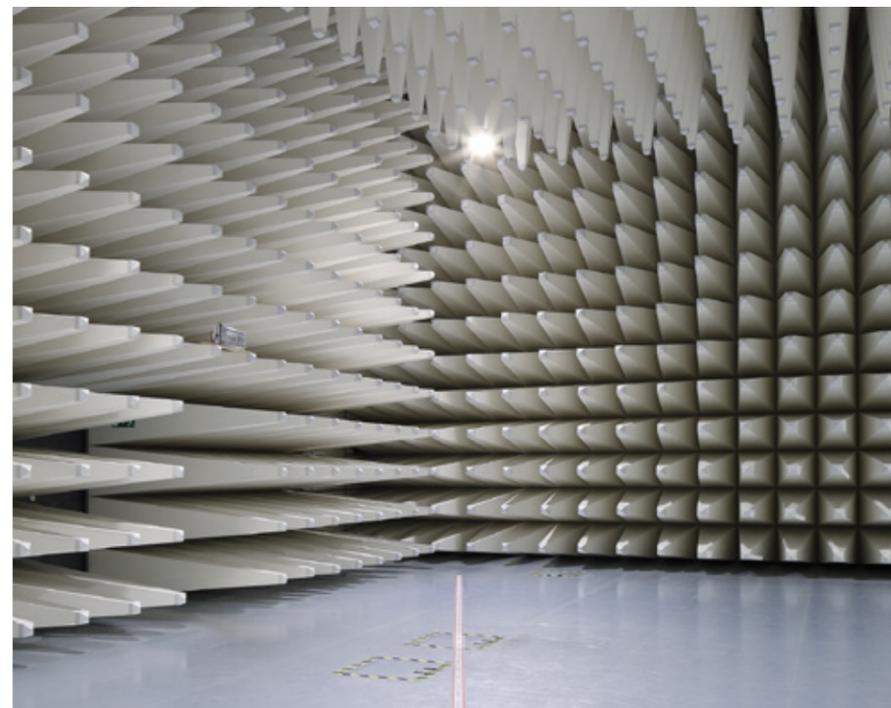
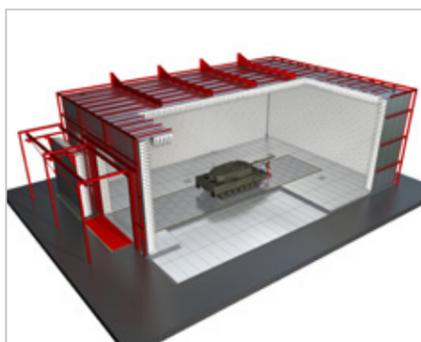
The **MIL STD Advanced Chamber** is Frankonia's military chamber solution acc. to MIL-STD 461 for large EUT's, and is compliant with commercial or automotive test site requirements. Frankonia's unique Frankosorb® long-pyramid or hybrid absorber technology offers the possibility to combine MIL-STD 461 test requirements with commercial test requirements as per CISPR 16-1-4 and ANSI C63.4, as well as vehicle and automotive component tests.

Both solutions are designed based on MIL-STD 461 and are fully customized according to customers' requirements for military testing of large and heavyweight EUT's.

### Features

- › Various testing possibilities with focus to MIL-STD 461, or in combination with commercial or automotive requirements (advanced version)
- › Full compliant acc. to MIL-STD 461
- › Full compliant EMI/EMS for commercial standards (advanced version)
- › Advanced lining with long-lasting and non-combustible Frankosorb® absorbers (Frankonia technology)
- › Adjustable chamber size, characteristics and configuration due to different EUT's

