

AIE-W5ER

5 Port Air Interface Emulator, 400 ... 6000 MHz, 50 Ω

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.

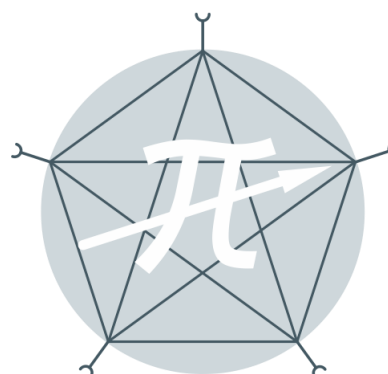
Remote control with Trigger

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 Ω	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	ΔS_{21}	0.00		95.25	dB	
attenuation resolution	dS_{21}		0.25		dB	
attenuation accuracy	ATT_{ERR}		± 0.50		dB	@ 3 GHz, ATT = 63.25 dB
attenuator settling time	t_{ASET}		1		μs	
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 Ω pull up

* Insertion loss at attenuator setting 0.00 dB.

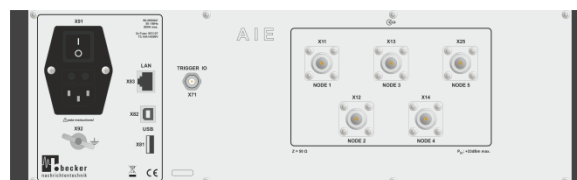
Common Specifications

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				RJ45 connector
		2.0 (high speed)				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

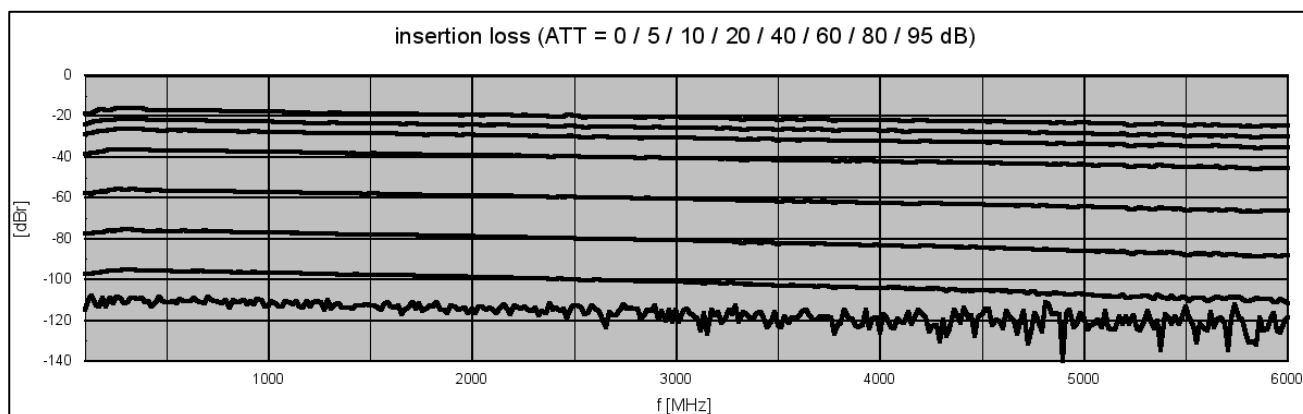
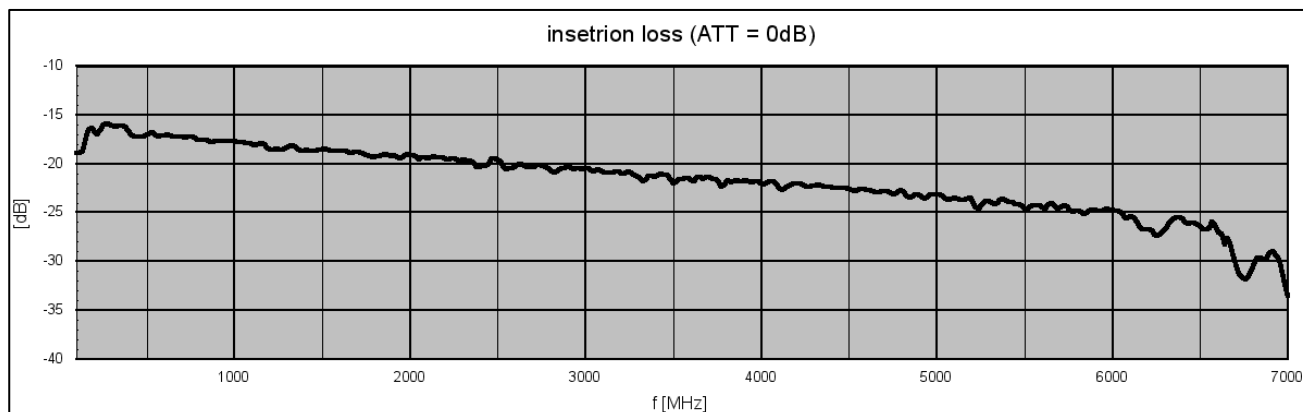


Front view



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