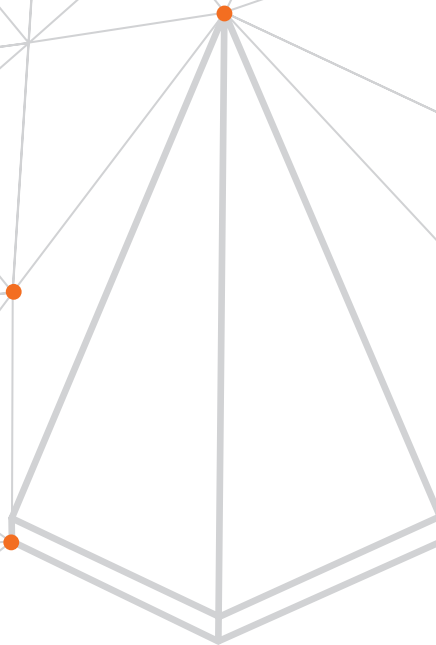
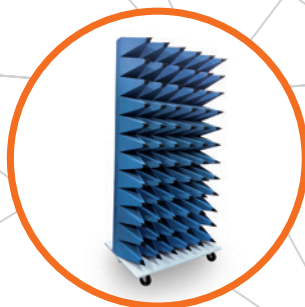
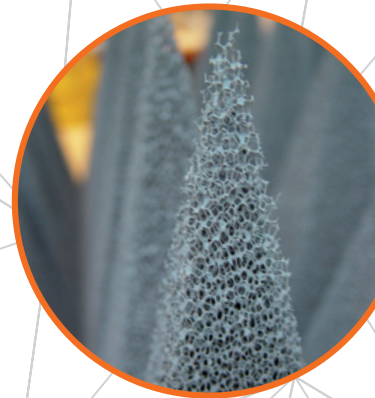
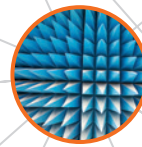
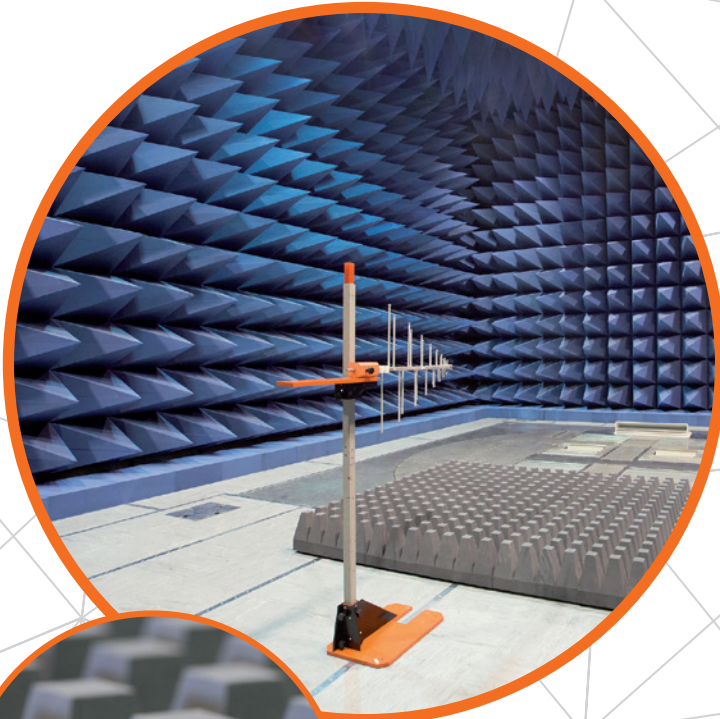


# HYPERLOSS ABSORBERS

PRODUCT  
OVERVIEW





## Introduction

Welcome to our Hyperloss Absorbers catalog presenting all our Absorbers in one place. The catalog is designed to guide you through our full range, helping you to select the right anechoic materials to suit your testing needs.

Part of the Microwave Vision Group (MVG) family, Advanced ElectroMagnetics, Inc. (AEMI), has over 35 years' experience in the Antenna and EMC testing industries and has become one of the world's top manufacturing experts in Hyperloss Absorbers. Our Hyperloss Absorbers meet the latest standards for accreditation, with independent testing completed by approved 3<sup>rd</sup> party organizations. They can be customized to fit any anechoic or shielded room chamber, from a small telecoms chamber to a large aircraft chamber, which can also be supplied by MVG.

