AR Systems

rf/microwave instrumentation

We're with you all the way

How to Use AR's Interactive Catalog

The following links have been added throughout the catalog to help you navigate and easily find what you're looking for:

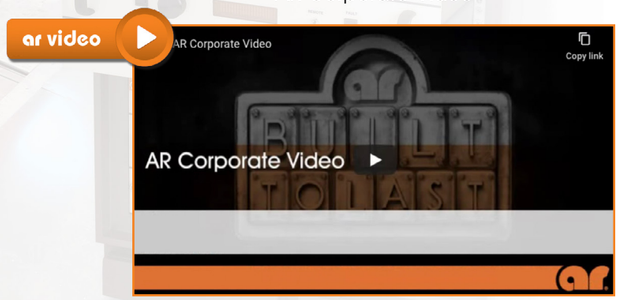
Table of Contents — Easily navigate to the section of the catalog you are interested in by clicking in the Table of Contents.

Orange & Underlined Text — Click on any text that is orange & underlined to visit the relevant page on the AR website.

www — Learn more about a product by clicking on this icon and visiting the product page on AR's website.

ar video — Watch a video by clicking on this icon.

AR Corporate Video



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Individual specification sheets for all models are available for download from our website: www.arworld.us

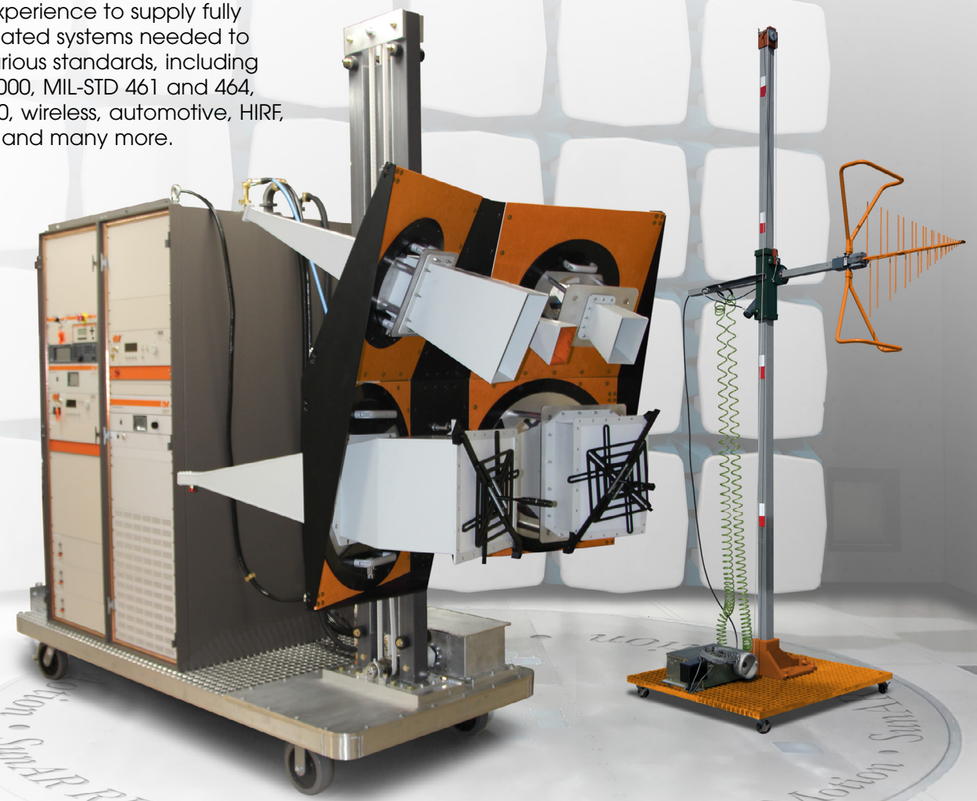
AR Systems—
Fully Integrated Test Systems from DC to 50 GHz

EMC test systems from AR are known for their dependability. The knowledge gained through the years has translated into a number of benefits that customers value: ease of use, quality of construction, reliability, and affordability.

Why an AR System Is the Smart Choice

- Seamless integration with either emcware or Nexio software and Comtest chambers
- Developed by AR engineers with extensive experience in a wide range of EMC test standards
- Reduced test-lab downtime during system integration and training
- Power performance guarantee—AR manufactures the majority of the critical system components, allowing us to match and guarantee them to meet your requirements.
- Fully tested before being shipped and upon installation
- Global support and service

AR can deliver a solution that integrates all your testing needs: radiated and conducted immunity, radiated and conducted emissions…whatever you need. We have the expertise and experience to supply fully automated systems needed to test various standards, including IEC 61000, MIL-STD 461 and 464, DO-160, wireless, automotive, HIRF, HERO, and many more.



For information about Specifying RF/Microwave Power Amplifiers for EMC Testing, see Application Note—Specifying RF/Microwave Power Amplifiers for EMC Testing.

AR prides themselves on working with their customers to ensure that you get exactly what you need. By fully understanding your specifications and requirements, we are able to supply a system that meets all of them. In order to help streamline the process, AR has developed numerous *Predefined Systems* to use as building blocks for meeting common requirements. We can easily tailor these or develop fully customized systems from the ground-up to satisfy whatever needs you have. During the system development process, we will—

