

## AIE-W5ER

5 Port Air Interface Emulator, 400 ... 6000 MHz, 50  $\Omega$

### Features

- wideband
- 2 watt power capability
- 95.25 dB attenuation range
- LAN and USB Remote Interface
- Trigger interface
- 19", 3 U device

### Applications

- Air Interface Emulation
- WiFi communication testing
- 802.11 a/h, ac, b, g, n, p
- V2X and V2V
- Fading simulation

### At a Glance

The AIE-W5ER air interface emulator enables real emulation of RF levels for radio communication for wireless networks. It has 5 RF Ports for the connection of access points. All signal paths are bidirectional. Every of the 5 ports can be fed with a composite RF signal that is individually composed of a programmable mix of the 4 signals coming from the remaining ports. The variation of levels can be done in a wide dynamic range with internal precision attenuators.

The AIE-W5ER allows to recreate a realistic air interface, whereby the connected access points receives multiple signals from the remaining access points simultaneously with varying propagation loss. The reproducible emulation of air interface scenarios in laboratory environment saves time and cost in product development and verification.

### Matrix function

The AIE-W5ER can also be used as non-blocking matrix. Every port has free access to the remaining ports. Attenuators between the signal paths allow also the emulation of fading effects. With a fast attenuator response time, the device is an efficient and fast solution for automatic testing systems.

### Wideband

The operating frequency range covers 400 MHz to 6000 MHz. Therefore the AIE-W5ER is useable for all WiFi standards including 802.11p for V2X and V2V communication.



### High Dynamic

The setting range of the digitally controlled attenuators covers 95.25 dB and is adjustable in 0.25 dB steps. This allows test scenarios with highest requirements for dynamics and accuracy. All RF ports of the air emulation system allow signals levels of up to 2 Watts.

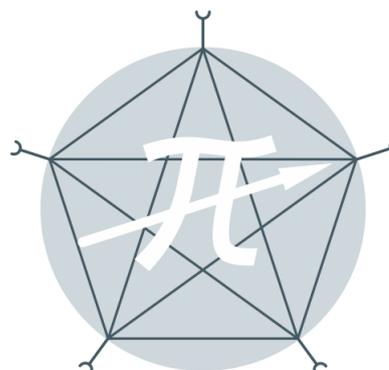
### Remote control with Trigger

For remote control the AIE-W5ER offers LAN and USB interface and a trigger input.

The command execution can be done with ASCII strings.

Alternative the switching configuration of the matrix device can be preloaded with SCPI oriented ASCII strings via LAN interface without execution. After a positive TTL pulse slope at the trigger input, the preloaded switch configuration will be executed only by hardware in micro seconds.

### Principle diagram



## RF Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{in} / Z_{out}$		50		Ohm	
low frequency	$f_{min}$		300	400	MHz	
high frequency	$f_{max}$	6000			MHz	
number of RF ports	$n_{RF}$		5			bi-directional
return loss	$S_{11}, S_{22}$		-12		dB	
maximum input power	$P_{RF}$			+33	dBm	
DC voltage	$U_{DC}$			15	V	
ESD discharge resistor	$R_{ESD}$		1.2		k $\Omega$	all inputs and outputs
insertion loss*	$S_{21}$		-17		dB	$f \leq 1$ GHz
	$S_{21}$		-19		dB	$1 \text{ GHz} \leq f \leq 3 \text{ GHz}$
	$S_{21}$		-22		dB	$3 \text{ GHz} < f \leq 5 \text{ GHz}$
	$S_{21}$		-24		dB	$5 \text{ GHz} < f \leq 6 \text{ GHz}$
isolation	$S_{21}$		40		dB	between ports ATT = 0 dB
attenuation range	$\Delta S_{21}$	0.00		95.25	dB	
attenuation resolution	$dS_{21}$		0.25		dB	
attenuation accuracy	$ATT_{ERR}$		$\pm 0.50$		dB	@ 3 GHz, ATT = 63.25 dB
attenuator settling time	$t_{ASET}$		1		$\mu$ s	
atten. response time	$t_{ARSP}$		1		ms	
RF connector	$X_{RF}$		N female			rear side
trigger input	$X_{TR}$		BNC female			rear side
trigger level	$U_{TR}$		TTL (0 V / 5 V)			positive slope, 1 k $\Omega$ pull up

\* Insertion loss at attenuator setting 0.00 dB.