We offer a worldwide service and support network, so no matter where you're located, we can collaborate with you. If you'd like to speak with one of our experts about our Hyperloss Absorbers, anechoic and shielded rooms or anything else in relation to Antenna and EMC measurement, then please look up your nearest local office by visiting

[www.mvg-world.com/mvg-offices](http://www.mvg-world.com/mvg-offices)

**Our mission: to offer you the broadest choice of Antenna Measurement and EMC testing solutions.**



# Innovative Absorbers: Made to Last

Advanced ElectroMagnetics, Inc. (AEMI) has been serving the RF and EMC communities for 30 years. While AEMI's primary focus is on our strong customer relationships, we have a solid theoretical knowledge base that has allowed us to grow into one of the top absorber and anechoic chamber manufacturers in the world.




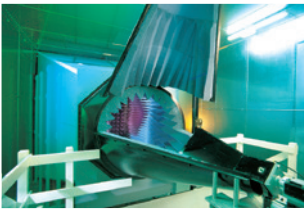
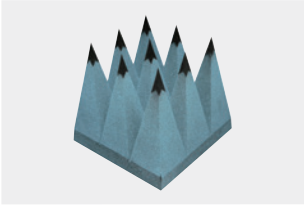

## Did you know?

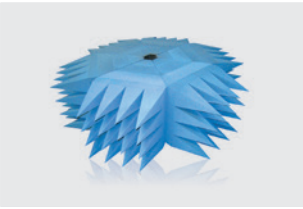
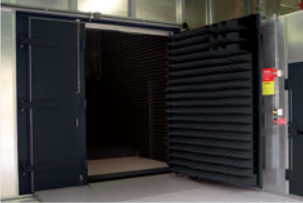
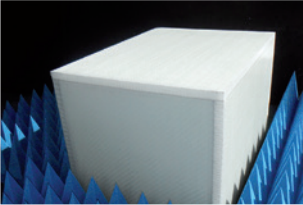
AEMI was founded in 1980 by Gabriel Sanchez and Leland Hemming, author of the well-known "Electromagnetic Anechoic Chambers: A Fundamental Design and Specification Guide."

## 1/ THE ABILITY TO ADAPT OFF-THE-SHELF ABSORBERS TO MEET SPECIFIC NEEDS

Our ability to offer individual solutions to each of our customers characterizes AEMI's working philosophy. We don't just provide a selection of standard absorbers; we understand our customers' needs and use our extensive industry knowledge and state-of-the-art capabilities to find the best solution.

### Providing customized solutions

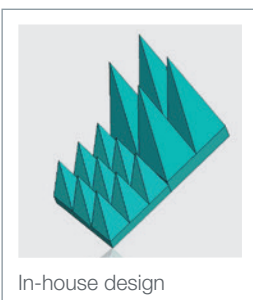
	OFF-THE-SHELF PRODUCT	SPECIFIC REQUIREMENT	SOLUTION
	<ul style="list-style-type: none"><li>• Portable RF wall panels</li></ul>	<ul style="list-style-type: none"><li>• High power target wall</li></ul>	<ul style="list-style-type: none"><li>• Medium power reticulated absorbers</li><li>• Permanently mounted fans</li></ul>
	<ul style="list-style-type: none"><li>• Tapered chambers</li></ul>	<ul style="list-style-type: none"><li>• Rectangular &amp; custom-shaped chambers</li></ul>	<ul style="list-style-type: none"><li>• Cost effective multiple units</li><li>• Production line antenna testing</li></ul>
	<ul style="list-style-type: none"><li>• Pyramidal absorbers</li></ul>	<ul style="list-style-type: none"><li>• Tethered fire suppression</li></ul>	<ul style="list-style-type: none"><li>• Designed to solve specific application issues</li></ul>
	<ul style="list-style-type: none"><li>• All absorbers</li></ul>	<ul style="list-style-type: none"><li>• Cover systems, custom colors, treatments and coatings</li></ul>	<ul style="list-style-type: none"><li>• Specially-engineered coatings for specific applications</li><li>• New rubberized treatment now available for increased durability and weather resistance</li></ul>

OFF-THE-SHELF PRODUCT	SPECIFIC REQUIREMENT	SOLUTION
	<ul style="list-style-type: none"> <li>• All absorbers</li> <li>• Shapes</li> </ul>	<ul style="list-style-type: none"> <li>• Custom-cut shapes to accommodate unique treatments</li> </ul>
	<ul style="list-style-type: none"> <li>• Shielded chambers</li> <li>• Avionics &amp; aerospace shielding</li> </ul>	<ul style="list-style-type: none"> <li>• Component &amp; system shielding</li> <li>• Mixed-use FOD &amp; EMI</li> </ul>
	<ul style="list-style-type: none"> <li>• Extra Heavy Duty Walkway Absorber</li> </ul>	

## 2/ QUALITY SYSTEMS: DESIGN, PRODUCTION AND DELIVERY

As of September 30<sup>th</sup> 2016, we have a new and bigger facility of 52,900 ft<sup>2</sup>, located in San Diego, CA (USA). The integrated quality management processes are run using the most modern design, production and logistic equipment available.