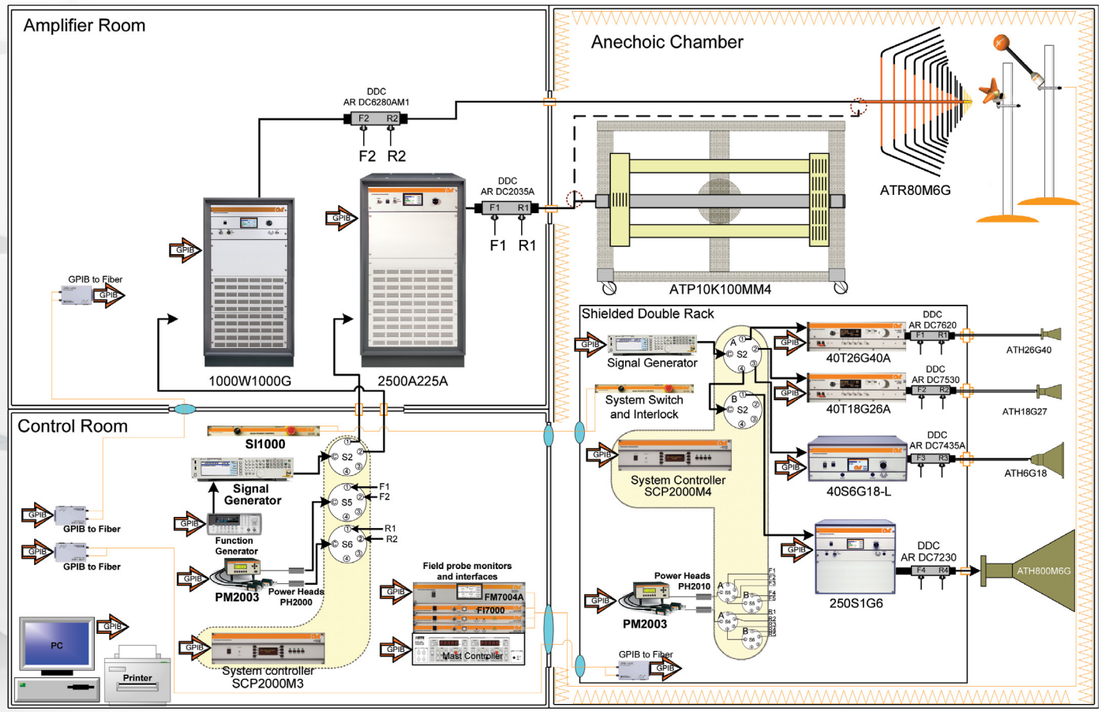
- Identify an overall solution for your specific requirements
- Match equipment with appropriate components and guarantee performance
- Evaluate all packaging options, including proper rack sizing, cooling options (air conditioning, blowers, or liquid), AC power distribution, control, and shielding
- Select the appropriate cabling, coax, or waveguide to match the amplifiers and accessories within the system
- Determine the best method of automation, including signal routing (RF switching) and the integration of emcware or Nexio EMC test software
- Propose transient test equipment
- Propose emissions test equipment
- Propose a chamber solution

After your system has been designed and developed, we provide on-site installation and training according to your schedule. Our team of experienced system integrators will go step by step, explain how your system operates, and provide support through your testing procedures.

If you have existing equipment, we can integrate it into a system or leave space for future expansion to higher frequencies and power levels.

AR has the experience and ability to take the integration as far as you are willing to go, from a simple racking of equipment to a fully integrated state of the art facility, including installation and satisfaction guaranteed.

Schematic of a 200 V/m System
10 kHz–40 GHz



Producing a system that excels in performance and reliability is easy when you have System Design and Applications Engineers with years of experience, Customer Service with global reach, and products that are known for performance and quality. AR has this very organization and product offerings. AR is here for you at each step to ensure that the system design, integration, and support of your EMC or RF system complies with your goals. AR has designed hundreds of EMC systems covering frequency ranges from DC to 50 GHz, and power levels ranging from less than 10 V/m to thousands of V/m, in compliance with military, aviation, commercial and automotive test standards. AR also offers RF test systems, for applications such as wireless component reliability testing. Below is a list of predefined systems that are available for purchase or may be used as a starting point for your designs. These systems are designed to meet the requirements of a number of today's common EMC test standards. Depending on your needs, these systems can then be tailored and customized to meet your specific requirements as well as additional test requirements.

Choose an AR Predefined System... or let us customize to your specs.

IEC 61000-4-3 80 MHz to 6 GHz		Field Level (CW)		
		3 V/m	10 V/m	30 V/m
Test Distance	2 meters		SSIEC10V2M	SSIEC30V2M
	3 meters	SSIEC3V3M	SSIEC10V3M	SSIEC30V3M

ISO 11451-2		Field Level (CW)		
		50 V/m	100 V/m	200 V/m
Frequency Range	10 kHz to 18 GHz	SSISOV50V10K18G	SSISOV100V10K18G	SSISOV200V10K18G
	20 MHz to 18 GHz	SSISOV50V20M18G	SSISOV100V20M18G	
	30 MHz to 18 GHz			SSISOV200V30M18G

*2-meter test distance

ISO 11452-2		Field Level (CW)		
		50 V/m	100 V/m	200 V/m
Frequency Range	10 kHz to 18 GHz	SSISOC50V10K18G	SSISOC100V10K18G	SSISOC200V10K18G
	80 MHz to 18 GHz	SSISOC50V80M18G	SSISOC100V80M18G	SSISOC200V80M18G

*1-meter test distance

MIL-STD-461		Field Level (CW)		
		10 V/m	50 V/m	200 V/m
Frequency Range	10 kHz to 18 GHz	SSMIL10V10K18G	SSMIL50V10K18G	SSMIL200V10K18G
	2 MHz to 18 GHz	SSMIL10V2M18G	SSMIL50V2M18G	SSMIL200V2M18G
	2 MHz to 40 GHz	SSMIL10V2M40G	SSMIL50V2M40G	SSMIL200V2M40G

*1-meter test distance

RF Distribution (HTOL/Burn-in Systems)	>3W		
	8 Channel	16 Channel	80 Channel
Frequency Range 0.7 to 6 GHz	RFDS-8ch	RFDS-16ch	RFDS-80ch

AR's High Intensity Radiated Fields (HIRF) Equipment Designed To Meet Tomorrow's Needs

Inherent danger associated with High Intensity Radiated Fields (HIRF) is becoming increasingly evident with the growing complexity of military and aircraft systems. Sources of HIRF include high power radars, weapons, and naturally occurring environmental conditions. Unprotected equipment can fail with potentially devastating results. To prevent possible catastrophes, qualify them for harsh HIRF environments by testing the equipment with AR amplifiers and power-matched antennas.

AR's ability to provide test systems with the highest-power, wideband amplifiers and power-matched antennas to produce these HIRF and other high field environments is AR's claim to fame.

Through SunAR RF Motion, AR can offer a broad range of complimentary positioning equipment and reverberation tuners for EMC and HIRF testing, all from one company.

To complete the product offering, reverberation and anechoic chambers are also available through AR's partnership with Comtest.

Whether you're generating HIRF per MIL-STD-464 testing, DO-160 or recreating RF/microwave environments for intelligence, counterintelligence, or jamming measures and infrastructure susceptibility testing, AR has the range of solutions to make you feel at ease.