## Common Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	$u_{AC}$	90	230	260	V	50 / 60 Hz
power consumption	P		6		W	
power socket	$X_{AC}$	IEC-60320 C14				country specific power cable
dimensions	W x H x D	approx. 483 x 133 x 390			mm	19", 3 U, without handles
weight			10		kg	
remote interface		10/100BaseT 2.0 (high speed)				RJ45 connector USB type B connector
operating temp. range	$T_o$	+ 20		+ 30	$^{\circ}$ C	within specification
storage temp. range	$T_s$	- 40		+ 70	$^{\circ}$ C	
EMC		including IEC/EN61326-1				in line with EMC directive 2014/30/EU
safety		in line with IEC/EN 61010-1				
ordering information		AIE-W5ER	P/N: 1309.4052.1			

## Appearances



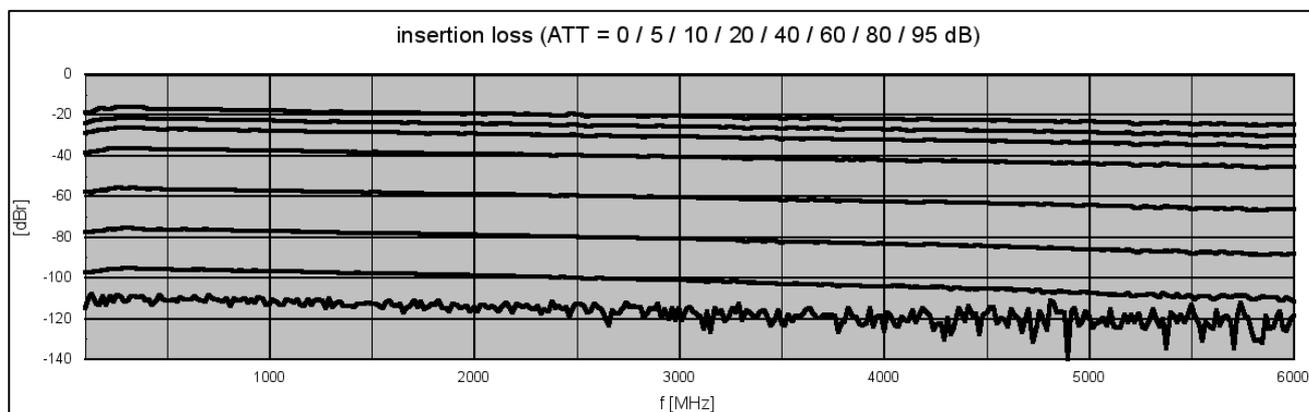
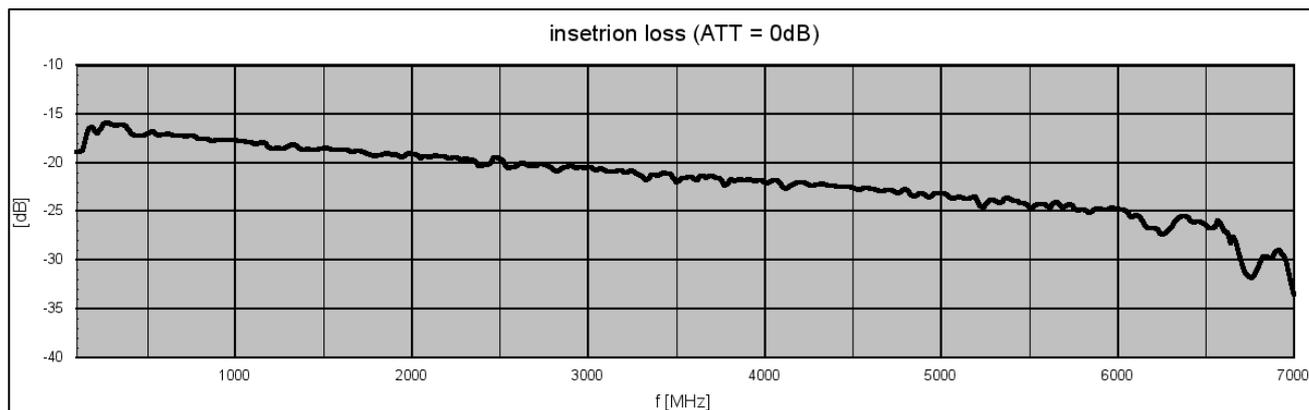
Front view



Rear view



## Typical frequency responses



## Related Products

Product	Description	P/N
AIE-4X4R	4 Channel Air Interface Emulator 500 ... 3000 MHz	1201.4002.1
AIE-4X4ER	4 Channel Air Interface Emulator 400 ... 6000 MHz	1201.4902.1
AIE-W9	9 Port Air Interface Emulator 1800 ... 6400 MHz	1309.4092.1