### OUR CAPABILITIES



#### 1 Design

- Dielectric properties testing and software simulation predict absorber performance, which is then verified by testing.
- Absorber geometries have been refined over 30 years and hundreds of installations.
- Modeling software verifies individual absorber and anechoic chamber performance.
- VSWR, Field Probing and other methods verify design performance at the system level.



#### 2 Cutting

- AEMI works closely with high tech material manufacturers and uses the latest CAD-CAM software and CNC-controlled foam cutting equipment to ensure consistent geometries and dimensions.
- An in-house, custom-contour saw allows for the additional flexibility required by short, custom shapes or emergency runs.
- In-line trimming saws assure final geometry and dimensional stability.



Single dip impregnator

### 3 Loading

- A unique chemical composition creates the excellent electrical performance and fire retardant capabilities in our absorber products.



- **Loading consistency is critical for both electrical and fire retardant capabilities. Our unique single dip system binds the fire retardants in the carbon matrix for superior fire retardant life, and also minimizes salt leach and reduces flammability. As opposed to double dip systems that try to load the fire retardants into foam that has already been impregnated with carbon, our proprietary single dip system, incorporates all chemicals at once for greater consistency.**
- **The speed of our single dip impregnator is computer-controlled, enabling us to maintain uniform torque at any speed, ensuring the most uniform lossy dielectric distribution possible.**



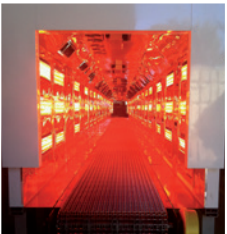
Flammability testing

### 4 Flammability and NRL Testing

- Impregnation consistency is critical for the best flammability characteristics, so in addition to the single dip system and custom impregnation equipment, AEMI tests every production batch, where applicable, to meet NRL 8093 Tests 1, 2 and 3.



**Our absorber also meets the standards of TI #2693066, MIT MS-8-21, and UL 94.**



Halogen-fired drying line

### 5 Drying

- Our in-line drying oven uses a computer-controlled halogen-fired system, allowing for even heating and precise drying time.



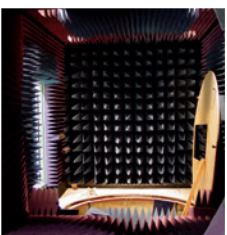
**We invested in a halogen technology oven for its easy temperature regulation and improved heat uniformity. Many manufacturers still use the older convection technology.**



Assembly station

### 6 Assembly

- Our state-of-the-art assembly stations provide unique custom solutions including Chebyshev patterns, custom chamber configurations, special tapers, custom door treatments, pop up covers, and equipment treatments.



Chebyshev absorbers

### 7 Treatment

- Special treatment can be made at this stage to answer special needs, such as door treatment, covers or custom Chebyshev patterns.



Coating line



Custom color absorbers with rubberized coating

## 8 Coating

- We use motorized coating lines with in-line flash dryers to ensure a professional finish.



**The new rubberized coating is a moisture resistant spray-on vinyl treatment that increases absorber durability and lifespan. It can be added to any pyramidal, wedge, convoluted or laminated absorber products.**



- **Consistent colors enhance the cosmetic appearance of your chamber.**
- **Custom coatings and colors are available for rubberized version.**
- **Rubberized coating improves durability.**



Coax test fixture



Arch testing

## 9 Final Absorber Reflectivity Testing

- The dielectric properties of our absorbers are tested using a NIST-designed fixture and software.
- We perform functional coax and arch testing. The coax fixture is over 10 meters long and is made in accordance with IEEE Standard 1128-1998. Three arch configurations measure the energy reflected by the absorber from 1 GHz to 18 GHz.



Delivery



Installation

## 10 Delivery & Installation

- AEMI's shipping department can arrange dedicated trucks, rail and ocean freighters to assist our customers worldwide.
- Our experienced installation managers supervise installations in countries around the world and are supported by dedicated project managers, product support engineers and numerous local representatives.