Available HIRF System Components

RF Power Amplifiers for CW Tests

Model 16000A225A-A, RF Amplifier, 10 kHz–225 MHz, 16,000 watts
Model 10000W1000A, RF Amplifier, 80 MHz–1,000 MHz, 10,000 watts
Model 3000S1G2z5, RF Amplifier, 1–2.5 GHz, 3,000 watts
Model 1500T2G8A, RF Amplifier, 2.5–7.5 GHz, 1,500 watts
Model 1500T8G18, RF Amplifier, 7.5–18 GHz, 1,500 watts
Model 200T18G26z5A, RF Amplifier, 18–26.5 GHz, 200 watts
Model 200T26z5G40A, RF Amplifier, 26.5–40 GHz, 200 watts

RF Power Amplifiers for Pulse Tests

Model 10000W1000A, RF Amplifier, 80 MHz–1,000 MHz, 10,000 watts
Model 8000SP1G2, RF Amplifier, 1–2 GHz, 8,000 watts
Model 6900TP2G4, RF Amplifier, 2–4 GHz, 6,900 watts
Model 7400TP4G8, RF Amplifier, 4–8 GHz, 7,400 watts
Model 8300TP8G12, RF Amplifier, 8–12 GHz, 8,300 watts
Model 5700TP12G18, RF Amplifier, 12–18 GHz, 5,700 watts

AR Antennas

Model ATP10K100M, Broadband Transmission Line, 10 kHz–100 MHz, 3,000 watts
Model ATR26M1G, Log-Periodic Antenna, 26 MHz–1,000 MHz, 20,000 watts
Model ATH800M6G, High-Gain Horn Antenna, 800 MHz–6 GHz, 2,300 watts
Model ATH2G8A-1, Horn Antenna, 2.5–7.5 GHz, 12,000 watts
Model ATH7G18, High-Gain Horn Antenna, 7.5–18 GHz, 2,800 watts
Model ATH18G27, High-Gain Horn Antenna, 18–26.5 GHz, 350 watts
Model ATH26G40, High-Gain Horn Antenna, 26.5–40 GHz, 240 watts

Other amplifiers and antennas available

Get More, Pay Less

Solid State Amplifier and Antenna Combos Generate up to 50 V/m Fields from 18–40 GHz for Far Less Cost than Traditional Setups

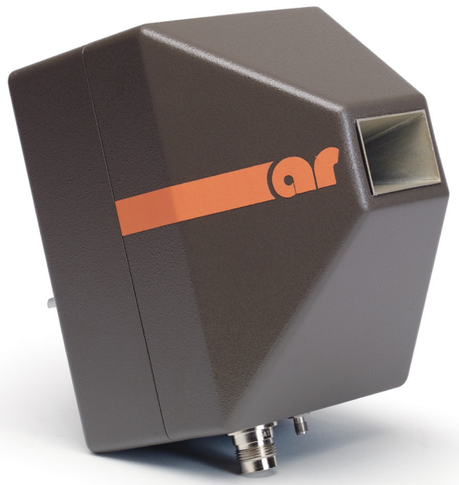
Solid State Amplifier and Antenna Combinations Generate up to 50 V/m
- 18–26.5 GHz and 26.5–40 GHz units
- 20 V/m and 50 V/m in each band

Numerous benefits over traditional Traveling Wave Tube Amplifier (TWTA) solution for low-level radiated immunity testing
- Fraction of the cost (~ 80% lower)
- Far higher MTBF (solid-state vs. TWTA)
- Improved harmonics specifications
- Longer warranty (3 vs. 1 year)

AA1000
- Provides RF routing, fault protection, and DC power for AA units.
- Includes RF and twinax power cable set (2 m and 4 m for each type) along with required bulkhead connectors.
- One AA1000 can be used with any AA unit

Can be used with AR's SC2000 and Keysight signal generators to create a turnkey solution from 18–40 GHz

Numerous Applications
- Radiated Immunity
- 5G
- Satellite and Experimental communications
- TWTA Replacements



"AA" Systems

Model	Frequency (GHz)	Field Strength (V/m)
AA18G26-20	18–26.5	20
AA18G26-50	18–26.5	50
AA26G40-20	26.5–40	20
AA26G40-50	26.5–40	50

Solid State Field Generating Systems

AA1000

Power Supply and Control

Primary Power (Universal; Selected Automatically):	100–240 VAC, 50/60 Hz
Connectors (Rack Unit):	
RF Input:	2.92 mm (K-type) female
RF Output:	2.92 mm (K-type) female
DC Output:	Twinax
Remote Interfaces:	
IEEE-488:	24-pin female
RS-232:	9-pin sub D (female)
Fiber optic:	ST Conn Tx and Rx RS-232
USB 2.0:	Type B
Ethernet:	RJ-45
Safety Interlock:	15-pin subminiature D
Cooling:	Forced air (self-contained fans)
Weight:	
Rack Unit:	4.5 kg (10 lb.)
Size (W x H x D):	48.3 cm x 8.9 cm x 53.3 cm 19 in. x 3.5 in. x 21 in.
Environmental:	
Operating Temperature:	5°C / +40°C Operating
Altitude:	up to 2,000 M
Shock and vibration:	Normal Truck Transport
Regulatory Compliance:	
EMC	EN 61326-1
Safety	UL 61010-1 CAN/CSA C22.2 #61010-1 CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
WEEE	Directive 2012/19/EU
Export Classification:	EAR99

AA18G26-20

18–26.5 GHz, 20 V/m

Rated Field Strength:	Minimum 20 V/m at 1 meter antenna distance
Maximum Amplifier Input:	+10 dBm max
Frequency Response:	18–26.5 GHz instantaneous
3 dB Beamwidth:	
AA18G26-20:	E Plane: 17.5 degrees H Plane: 17.8 degrees
3 dB Spot Size @ 1 m:	
AA18G26-20:	0.31 m x 0.31 m
Modulation Capability:	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Spurious:	Minus 65 dBc typical
Primary Power (Supplied by AA1000):	8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max
Connectors:	
RF Input:	2.92 mm (K-type) female
DC Input:	Twinax
Cooling:	Forced air (self-contained fans)
Weight:	
AA18G26-20:	2.5 kg (5.5 lb.)
Size (W x H x D):	
AA18G26-20:	12.1 cm x 18.4 cm x 17.8 cm 4.75 in. x 7.25 in. x 7 in.
Environmental:	
Operating Temperature:	5°C/+40°C
Operating Altitude:	up to 2,000 M
Shock and vibration:	Normal Truck Transport
Regulatory Compliance:	
EMC	EN 61326-1
Safety	UL 61010-1 CAN/CSA C22.2 #61010-1 CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
WEEE	Directive 2012/19/EU
Export Classification:	EAR99