**MIL STD**  
Military Equipment & Vehicles  
30 MHz/ 80 MHz to 40 GHz

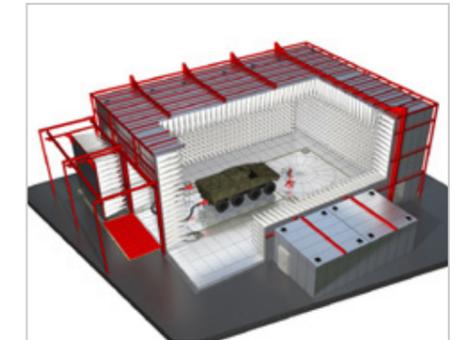


### Absorbers

- › Frankosorb® short-pyramid, long-pyramid or hybrid absorber lining
- › High-performance nano thin-film technology with proven long-term stability
- › Non-combustible acc. to DIN EN 13501-1 class A2 – s1 d0
- › Hardly inflammable acc. to DIN EN 13501-1 class B (alternative)

# MIL STD Advanced

## Military Standard Anechoic Chamber for large EUT's & Vehicles, Commercial & Automotive



**MIL STD Advanced**  
Military Equipment & Vehicles  
Commercial & Automotive  
30 MHz to 40 GHz

MIL STD	Custom size 9 kHz/ 80 MHz to 40 GHz with short-pyramid absorbers P600 or P900
	9 kHz/ 30 MHz to 40 GHz with long-pyramid absorbers P2200 or P2400
MIL STD Advanced Pyramid	Custom size 9 kHz/ 26 MHz to 40 GHz with long-pyramid absorbers P2400
MIL STD Advanced Hybrid	Custom size 9 kHz/ 30 MHz to 40 GHz with hybrid absorber lining

### Performance & Compliance MIL STD Chamber

- › Full compliant emission (EMI) according to MIL-STD 461 and D0-160
- › Full compliant immunity (EMS) according to MIL-STD 461 and D0-160
- › Absorption at normal incidence:  
80 MHz to 250 MHz  $\geq$  6 dB, as per standard requirements  
above 250 MHz  $\geq$  10 dB, as per standard requirements

### Performance & Compliance MIL STD Chamber Advanced

- › Full compliant emission (EMI) according to MIL-STD 461 and D0-160
- › Full compliant immunity (EMS) according to MIL-STD 461 and D0-160
- › Full compliant emission (EMI) according to CISPR 16-1-4 and ANSI C63.4  
Deviation NSA  $\pm$ 3,5 dB (30 MHz to 1 GHz)  
Deviation SVSWR +5,5 dB (1 GHz to 18 GHz)
- › Full compliant immunity (EMS) according to IEC/EN 61000-4-3  
Deviation FU 0 dB/+6 dB at 75 % of 16 measuring points (26/ 80 MHz to 18 GHz)



Reliable

# Frankosorb®

## Unique Nano Thin-film Absorbers

Since Frankonia's **Frankosorb®** nano thin-film absorber technology started to conquer the world market, more and more customers recognize and appreciate the stable performance characteristics and many more unique attributes offered by this technology. Frankosorb® convinces with more than 25 years of operation without having any malfunction, defect, quality or performance loss or the need to refurbish.

The unique method of Frankosorb® technology and its specific manufacturing process is available either as a hybrid solution in combination with Ferrite absorbers, or as a stand-alone pyramid solution with a length up to 2,4 m. The most important advantage of the Frankosorb® long pyramid absorbers is the coverage of the whole frequency range starting from 26 MHz up to 40 GHz, so that additional Ferrite absorbers are unnecessary.