### Quality Control

Extensive in-process verification and testing is conducted throughout the manufacturing process. Per our ISO 9001 procedures, critical verifications and tests include:

- |                                     |                               |                    |
|-------------------------------------|-------------------------------|--------------------|
| • Incoming material inspections     | • Drying process verification | • Coax tests       |
| • Mix testing                       | • Dimensional verification    | • Final inspection |
| • Carbon testing                    | • NRL testing                 |                    |
| • Impregnation process verification | • Arch tests                  |                    |

### 3/ CONTINUOUS PRODUCT INNOVATION - BETTER FLEXIBILITY & QUALITY

**AEMI is continuously innovating and integrating new partners.**

#### 1/ Supplier partnership

An absorber's initial physical characteristics come from its foam substrate. AEMI has worked very closely with leading foam chemists to develop custom foam that is specifically designed to address unique conditions.

The new matrix formula has an extended "memory" which improves the stability of the absorbers throughout repeated flexing. This foam matrix also improves the durability of the absorbers in high traffic areas (walkways) and reduces "tip drooping" of larger absorbers.

This new formula, called HyPyr-Flex, improves our absorber's durability while maintaining its outstanding dielectric properties.

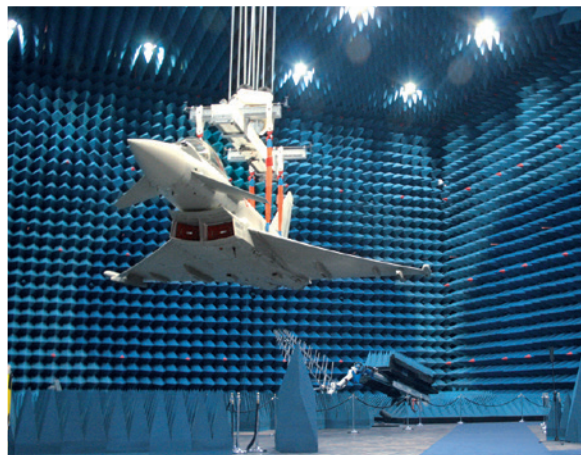
#### 2/ Internal partnership with ORBIT/FR, REMC & MVG Industries.

AEMI joined the ORBIT/FR family in 1997. ORBIT/FR specializes in the conception, manufacture and installation of antenna and RF test and measurement systems. Many of these test systems are installed in anechoic chambers that utilize AEMI's expertise in absorber and full turn-key chamber solutions.

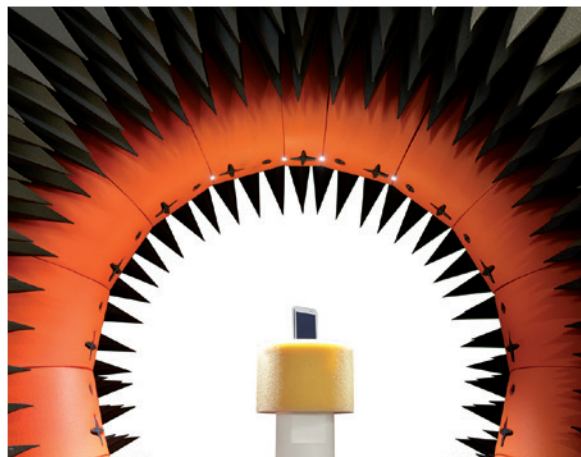
In 2008, ORBIT/FR and AEMI joined SATIMO, creating The Microwave Vision Group. SATIMO specializes in unique multi-probe array systems which provide fast electromagnetic field scanning. The Microwave Vision Group provides measurement and test solutions for the Telecommunications, Automotive, Academic, Aerospace and Defense markets.

Our knowledge spans test systems, absorbing materials, and full chamber production. We offer integrated solutions and the combination of our diverse portfolios helps to prevent problems commonly created by using several unaffiliated vendors to complete your project.