AA18G26-50

18–26.5 GHz, 50 V/m

Rated Field Strength:	Minimum 50 V/m at 1 meter antenna distance
Maximum Amplifier Input:	+10 dBm max
Frequency Response:	18–26.5 GHz instantaneous
3 dB Beamwidth:	
AA18G26-50:	E Plane: 8.1 degrees H Plane: 9.5 degrees
3 dB Spot Size @ 1 m:	
AA18G26-50:	0.14 m x 0.17 m
Modulation Capability:	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Spurious:	Minus 65 dBc typical
Primary Power (Supplied by AA1000):	8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max
Connectors:	
RF Input:	2.92 mm (K-type) female
DC Input:	Twinax
Cooling:	Forced air (self-contained fans)
Weight:	
AA18G26-50:	2.7 kg (6 lb.)
Size (W x H x D):	
AA18G26-50:	12.1 cm x 18.4 cm x 35.6 cm 4.75in x 7.25in x 14in
Environmental:	
Operating Temperature:	5°C/+40°C
Operating Altitude:	up to 2,000 M
Shock and vibration:	Normal Truck Transport
Regulatory Compliance:	
EMC	EN 61326-1
Safety	UL 61010-1 CAN/CSA C22.2 #61010-1 CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
WEEE	Directive 2012/19/EU
Export Classification:	EAR99

AA26G40-20

26.5–40 GHz, 20 V/m

Rated Field Strength:	Minimum 20 V/m at 1 meter antenna distance
Maximum Amplifier Input:	+10 dBm max
Frequency Response:	26.5–40 GHz instantaneous
3 dB Beamwidth:	
AA26G40-20:	E Plane: 16.7 degrees H Plane: 18.3 degrees
3 dB Spot Size @ 1 m:	
AA26G40-20:	0.29 m x 0.32 m
Modulation Capability:	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Spurious:	Minus 65 dBc typical
Primary Power (Supplied by AA1000):	8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max
Connectors:	
RF Input:	2.92 mm (K-type) female
DC Input:	Twinax
Cooling:	Forced air (self-contained fans)
Weight:	
AA26G40-20:	2.5 kg (5.5 lb.)
Size (W x H x D):	
AA26G40-20:	12.1 cm x 18.4 cm x 15.2 cm 4.75 in. x 7.25 in. x 6 in..
Environmental:	
Operating Temperature:	5°C/+40°C
Operating Altitude:	up to 2,000 M
Shock and vibration:	Normal Truck Transport
Regulatory Compliance:	
EMC	EN 61326-1
Safety	UL 61010-1 CAN/CSA C22.2 #61010-1 CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
WEEE	Directive 2012/19/EU
Export Classification:	3A001

AA26G40-50

26.5–40 GHz, 50 V/m

Rated Field Strength:	Minimum 50 V/m at 1 meter antenna distance
Maximum Amplifier Input:	+10 dBm max
Frequency Response:	26.5–40 GHz instantaneous
3 dB Beamwidth:	
AA26G40-50:	E Plane: 8.3 degrees H Plane: 9.7 degrees
3 dB Spot Size @ 1 m:	
AA26G40-50:	0.15 m x 0.17 m
Modulation Capability:	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Spurious:	Minus 65 dBc typical
Primary Power (Supplied by AA1000):	8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max
Connectors:	
RF Input:	2.92 mm (K-type) female
DC Input:	Twinax
Cooling:	Forced air (self-contained fans)
Weight:	
AA26G40-50:	2.7 kg (6 lb.)
Size (W x H x D):	
AA26G40-50:	12.1 cm x 18.4 cm x 25.4 cm 4.75in x 7.25in x 10in
Environmental:	
Operating Temperature:	5°C/+40°C
Operating Altitude:	up to 2,000 M
Shock and vibration:	Normal Truck Transport
Regulatory Compliance:	
EMC	EN 61326-1
Safety	UL 61010-1 CAN/CSA C22.2 #61010-1 CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
WEEE	Directive 2012/19/EU
Export Classification:	3A001

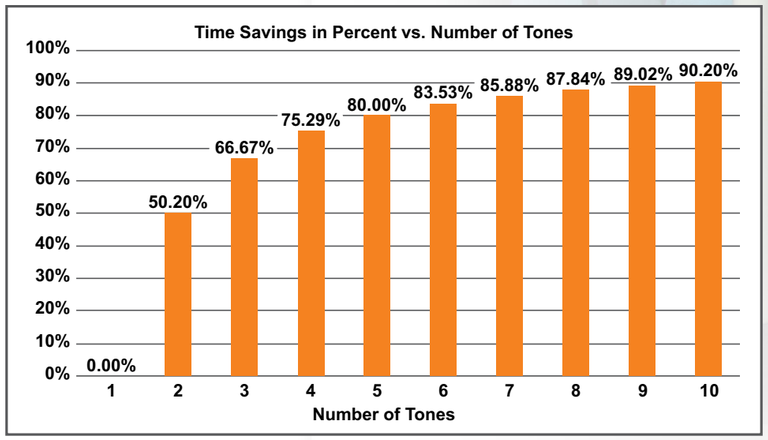
Maximize Your RF Immunity Testing and Minimize Costs

Testing faster than ever before is now achievable with AR's MultiStar Multi-Tone Tester (MT06002). AR Engineering has created this state-of-the-art system to test in accordance with commercial, aviation, and automotive EMC RF Radiated and Conducted Immunity standards. Included is AR's proprietary software, offering users numerous test and calibration routines utilizing multiple tone methodology, to meet these standards. Additionally, the use of a PXI bus and AR's SC2000 system controller allow for seamless integration of all hardware and streamlined routing of all RF to and from the embedded vector signal transceiver and amplifiers.

The enhanced MT06002 offers testing from 10 kHz to 6 GHz, with up to 1 GHz instantaneous bandwidth, greatly expanding an EMC laboratory's opportunities beyond IEC 61000-4-3 to include conducted immunity and allow for more tones to be used during testing.

The system may control up to four RF amplifiers, antennas, and directional couplers. In addition, up to four field probes can be monitored with the MT06002 M1 option. AR's Application Engineering department is here to help you size your amplifiers, antennas, and directional couplers based on your required field levels and testing needs.