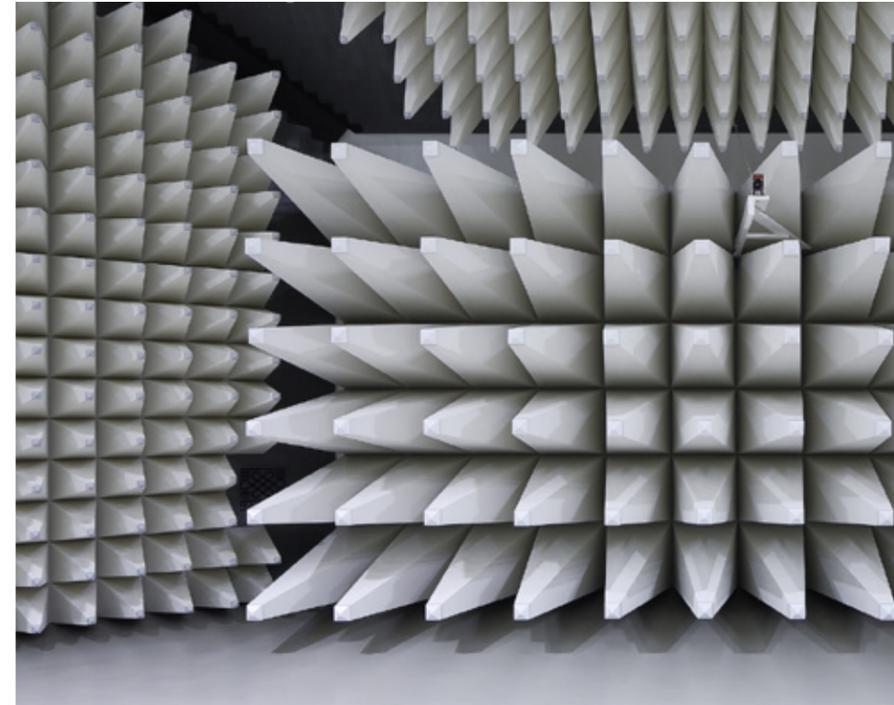
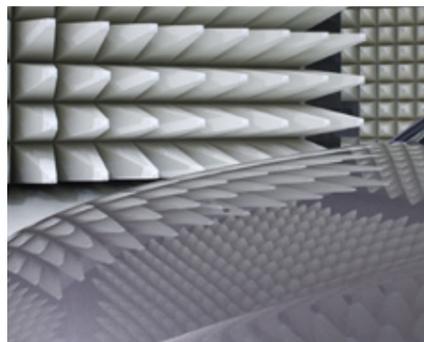
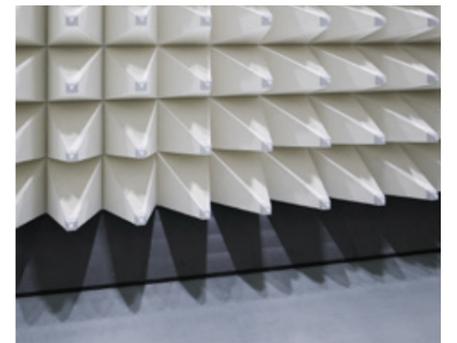
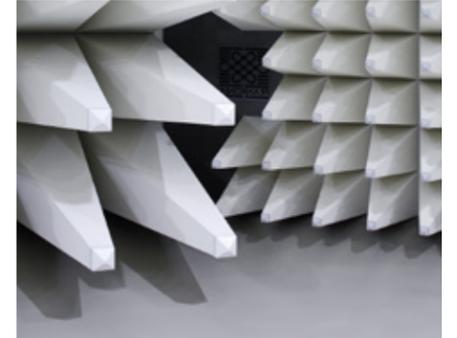
### P-Series Pyramid Absorbers

- › Short-pyramid absorbers P600 or P900 (80 MHz to 18/ 40 GHz)
- › Long-pyramid absorbers P2400 (26 MHz to 18/ 40 GHz)

### H-Series Hybrid Absorbers

- › Hybrid absorber lining in combination with Ferrite (30 MHz to 18/ 40 GHz)

The Frankonia Frankosorb® absorber technology combines a variety of high-performance standards in a single solution.



Due to the stable performance characteristics and its unique non-combustible attribute, a safe environment for people and EUT can be assured, which also leads to a constant, reproducible and long-lasting testing quality.

The Frankosorb® absorbers are available in several configurations that combines cost-effectiveness and high-performance. Thus, together with the Frankosorb® absorber technology, Frankonia's chambers offer the best choice for a long-term investment.