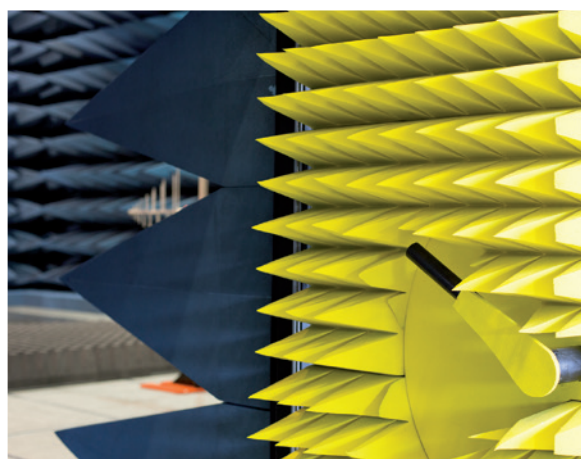
FULL TURN-KEY SOLUTION DELIVERED  
BY THE MICROWAVE VISION GROUP



Chamber and positioner



Measurement system



Chamber with special door absorbers

## AEMI's Customer Satisfaction Program

### Offering reliable products and services.

#### 1 Quality management

AEMI is a registered ISO 9001-2008 company. This Quality Management System ensures that:

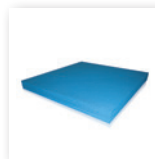
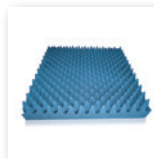
- Our processes are focused on consistency and continuous improvement.
- Our products are designed to meet our customers' needs.

#### 2 Quality policy

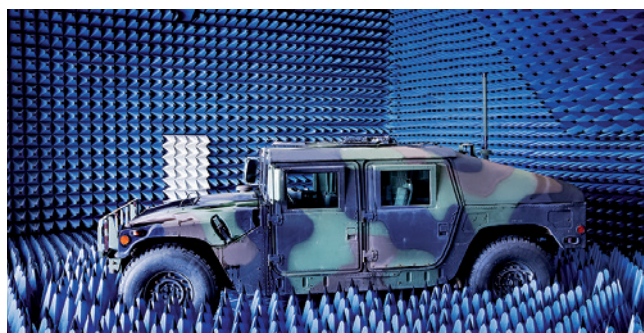
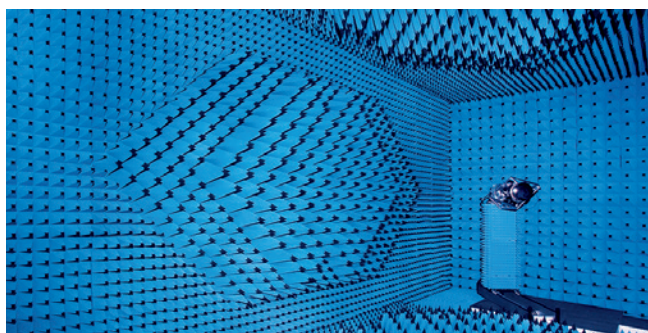
It is the primary objective and commitment of Advanced ElectroMagnetics, Inc. to provide products and services of unsurpassed quality that meet or exceed customer requirements. We create an environment that enables each employee to apply the proven benefits of our continuous improvement process. This will ensure accomplishment of our quality objectives and goals, and total customer satisfaction.



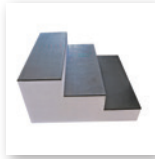
## Quick guide



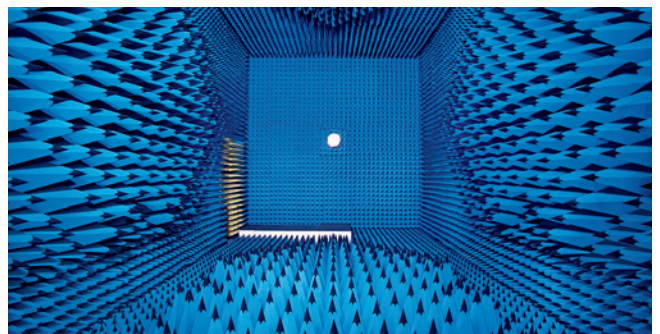
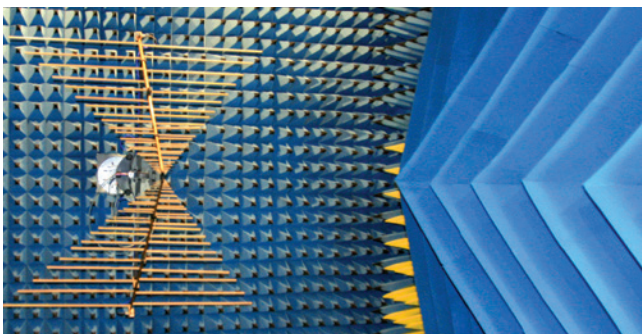
Product Configuration	Pyramidal Absorbers	Wedge Absorbers	Convuluted Absorbers	Laminated Absorbers	EMC Absorbers	Ultra Hybrid Absorbers
Shape	Conventional and Twisted Pyramid	Wedge	Convuluted	Flat	Truncated Pyramid	Hybrid Pyramid
Frequency Band	30 MHz to 40 GHz	125 MHz to 18 GHz	3 GHz to 30 GHz and higher	400 MHz to 18 GHz and above	20 MHz to 40 GHz	30 MHz to 40 GHz
Standard Base Size	2' x 2' (60.96 cm x 60.96 cm)	<ul style="list-style-type: none"> <li>2' x 2' (60.96 cm x 60.96 cm)</li> <li>2' x 4' (60.96 cm x 121.92 cm)</li> </ul>	2' x 2' (60.96 cm x 60.96 cm)		1.97' x 1.97' (60 x 60 cm)	
Height	4" to 96" (10.2 cm to 243.8 cm)	4" to 48" (10.2 cm to 121.9 cm)	1.5" to 4" (3.8 cm to 10.2 cm)	0.25" to 9" (0.6 cm to 22.9 cm)	12" to 30" (30.5 cm to 152.4 cm)	30 cm to 75 cm
Operating Conditions	<ul style="list-style-type: none"> <li>Temperature: 70°F +/-5° (21°C +/-3°)</li> <li>Relative humidity: 55% RH +/-15%</li> </ul>					<ul style="list-style-type: none"> <li>Temperature: 90°C</li> </ul>
For use in	Indoor					Indoor/Outdoor