Not only does the multi-tone system significantly reduce test time, but also, in the event of an EUT failure, margin investigation (thresholding) and traditional single tone testing is easily performed through AR's software.



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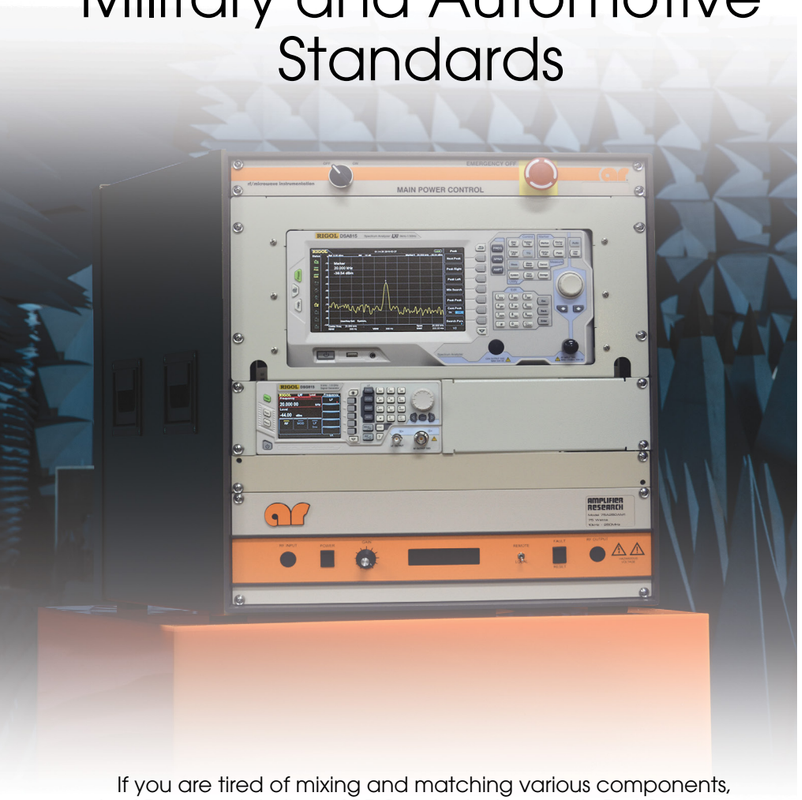
RF Conducted Immunity Testing to IEC, Military and Automotive Standards



If you are tired of mixing and matching various components, try AR's complete line of RF Conducted Immunity Test Systems. We now make one fully configured and stand-alone CI System from 4 kHz to 400 MHz with output powers designed to meet the latest commercial, custom, and military standards. In addition, AR provides configurable systems to meet your specific requirements of increased power and frequency range. Each CI System has the built-in flexibility to conduct standard and customized tests, using our supplied user-friendly software that can generate reports directly into Microsoft® Word or Excel.

CDN Testing to 250 MHz

25 watts, 10 kHz–250 MHz

Complete Testing Solutions to the following standards: EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, EN 55024, ISO 11452-4, and other automotive standards.

Signal Generator Specifications

Frequency Range/Resolution	9 kHz to 1.5 GHz / 0.01 Hz
Power Range/Resolution	-110 to +13 dBm / 0.01 dB
Modulation	AM, FM, Phase, Int Pulse, Ext Pulse

Spectrum Analyzer Specifications

Frequency Range/Resolution	9 kHz to 1.5 GHz / 1 Hz
RF Power CW (max)	
Atten = 30 dB	20 dBm
Resolution BW	10 Hz to 1 MHz
Video BW	1 Hz to 3 MHz
Amplitude Measurement Range	-110 dBm to +20 dBm in 1 dB steps
Preamplifier Gain	20 dB (nom)
Sweep Time, span> 100 Hz	10 msec to 1,500 sec

RF Solid State Amplifier Specifications

Frequency Range	10 kHz to 250 MHz
Power Rating	25 watts min.
At 1 dB compression the power is 75 watts min.	
Harmonic Distortion	-20 dBc at 75 watts
Mismatch Tolerance	100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.
Gain	50 dB min.

Connections

RF Out	Type N (front)
Monitor Port In	Type N (front)
Signal Generator Out	Type N (rear)
RF Amp In/Out	Type N (rear)
Directional Coupler In	Type N (rear)
Pulse In	BNC (rear)
Communication	USB B (rear)
Directional Coupler Fwd Out	Type SMA (rear)
Directional Coupler Fwd In	Type SMA (rear)
Directional Coupler Rev Out	Type SMA (rear)
Directional Coupler Rev In	Type SMA (rear)

General

Power	115/230 VAC, 50/60 Hz, single phase 16 A
Breaker	2 pole, 20 A
Cooling	Active cooling, air ventilation
Environmental Conditions	10°C–40°C (50°F–104°F)
Dimensions	50.3 x 53.3 x 55.1 cm (19.8 x 21.0 x 21.7 in.)
Weight	49.9 kg (110 lb.)

PC Requirements

Computer	Intel Pentium 4, AMD Athlon 64 or better processor
Operating System	Windows, 7, 8, or 10
RAM	2 GB Minimum
Screen Resolution	1024 x 768
Ports	2 available USB 2.0 ports
Software Requirements	Microsoft Word/Excel 2007 or newer

CDN or BCI Testing to 400 MHz

100 watts, 10 kHz–400 MHz

Complete Testing Solutions to the following standards: MIL-STD-461 and CS114, DO160 (Section 20) BCI Testing, EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, EN 55024, ISO 11452-4, and other automotive standards.

Internal Test Specifications*

MIL-STD-461 (CS114), DO160 (Sec 20 BCI Test), IEC/EN 60601-1-2, IEC/EN 50130-4, IEC/EN 61326, IEC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61000-4-6, CISPR 24/EN 55024, ISO 11452-4, EMC-CS-2009, GM GMW3097, BMW GS95002, Chrysler DC-11224, Renault 36-00-808, and other automotive standards.