### Features

- › Nano thin-film technology guarantees highest homogeneity and impedance accuracy
- › **A2- Non-combustible absorbers** according to DIN EN 13501-1 class A2 - s1 d0 equivalent to DIN 4102 class A2 (Chinese GB8624-2006; Russia GOST 30244-94) evaluated according to NRL 8093 report for tests 1,2,3,4 and 5 compliant with EN/ISO 5659-2 (smoke generation and opacity)
- › **B- Hardly inflammable absorbers** according to DIN EN 13501-1 class B equivalent to DIN 4102 class B1 (Chinese GB8624-2006; Russia GOST 30244-94) evaluated according to NRL 8093 report for tests 1,2 and 3
- › Not carbon-based absorbers
- › High-quality prefabrication
- › Cost saving solution with Frankosorb® non-combustible absorbers as no sprinkler or fire extinguishing system is necessary
- › High-performance characteristics
- › Proven long-term stability for more than 25 years ensure reproducible test results
- › Non-hygroscopic materials are used to meet any climatic conditions (humidity-proof and temperature-proof)
- › No toxic gases emitted in case of absorber heating
- › No dirt, solvent-free, and free of glue or other harmful substances ensure a healthy environment for people and EUT
- › Recyclable at 99%
- › Clean room classification according to ISO 14644-1 Class 5
- › White coloring that improves the illumination level (no covers necessary)
- › Space-saving and stackable floor absorbers
- › Removable due to absorber fixation either by screw or hanging type

The Frankosorb® absorber technology remains the number one choice when it comes to long-term performance paired with its unique non-combustibility characteristic.



Frankonia

MBtech

Feebar

# Shielding Accessories

## Shielding, Doors, Gates, and Accessories

Since 1987, Frankonia follows a prefabrication and modular standard at highest quality and efficiency. Nothing is welded, nothing is glued, everything remains modular to meet any future modification requirements.

### Shielding and Structure

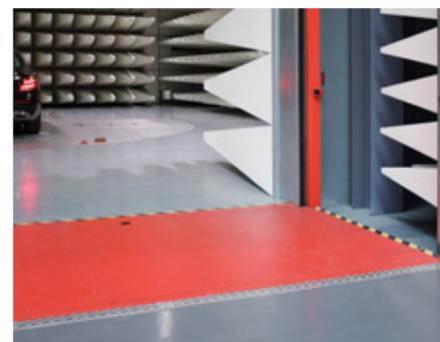
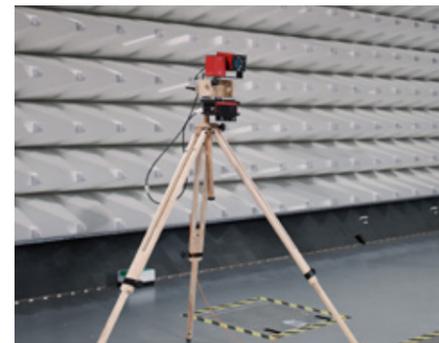
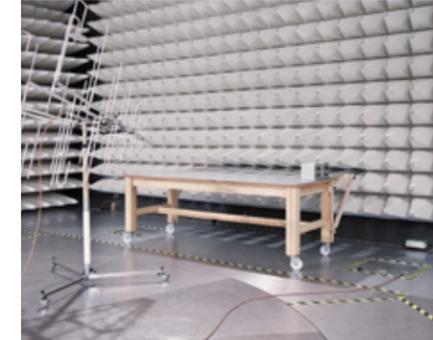
- › Modular and prefabricated PAN type shielding system
- › Highest shielding attenuation for every shielding accessories, honeycombs, doors and gates
- › Static steel structure adapted to local seismic conditions

### Doors and Gates

- › Broad range of doors and gates in various sizes
- › Modular and prefabricated
- › Single-leaf door (SLD)
- › Double-leaf door (DLD)
- › Sliding door (SSD)
- › Sliding gate (SG)

### Ramps and Platforms

- › Lifting ramps
- › Lifting platforms
- › Sliding platforms



As a specialist in RF-shielding and EMC testing chambers, Frankonia offers a broad range of complementary, standardized and customized products to maintain its position as a turnkey provider.

Every chamber is designed as an autonomous room with its own full-integrative electrical system setup with additional accessories to meet our customers' requirements.