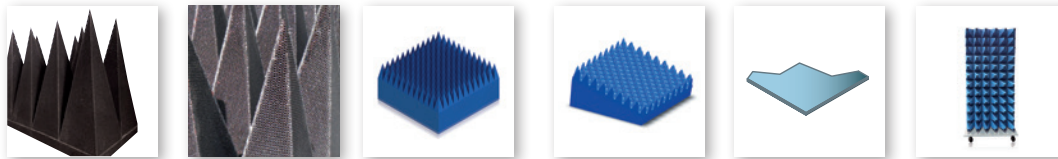


## Quick guide

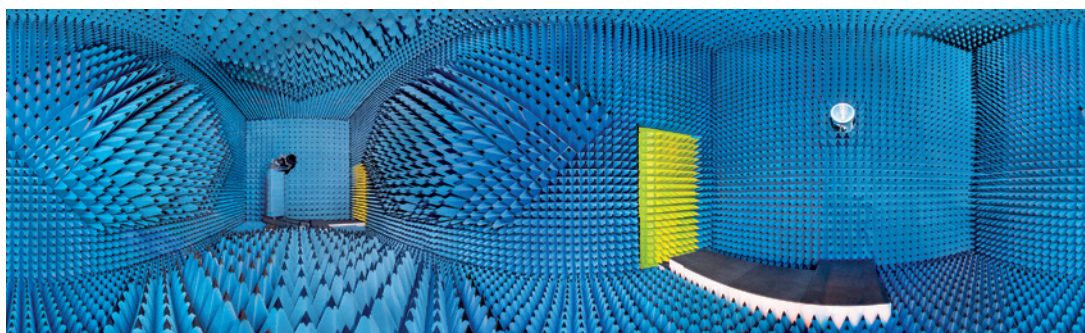


Product Configuration	Walkway Absorbers	Extra Heavy Duty Walkway Absorbers	Clean Room RF Absorbers	Rubberized Absorbers	Weatherproof Absorbers	Ventilated Absorbers
Shape	<ul style="list-style-type: none"> <li>Flat/Step</li> <li>Custom</li> </ul>	<ul style="list-style-type: none"> <li>Flat</li> <li>Step</li> </ul>	<ul style="list-style-type: none"> <li>Pyramid</li> <li>Convoluted</li> <li>Wedge</li> <li>Custom</li> <li>Laminated</li> </ul>		<ul style="list-style-type: none"> <li>Type 1: All absorber configurations available</li> <li>Type 2: All absorber configurations available</li> </ul>	<ul style="list-style-type: none"> <li>Pyramid</li> <li>Wedge</li> <li>Flat</li> </ul>
Frequency Band	250 MHz to 30 GHz	<ul style="list-style-type: none"> <li>25 MHz to 6 GHz</li> <li>Higher bands possible, please consult our specialists</li> </ul>	125 MHz to 40 GHz		125 MHz to 18 GHz	125 MHz to 40 GHz
Standard Base Size	2' x 2' (60.96 cm x 60.96 cm)	2' x 4' (60.96 cm x 121.92 cm)	2' x 2' (60.96 cm x 60.96 cm)			
Height	<ul style="list-style-type: none"> <li>Standard: 4" to 24" (10.2 cm to 61 cm)</li> <li>Custom sizes available up to 72"</li> </ul>	<ul style="list-style-type: none"> <li>Standard: 4" to 24" (10.2 cm to 61 cm)</li> <li>Custom sizes available</li> </ul>	<ul style="list-style-type: none"> <li>Standard: 4" to 48" (10.2 cm to 121.9 cm)</li> <li>Custom sizes available up to 96" (243.8 cm)</li> </ul>	Up to 96" (243.8 cm)	<ul style="list-style-type: none"> <li>4" to 36" (10.2 cm to 91.4 cm)</li> <li>Type 2 up to 96" (243.8 cm)</li> </ul>	4" to 72" (10.2 cm to 121.9 cm)