Signal Generator Specifications

Frequency Range/Resolution	9 kHz to 1.5 GHz / 0.01 Hz
Power Range/Resolution	-110 to +13 dBm / 0.01 dB
Modulation	AM, FM, Phase, Int Pulse, Ext Pulse

Spectrum Analyzer Specifications

Frequency Range/Resolution	9 kHz to 1.5 GHz / 1 Hz
RF Power CW (max)	
Atten = 30 dB	20 dBm
Resolution BW	10 Hz to 1 MHz
Video BW	1 Hz to 3 MHz
Amplitude Measurement Range	-110 dBm to +20 dBm in 1 dB steps
Preamplifier Gain	20 dB (nom)
Sweep Time, span> 100 Hz	10 msec to 1,500 sec

RF Solid State Amplifier Specifications

Frequency Range	9 kHz to 400 MHz
Power Rating	100 watts min.
At 1 dB compression the power is 75 watts min.	
Harmonic Distortion	-20 dBc at 75 watts
Mismatch Tolerance	100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.
Gain	50 dB min.

Connections

RF Out	Type N (front)
Monitor Port In	Type N (front)
Signal Generator Out	Type N (rear)
RF Amp In/Out	Type N (rear)
Directional Coupler In	Type N (rear)
Pulse In	BNC (rear)
Communication	USB B (rear)
Directional Coupler Fwd Out	Type SMA (rear)
Directional Coupler Fwd In	Type SMA (rear)
Directional Coupler Rev Out	Type SMA (rear)
Directional Coupler Rev In	Type SMA (rear)

General

Power	115/230 VAC, 50/60 Hz, single phase 16 A
Breaker	2 pole, 20 A
Cooling	Active cooling, air ventilation
Environmental Conditions	10°C–40°C (50°F–104°F)
Dimensions	50.3 x 53.3 x 55.1 cm (19.8 x 21.0 x 21.7 in.)
Weight	49.9 kg (110 lb.)

PC Requirements

Computer	Intel Pentium 4, AMD Athlon 64 or better processor
Operating System	Windows, 7, 8, or 10
RAM	2 GB Minimum
Screen Resolution	1024 x 768
Ports	2 available USB 2.0 ports
Software Requirements	Microsoft Word/Excel 2007 or newer

BCI, EM, or TWC Testing to 1 GHz

250 watts, 100 kHz–1,000 MHz

Complete Testing Solutions to the following standards: EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, ISO 11452-4, and other automotive standards.

Internal Test Specifications*

IEC/EN 60601-1-2, IEC/EN 50130-4, IEC/EN 61326, IEC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61000-4-6, ISO 11452-4, EMC-CS-2009, GM GMW3097, BMW GS95002, Chrysler DC-11224, Renault 36-00-808, and other automotive standards.

Signal Generator Specifications

Frequency Range/Resolution	9 kHz to 1.5 GHz / 0.01 Hz
Power Range/Resolution	-110 to +13 dBm / 0.01 dB
Modulation	AM, FM, Phase, Int Pulse, Ext Pulse

Spectrum Analyzer Specifications

Frequency Range/Resolution	9 kHz to 1.5 GHz / 1 Hz
RF Power CW (max)	
Atten = 30 dB	20 dBm
Resolution BW	10 Hz to 1 MHz
Video BW	1 Hz to 3 MHz
Amplitude Measurement Range	-110 dBm to +20 dBm in 1 dB steps
Preamplifier Gain	20 dB (nom)
Sweep Time, span> 100 Hz	10 msec to 1,500 sec

RF Solid State Amplifier Specifications

Frequency Range	100 kHz to 1,000 MHz
Power Rating	250 watts min.
At 1 dB compression the power is 175 watts min.	
Harmonic Distortion	-20 dBc at rated power
Mismatch Tolerance	100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.
Gain	54 dB min.

Connections

RF Out	Type N (front)
Monitor Port In	Type N (front)
Signal Generator Out	Type N (rear)
Directional Coupler In	Type N (rear)
RF Amp In/Out	Type N (rear)
Communication	USB (rear)
Directional Coupler Fwd Out	Type SMA (rear)
Directional Coupler Fwd In	Type SMA (rear)
Directional Coupler Rev Out	Type SMA (rear)
Directional Coupler Rev In	Type SMA (rear)

General

Power	115/230 VAC, 50/60 Hz, single phase 16 A
Breaker	2 pole, 20 A
Cooling	Active cooling, air ventilation
Environmental Conditions	10°C–40°C (50°F–104°F)
Dimensions	128.9 x 56.1 x 91.4 cm (52.5 x 22.1 x 36 in.)
Weight	72.6 kg (160 lb.)

PC Requirements

Computer	Intel Pentium 4, AMD Athlon 64 or better processor
Operating System	Windows, 7, 8, or 10
RAM	2 GB Minimum
Screen Resolution	1024 x 768
Ports	2 available USB 2.0 ports
Software Requirements	Microsoft Word/Excel 2007 or newer

BCI, EM, or TWC Testing to 3 GHz

100/25 watts, 10 kHz–3 GHz

Complete Testing Solutions to perform Automotive Conducted Immunity testing over the frequency range of 100 kHz–3 GHz at test levels of up to 200 mA.

Internal Test Specifications*

MIL-STD-461F and G, CS114, DO160D Section 20 BCI testing, DO160E Section 20 BCI testing, IEC/EN 60601-1-2, IEC 61000-4-6 procedure and levels, IEC/EN 50130-4, IEC/EN 61326, IEC/EN 61000-6-1, IEC/EN 61000-6-2, CISPR 24/EN 55024, ISO 11452-4, GMW 3097, ES-XW7T-1A278-AC, DC-11224, BMW GS95002, and other automotive standards.

Signal Generator Specifications

Frequency Range	9 kHz to 3 GHz
Amplitude Resolution	0.01 dB
Modulation	AM, PM, Pulse Modulation
Power Range	-144 to +26 dBm

Spectrum Analyzer

Frequency Range	9 kHz to 3 GHz
Frequency Resolution	1 Hz
Detectors	Positive and negative peak, sample, normal, RMS
Amplitude Accuracy	± 0.5 dB, typical

RF Solid State Amplifier Specifications

Frequency Range	9 kHz to 400 MHz
Power Rating	100 watts min.
At 1 dB compression the power is 75 watts min.	
Harmonic Distortion	-20 dBc at 75 watts
Mismatch Tolerance	100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.
Gain	50 dB min.