### Electrical Integration

- › Electrical distribution unit, cabling, safety functions
- › LED lighting, ExTox lighting option, emergency lighting
- › AC and DC filters, signal and data filters, optic converters

### Ventilation, Smoke and Gas

- › Honeycombs, cooling and exhaust systems
- › Smoke and gas sampling systems
- › Autonomous smoke and gas analyzing systems
- › Extinguishing systems

### Video & Audio Systems

- › HD camera systems, fixed or mobile version
- › Audio systems
- › Recording systems

### Test Tables

- › CISPR 25 test tables
- › CISPR 22 transparent test tables (FTT)

### Floor-Absorberbords

- › Patented solutions for enhanced workflow improvements

# Automation

## Turntables and Antenna Masts

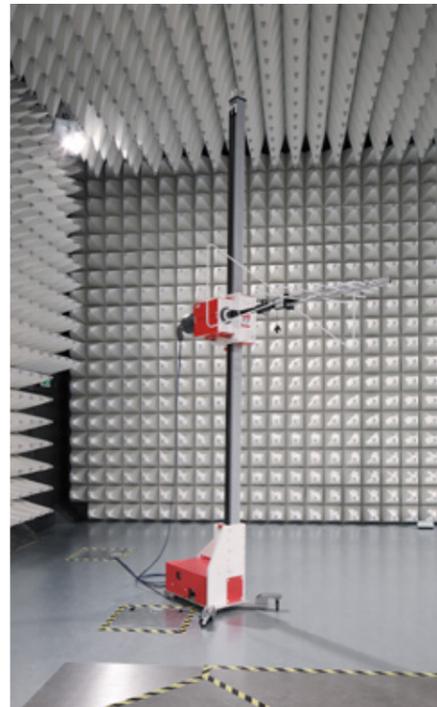
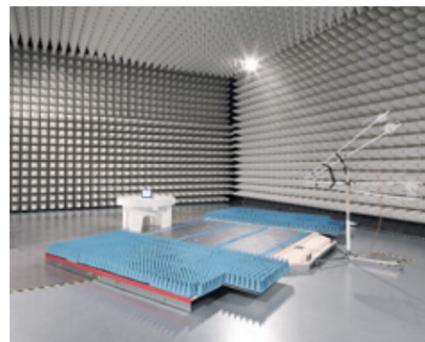
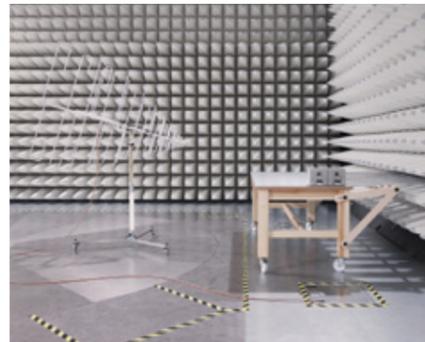