Operating Conditions	<ul style="list-style-type: none"> <li>Temperature: 70°F +/-5° (21°C +/-3°)</li> <li>Relative humidity: 55% RH +/-15%</li> </ul>				<ul style="list-style-type: none"> <li>Same as the applicable absorber. Weatherproofing provides limited water resistance.</li> </ul>	<ul style="list-style-type: none"> <li>Temperature: 70°F +/-5° (21°C +/-3°)</li> <li>Relative humidity: 55% RH +/-15%</li> </ul>
For use in	Indoor	Indoor/Outdoor	Indoor		Indoor/Outdoor	Indoor





Medium Power Hollow Absorbers	High Power Absorbers	Low Frequency Absorbers	Millimeter Wave Absorbers	Tuned Frequency Absorbers	Portable RF Wall Modules
Conventional pyramid: AEP-18 to AEP-60	Conventional pyramid: AEP-24 to AEP-36	Conventional pyramid with higher base	Convoluted	Flat	Custom
30 MHz to 40 GHz	80 MHz to 50 GHz	30 MHz to 1000 MHz	12 GHz to 95 GHz	Reflectivity: from 20 dB @ 10 GHz	250 MHz to 40 GHz (dependent upon absorber type chosen)
2' x 2' (60.96 cm x 60.96 cm)					-
18" to 60" (45.7 cm to 152.4 cm)	<ul style="list-style-type: none"><li>• 24", 36"</li><li>• Customizable sizes available upon request</li></ul>	12" to 48" (30.5 cm to 121.9 cm)	4" to 12" (12.7 cm to 30.5 cm)	Dependent upon frequency, i.e. X-band = 0.172" Nominal	Standard: <ul style="list-style-type: none"><li>• 2' x 8' (60.96 cm x 243.84 cm)</li><li>• 4' x 8' (121.92 cm x 243.84 cm)</li><li>• Custom sizes</li></ul>
<ul style="list-style-type: none"><li>• Temperature: 70° F +/- 5° (21° C +/- 3°)</li><li>• Relative humidity: 55% RH +/-15%</li></ul>	<ul style="list-style-type: none"><li>• Temperature: up to 176°C (350° F)</li><li>• Relative humidity: 55% RH +/-15%</li></ul>	<ul style="list-style-type: none"><li>• Temperature: 70°F +/-5° (21°C +/-3°)</li><li>• Relative humidity: 55% RH +/-15%</li></ul>		<ul style="list-style-type: none"><li>• Temperature: -22° F to +158° F (-30° C to +70° C)</li></ul>	<ul style="list-style-type: none"><li>• Temperature: 70°F +/-5° (21°C +/-3°)</li><li>• Relative humidity: 55% RH +/-15%</li></ul>
Indoor				Indoor/Outdoor	Indoor