Connections

RF Out	Type N Male (front)
Monitor Port In	Type N Male (front)
Communication	GPIB (rear)

General

Power	115/230 VAC, 50/60 Hz, single phase 16 A
Breaker	2 pole, 20 A
Cooling	Active air cooling, air ventilation
Environmental Conditions	10°C to 40°C (50°F–104°F)

PC Requirements

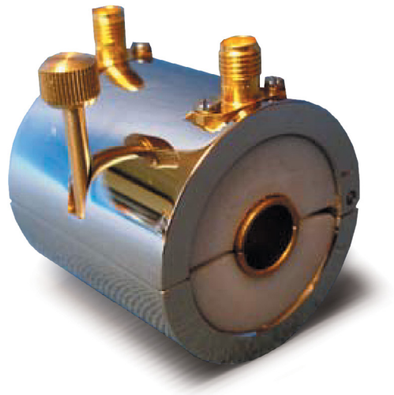
Computer or better processor	Minimum Intel Pentium 4/AMD Athlon 64
Operating System	Windows, 7, 8, or 10
RAM	2 GB Minimum
Free Hard Drive Space	2 GB
Screen Resolution	1024 x 768
Ports	2 available USB ports
Software Requirements	Microsoft Word/Excel 2007 or newer

** Specifications can be met using AR-specified external accessories (injection probes, monitor probes, calibration fixtures, CDNs, attenuators, etc.). All conducted immunity systems can be configured to cover 4 kHz to 3 GHz.*

Conducted Immunity and Emissions Tubular Wave Couplers

Our series of compact, versatile, and affordable tubular wave couplers is suitable for immunity testing and emissions measurement of power leads or other connection lines. The BI30000 Series features a bandwidth from 400 MHz to 3 GHz for immunity testing and 150 kHz to 3 GHz for emissions testing.

Immunity testing using the BI30000 Series is similar to using a BCI probe as in ISO 11451-2, ISO 11452-4, or IEC 61000-4-6, and emission measurements can be taken as a current probe according to EN 55025 (CISPR 25). With the proposed standards coming up in the automotive industry, the BI30000 Series will provide a low-cost alternative to perform conductive testing up to 3 GHz.

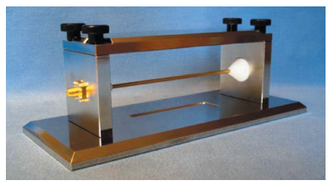


	BI30410	BI30413	BI30416	BI30520	BI30526
ISL Value <10 dB	0.50–2.80 GHz	0.60–2.80 GHz	0.80–2.50 GHz	0.60–1.40 GHz	
ISL Value <20 dB	0.15–3.00 GHz	0.15–3.00 GHz	0.20–3.00 GHz	0.15–2.50 GHz	0.20–2.50 GHz
Size (LxW)	40 x 40 mm (1.575 x 1.575 in.)	40 x 40 mm (1.575 x 1.575 in.)	40 x 40 mm (1.575 x 1.575 in.)	50 x 50 mm (1.97 x 1.97 in.)	50 x 50 mm (1.97 x 1.97 in.)
Internal Diameter	10 mm (0.394 in.)	13 mm (0.512 in.)	16 mm (0.630 in.)	20 mm (0.787 in.)	26 mm (1.02 in.)

M1 versions of the above models are available with 17025-compliant calibration.

Tubular Wave Coupler Calibration Kit

AR offers the CF30000 calibration fixture. This is designed to work with the BI30000 Series Tubular Wave Couplers for the purpose of level setting prior to conducted immunity testing.



	Model CF30000
Frequency Range	150 MHz–3 GHz
Calibration Power (max. watts)	4 CW
Input Impedance	50Ω
Connectors	SMA(F)
Max. Diameter of TWC	50 mm (1.97 in.)
Length of coupling line	120 mm (4.72 in.)
Weight	1.1 kg 2.42 lb.
Size (approx.) L x W x H	230 x 95 x 90 mm (9.05 x 3.74 x 3.54 in.)

For more information about selecting accessories for our Conducted Immunity Systems, please see Application Note—Selection Guide for CI System Accessories.

Model CI00402

Conducted Immunity Testing Kits

For use in CI requirements to 1 GHz. Contain all of the attenuators, injection probes, monitor probes, calibration fixtures, calibration resistors, and termination resistors necessary to perform Bulk Current Injection testing to various specifications.

	Model TK1000	Model TK1001	Model TK1002
Application	IEC Testing up to 32mm cable diameter	IEC Testing up to 66mm cable diameter	EM Clamp Testing up to 23mm cable diameter
Accessories Included	AF06250, 6 dB 250 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BI00250, 10 kHz -250 MHz injection probe CF00250, 10 kHz- 250 MHz calibration fixture CR00100BC, 150-50 ohm adapter P00250, 10 kHz – 250 MHz Monitor Probe CC21111015 50 Ω Shielded Coaxial Cable 1.5m N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable 0.3m N male connectors	AF06250, 6 dB 250 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BI00251, 10 kHz -250 MHz injection probe CF00251, 10 kHz- 250 MHz calibration fixture CR00100BC, 150-50 ohm adapter BP00251, 10 kHz – 250 MHz Monitor Probe CC21111015 50 Ω Shielded Coaxial Cable 1.5m N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable 0.3m N male connectors	AF06250, 6 dB 250 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination EM10123, electromagnetic clamp EM10123CF, electromagnetic clamp calibration kit BP00250, 10 kHz – 250 MHz Monitor Probe CC21111015 50 Ω Shielded Coaxial Cable 1.5m N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable 0.3m N male connectors

	Model TK2000	Model TK3000	Model TK4000
Application	MIL/DO Testing up to 32mm cable diameter	Automotive Testing up to 32mm cable diameter	BCI to 1GHz Testing up to 32mm cable diameter
Accessories Included	AF06250, 6 dB 250 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BI00400, 10 kHz – 400 MHz injection probe CF00400, 10 kHz – 400 MHz calibration fixture BP00100, 100 Hz – 100 MHz monitor probe BP00400, 10 kHz – 400 MHz monitor probe CC21111015 50 Ω Shielded Coaxial Cable 1.5m N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable 0.3m N male connectors	AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BI00401, 1-400 MHz injection probe CF00400, 10 kHz – 400 MHz calibration fixture BP00400, 10 kHz – 400 MHz monitor probe CC21111015 50 Ω Shielded Coaxial Cable 1.5m N male connectors (Qty 2)	BI101000, 100kHz-1000MHz injection probe CF01000, Calibration Fixture for BI001000 BP01000, 100kHz-1000MHz monitor probe AF06250, 6dB, 250 watt fixed attenuator AF20050, 20dB, 50 watt fixed attenuator AF10050, 10dB, 50 watt fixed attenuator CR00100BC, 150-50 Ohm adapter CC21111015, 50 Ohm Shielded Coaxial Cable, 1.5m, N male connectors (Qty 2) CC21111003, 50 Ohm Shielded Coaxial Cable, 0.3m, N male connectors TL50050, 50 Ohm, 50 watt termination

RF Conducted Probe and Cables

The following accessories are for use with our RF Conducted Immunity CI System Model CI00402.