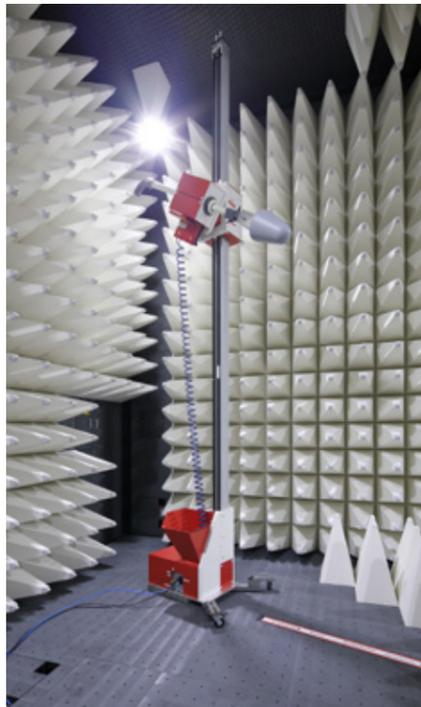
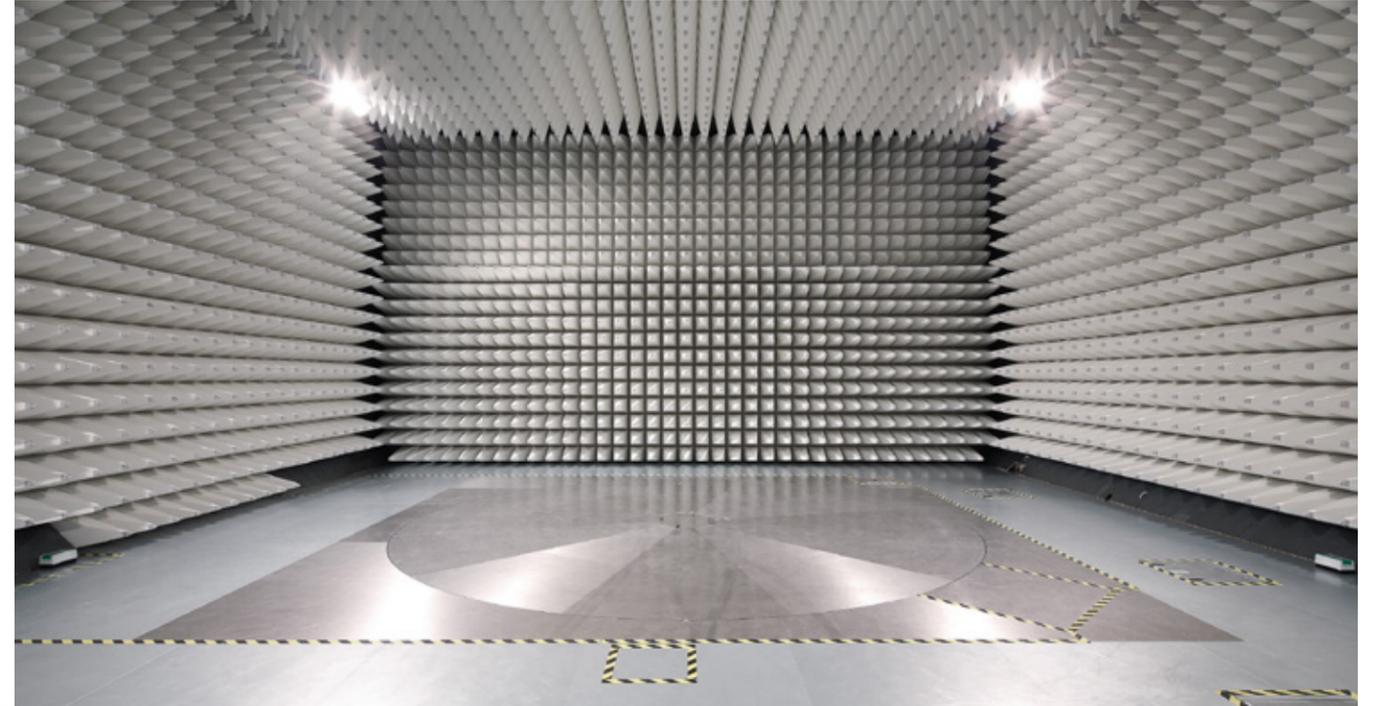
Frankonia provides a broad range of positioning devices such as standardized and multi-use turntable systems and antenna masts, which are designed and developed by Frankonia's own R&D department. Frankonia considers highest quality and technology standards respecting the latest EMC standard requirements.

### FTM – Turntable Systems

Frankonia's wide range of turntables is fully compliant with the EMC chamber environment. The turntables are available in different sizes and can be equipped with various options. They are integrated flush in the raised floor and are surrounded by a conductivity grounding ring to ensure the contact with the ground plane of the chamber. For the control of the turntable series FTM, the Frankonia controller FC06.1 is perfectly adapted using IEEE 488.2 (GPIB) commands.