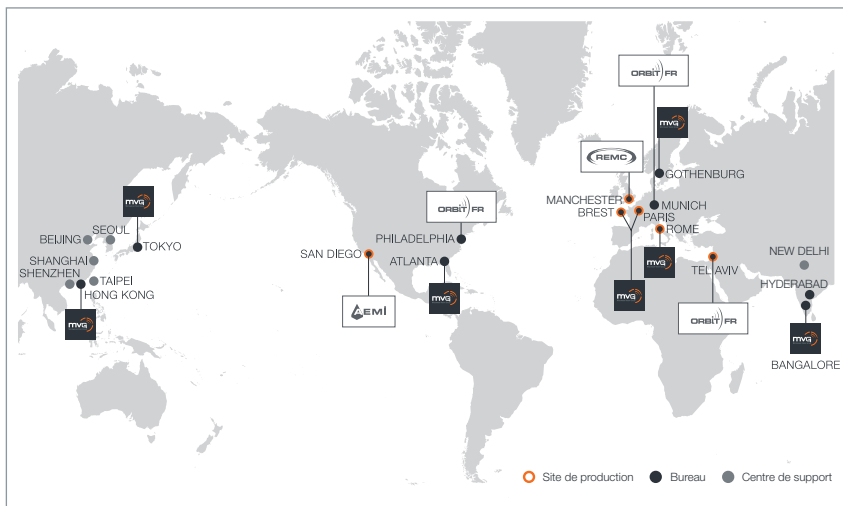
## About AEMI

AEMI specializes in the design and manufacture of absorbers and anechoic chambers. Founded in 1980, the company, together with ORBIT/FR, SATIMO & Rainford EMC Systems, is now part of The Microwave Vision Group, delivering full turn-key test solutions for the microwave community.

## AEMI customer satisfaction program

Our customer support program includes before and after sales service:

- A technical support engineer is dedicated to each product or geographic area.
- A maintenance and support team guarantees that customers get quick and efficient support from the installation stage onwards.



## CONTACT US:

### North America

#### AEMI

1320 Air Wing Road, Suite 101  
San Diego, CA 92154, USA  
Tel: +1 619 449 9492  
Fax: +1 619 449 1553

#### Orbit/FR Corporate Headquarters

650 Louis Drive, Suite 100  
Warminster, PA 18974, USA  
Tel: +1 215 674 5100  
Fax: +1 215 674 5108

#### MVG Inc.

2105 Barrett Park Dr., Suite 104  
Kennesaw, GA 30144, USA  
Tel: +1 678 797 9172  
Fax: +1 678 797 9173

### EMEA

#### Rainford EMC Systems Limited

Unit 400, Haydock Lane  
WA11 9TH Haydock,  
UNITED KINGDOM  
Tel: +44(0)1942296190

#### MVG (SATIMO) Industries Headquarters

17, avenue de Norvège  
91140 Villebon Sur Yvette, FRANCE  
Tel: +33 (0)1 69 29 02 47  
Fax: +33 (0)1 69 29 02 27

#### MVG (SATIMO) Industries Bretagne

Technopole Brest Iroise  
Z.I. du Vernis  
225 rue Pierre Rivoalon  
29200 Brest, FRANCE  
Tel: +33 (0)2 98 05 13 34  
Fax: +33 (0)2 98 05 53 87

#### MICROWAVE VISION Italy

Via Castelli Romani, 59  
00040 Pomezia (Rome), ITALY  
Tel: +39 06 89 99 53 11  
Fax: +39 06 89 99 53 24

#### ORBIT/FR Germany

Johann-Sebastian-Bach-Str. 11  
Vaterstetten 85591, GERMANY  
Tel: +49 (0)8106 99606 0  
Fax: +49 (0)8106 99606 77

#### MICROWAVE VISION Sweden

PO Box 35  
44121 Alingsås Gothenburg, SWEDEN  
Tel: + 46 31 402430  
Fax: + 46 31 402430

#### ORBIT/FR Israel

1 Geshet Ha-Ets St.,  
P.O. Box 12096, 3877701  
Emek Hefer Industrial Park,  
ISRAEL  
Tel: +972 74 7130130  
Fax: +972 4 6247375

#### MICROWAVE VISION Corporate Headquarters

47, Boulevard St Michel  
75005 Paris, FRANCE  
Tel: +33 (0)1 75 77 58 50  
Fax: +33 (0)1 46 33 39 02

### Asia

#### MICROWAVE VISION LIMITED Hong Kong

Suite 702, 7<sup>th</sup> floor Cyberport 1  
100 Cyberport Road  
Pok Fu Lam, HONG KONG  
Tel: +852 2989 6128  
Fax: +852 2989 6108

#### MICROWAVE VISION Japan

#101 Confort Murashi-Nakahara,  
2-10-32, Shimokodanaka,  
Nakahara-ku, Kawasaki-city  
211-0041 KANAGAWA, JAPAN  
Tel: +81 44 948 9301  
Fax: + 81 44 766 2775



Powered by **AEMI**

Contact your local sales  
representative for more  
information

[www.mvg-world.com/absorbers](http://www.mvg-world.com/absorbers)  
[salesteam@mvg-world.com](mailto:salesteam@mvg-world.com)