Current Monitor Probe

AR offers a clamp-on monitoring probe used to measure RF currents flowing through the conductor onto which the probe is placed. The following model is available:

- BP00250: 1 kHz–250 MHz

Coaxial Cables

Available in 50 Ω

AR—Your Chamber Solution Provider

AR is a single-source provider with the ability to design, build, and service EMC test and RF chambers. AR's experienced chamber team is with you all the way, starting with your requirements definition phase and all throughout the life of an AR-supplied chamber. AR customers can expect the highest level of service and technical support with chambers that you are familiar with for AR's instrumentation and systems.

AR is now the exclusive distributor for the US of Comtest Engineering products, including chambers, shielded rooms, absorbers, and antenna-measurement chambers.

Available Products:

- Semi- and fully anechoic chambers
- Reverberation chambers
- RF shielded rooms
- Antenna test ranges
- Chamber upgrades
- RF shielded doors
- Microwave absorbers

Applications:

- MIL-STD-461G
- MIL-STD-464C
- DO-160
- ISO
- IEC
- CISPR
- ETSI

Typical Chambers

At AR, we understand that the best option for our customers is being able to go to a single point of contact and obtain a complete EMC solution. Moreover, a quick response for budgeting purposes is also a must. With that in mind, AR has established a number of standard chamber designs that can easily be used when requesting a ROM (Rough Order of Magnitude) price. The chambers below represent the offerings that are readily available for our customer's reference and early planning.

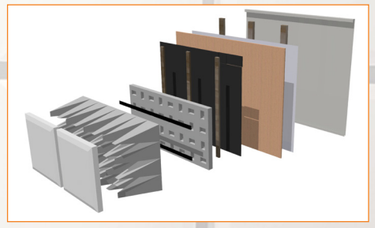
Model	Description	Model	Description
ARCP-0021	Shield Room	ARCP-0028	Vehicle Component Test Chamber
ARCP-0022	Radiated Immunity Chamber	ARCP-0029	Military Component Test Chamber (hybrid)
ARCP-0023	Semi Anechoic 3 m Chamber	ARCP-0030	Military Component Test Chamber (non-hybrid)
ARCP-0024	Semi Anechoic 5 m Chamber	ARCP-0031	Reverb Chamber LUF200
ARCP-0025	Semi Anechoic 10 m Chamber w/ 3 m Qz	ARCP-0032	Reverb Chamber LUF400
ARCP-0026	Semi Anechoic 10 m Chamber w/ 4 m Qz	ARCP-0033	Reverb Chamber LU1000
ARCP-0027	Semi Anechoic 10 m Chamber w/ 5 m Qz	ARCP-0034	Fully Anechoic 3 m Chamber

Although AR offers standard chamber designs, chambers are fully customizable, and offer a complete selection of accessories. Turntables, masts, and a wide array of antennas are part of the basic offering while other components such as fiber-optic converters, shielded RF penetrations, specialty bulkhead connectors, CCTV, and projection systems are also available.

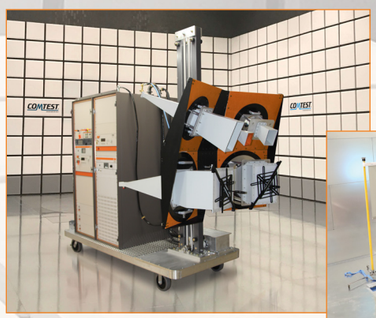
ar video

Why Choose a Comtest Chamber Through AR?

- Over 1,000 chamber installations worldwide
- 30 years of experience in chamber design, manufacturing, and installation
- Chambers backed by AR's global customer service
- Industry leading polystyrene absorber, and designs—oscillating wall, pan-type RF shielding, and chamber doors
- Typical designs are rated in excess of 40 GHz



Comtest absorber products are divided into two main categories: hybrid and microwave. Hybrid chamber solutions make use of ferrite tiles in combination with the hyrbid absorbers, and the microwave absorber line is typically used for research related to antenna pattern measurement.



AR's Competitive Edge

At AR, there's no substitute for customer responsiveness. It's the foundation of our business and the AR value that's recognized around the globe. It's one of the key reasons AR has become the worldwide leader in EMC, wireless and beyond.

AR products do more, last longer, work harder, and make your job easier. And that gives you a fierce competitive edge. Only AR delivers innovative technology, advanced design, quality build and workmanship, mismatch capability, durability and longevity, less cost per watt, and a worldwide support network that's here for you today and tomorrow.

With the combined resources of all the AR companies, we simply have more of the best people making the products to overcome your toughest challenges.

RF/Microwave Instrumentation

- RF & Microwave Solid State Amplifiers ranging from: 1-50,000 watts, 10 Hz to 50 GHz
- Antennas to 15,000 watts input power, 10 kHz to 50 GHz
- EMC and Wireless Test Systems
- Multi-tone test systems
- Field measuring equipment
- EMC test software
- EMC & RF test accessories
- Positioning equipment
- Chambers and accessories

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Modular RF

- Tactical Booster RF Amplifiers for Military Radios
- RF Amplifiers and Modules for Industrial, Medical, Scientific and Communication Applications
- RF Rack Mount Amplifiers for Industrial, Medical, Scientific and Communication Applications

SunAR RF Motion

- Positioning equipment, turntables and towers
- Distributed antenna systems
- Reverberation chamber stirrers
- EMC Test Antennas

Europe

- Offering a complete line of RF Products and testing solutions for the European market

Want to know more about AR? Need help with any RF solutions or testing procedures?
Here's how to reach AR and get all the help you need:
www.arworld.us

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AR United Kingdom +44 1908 282766

AR RF/Microwave Instrumentation is ISO Certified.

CERT #4206.01

Global Promise

The AR warranty is more than just a warranty, it's a promise, backed by a knowledgeable support team that's always there for you to help solve any problems and answer any questions, today and tomorrow. AR warrants its amplifiers, antennas, test systems, power meters, field monitoring equipment, conducted immunity generators, couplers and tripods to be free of defects in materials and workmanship for a period of three years from date of shipment. Vacuum, traveling wave tubes and powerheads carry a one year warranty.