### Range of Products

- › FTM mobile turntables from  $\varnothing 0,6$  m up to  $\varnothing 2,0$  m
- › FTM integrated turntables from  $\varnothing 1,2$  m up to  $\varnothing 11,0$  m for SAC
- › FTM integrated turntables from  $\varnothing 1,5$  m up to  $\varnothing 2,0$  m for FAC with transparent top
- › Integration of energy chain, exhaust and cooling systems, or customer specific items
- › Integrated dynamometers and rollers, turning or fixed position
- › Mobile dynamometers on top of turntable or floor
- › FC06.1 controller with independent software (SCPI commands)
- › Controllable with common EMC software



### FAM – Frankonia Antenna Mast

The FAM is Frankonia's standard antenna mast solution compliant according to CISPR 16-1-4. For customers' convenience, the Frankonia antenna mast is equipped with wheels and can be folded to enable easy transportation and handling. To reduce unintentional reflections, the masts are made of fiberglass and plastic materials. Any reflecting materials have been reduced to a minimum.

### FBM – Frankonia Boresight Antenna Mast

Based on the FAM antenna mast, the FBM boresight antenna mast is compliant with ANSI C63.4 and CISPR 16-1-4 that includes an advanced tilt function. To offer full flexibility, the tilt function can be switched off, so that the FBM operates as a standard mast. Within the tilt function, the FBM software automatically calculates the tilt angle in accordance with the antenna specific reference point, as well as distance, position and size of the EUT and monitors the complete test procedure.

### Range of Products

- › FAM standard antenna mast (CISPR)
- › FBM boresight antenna mast (FCC/ANSI & CISPR)
- › FSM antenna stand with polarization unit
- › FC06.1 controller with independent software (SCPI commands)
- › Controllable with common EMC software

# Frankonia Solutions

We realize your project with perfection

Frankonia starts from the very first moment with planning, technical drawings, coordination and definition that meets our customers' individual demands. Due to the solution ambitiousness, Frankonia provides excellent expertise in every stage of a project. Frankonia's project business convinces with its in-house project management, engineering and manufacturing, research and development, as well as installation and implementation and provides the latest technology at highest quality.

## Consulting

- Frankonia provides precise knowledge of state-of-the-art Anechoic Chamber and Test System solutions with the latest technology and highest quality, while considering today's and future standards. Together with our customers, we define customized projects, provide technical details, project timeline and complete drawings. Herewith, in every single phase of the project, we ensure a perfect solution.

## Project Management

- From the first moment to the final handover, our project management takes care of the project and represents the central interface between Frankonia's scope of delivery and building related parties. Thus, we meet our customers' requirements without compromises.

## Engineering

- Frankonia's engineering ensures that our customers' requirements will be implemented impeccably from a single product up to a complete solution. Having our own engineering guarantees the quality and technology level that our customers expect. Herewith, Frankonia claims to be a competent solution partner.

## Research & Development

- Frankosorb® is Frankonia's unique absorber innovation that defines the leading standard for absorber technologies. Our continuous research on materials, a proper adaptation to our customers' requirements, as well as the respect of future standards put Frankonia's R&D department to the core when it comes to providing long-term efficient and trustful chamber solutions.

## Manufacturing

- Frankonia runs a stand-alone production network and constantly invests in innovative technologies and latest manufacturing equipment to meet our customers' as well as our own expectations. Having our own manufacturing resources, which enable us to consequently provide the highest production quality and accuracy, distinguishes Frankonia from others. Moreover, it allows us to be independent and flexible in time.

## Implementation

- Our own European installation team ensures a proper implementation and installation of single products up to complete solutions that are engineered, developed and manufactured according to Frankonia's modular and prefabricated standards. Offering a complete scope of products and a broad range of international capabilities verifies Frankonia to be named as the trusted turnkey solution provider.

## Solution

- With more than 30 years experience to date, Frankonia's goal is to transform our customers' individual requirements into reliable state-of-the-art solutions, always considering today's and future standards and test related specifications. We offer our expertise and innovation to customers seeking for complete solutions with leading ambitions. Because we know, only a complete and comprehensive solution can create and maintain long-term satisfaction.

## Frankonia Group

The unique and trustworthy partner  
for EMC solutions worldwide.

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