

## RF-Matrix MX-14/6-HLS with integrated Air Interface Adapter AIAD-2x2/1-MIMO-6G

MTS-No.: 26636

### Application

The MX-14/6-HLS is an RF-Matrix made of dividers and semiconductor switches. The principle is full fan out.

Additionally an AIAD is integrated at the unit. With the MTS AIAD you can emulate air interfaces for all imaginable scenarios. To avoid the influence from the live-net, the signals can be connected with cables directly from the different signal sources, as for example GSM or UMTS base stations or signal generators etc. over the MTS AIAD to mobile devices.

### Description

At the MX-14/6-HLS all of the outputs can be connected to maximum one input simultaneously. This can be the same input for all outputs. The configuration is 14 inputs and 6 outputs.

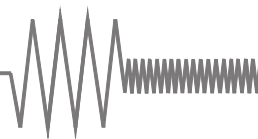
The Air Interface Adapter series AIAD is our most flexible solution for air interface emulation. With the AIAD it is possible to emulate the in- and outputs according to the demands of the customer. The design of the shown unit is divided to 2 groups. Every group allows program controlled attenuation of 2 inputs to 1 output signal at the same time. The function is carried out by combiners and variable attenuators.

The controlling of both parts is completely separated by two control cards.



### Characteristics

- ▶ RF-Matrix, full fan out, bidirectional, made of dividers and semiconductor switches (14 inputs, 6 outputs)
- ▶ AIAD with 2 groups each with 2 inputs leading through 95 dB attenuators to 1 output (4 inputs, 2 outputs)
- ▶ RF-Matrix and AIAD with frequency range from 500 MHz to 6000 MHz
- ▶ AIAD with attenuation range from 0 dB to 95 dB in 1 dB steps at each attenuator
- ▶ On request attenuation in 0.5 dB steps (up to 95 dB) or in 0.25 dB steps (up to 32 dB)
- ▶ Switching time up to 10 ms
- ▶ Integrated power supply 100 V - 240 V AC
- ▶ Separated remote control by RS-232 and LAN (other interfaces on demand)
- ▶ On Request Device Web Control available
- ▶ 19" rack mount case with 6 HU
- ▶ Windows control programs can be offered
- ▶ High quality materials and components for extended durability
- ▶ On request Group+Block of separate components (with name / name and key)
- ▶ MTS units can be designed according to customers individual requirements



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### Configuration:

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AIAD with 2 groups each with 2 inputs leading through 95 dB attenuators to 1 output (4 inputs, 2 outputs)

### Technical data:

#### 1 MX-14/6-HLS RF-specifications:

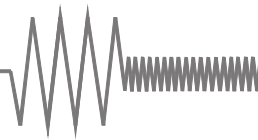
1.1 Impedance	50 Ω		
1.2 Input power	+36 dBm max. @ the inputs +30 dBm max. @ the outputs		
1.3 Frequency range	500 MHz - 6000 MHz		
1.4 RF-connections	N female @ the inputs SMA female @ the outputs		
	<b>min.</b>	<b>typ.</b>	<b>max.</b>
1.5 VSWR in			
@ 700 - 5800 MHz		1.5	1.7
@ 500 - 6000 MHz			2.2
VSWR out			
@ 700 - 5800 MHz		1.8	2.0
@ 500 - 6000 MHz			2.7
1.6 Insertion loss (IL)			
@ 500 MHz	16.5 dB		17.0 dB
@ 5800 MHz	24.0 dB		24.5 dB
@ 6000 MHz			27.0 dB
1.7 IL derating / 100 MHz		0.15 dB	
1.8 Isolation (see plot)			
@ IN/IN, IN/OUT			
@ 700 - 5800 MHz	100 dB	110 dB	
@ 500 - 6000 MHz	90 dB	100 dB	
@ OUT/OUT,	100 dB	110 dB	
switched to other input			
@ OUT/OUT,	25 dB	40 dB	
switched to same input			
1.9 Switching time			10 ms

#### 2 AIAD-2x2/1-MIMO-6G RF-specifications:

2.1 Impedance	50 Ω		
2.2 Input power	+30 dBm max. @ the inputs +33 dBm max. @ the outputs		
2.3 Frequency range	500 MHz - 6000 MHz		
2.4 RF-connections	SMA female		
2.5 Attenuation	0 - 95 dB in 1 dB steps		
	<b>min.</b>	<b>typ.</b>	<b>max.</b>
2.6 VSWR in			
@ 500 - 5800 MHz		1.3	1.7
@ 500 - 6000 MHz		1.6	1.9
VSWR out			
@ 790 - 6000 MHz		1.4	1.9
@ 500 - 6000 MHz		1.6	2.4
2.7 Insertion loss (IL)			
@ 500 MHz		6.5 dB	7.0 dB
@ 6000 MHz		12.5 dB	15.0 dB
2.8 IL derating / 100 MHz		0.12 dB	0.16 dB
2.9 Isolation (see plot)	(without attenuation)		
@ 790 - 6000 MHz	28 dB	35 dB	
@ 500 - 790 MHz	19 dB	25 dB	
2.10 Switching time			10 ms
2.11 Attenuation accuracy			
@ 500 - 3000 MHz			
@ 1 - 30 dB		±0.1 dB	±0.8 dB
@ 31 - 60 dB		±0.4 dB	±1.5 dB
@ 61 - 95 dB		±0.8 dB	±2.0 dB
@ 3000 - 6000 MHz			
@ 1 - 30 dB		-0.7 dB	+0.2/-2.5 dB
@ 31 - 60 dB		-2.6 dB	-5.0 dB
@ 61 - 95 dB		-5.2 dB	-8.0 dB

#### 3 Connections:

3.1 Front side	Colour display with touchpanel Power switch with integrated control lamp
3.2 Rear side	RF-connections Control card and interfaces Appliance plug with the integrated fuses F1 and F2 Ground connector



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### Configuration:

RF-Matrix, full fan out made of dividers and semiconductor switches (14 inputs, 6 outputs)

AIAD with 2 groups each with 2 inputs leading through 95 dB attenuators to 1 output (4 inputs, 2 outputs)

### Technical data:

#### 4 General specifications:

4.1 Power supply	100 V - 240 V 50 Hz / 60 Hz
4.2 Internal voltage	+5 V DC, +28 V DC
4.3 Control displays	Control lamp in the power switch
4.4 Control interfaces (1x for Matrix, 1x for AIAD, each)	RS-232 LAN
4.5 Power consumption primarily	0.15 A max. @ 230 V
4.6 Voltage supply	Standard rubber connector
4.7 Operating temperature	0 °C - +50 °C
4.8 Reference temperature for specifications	+25 °C
4.9 Dimensions	19"-unit x 6 HU x 430 mm (dimensions without handles and connections)
4.10 Colour	Front side colourless anodized Rear side colourless anodized
4.11 Weight	25 kg

#### 5 Delivered parts:

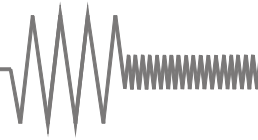
MX-14/6-HLS+AIAD-6G  
Power cable  
CD with operating manual

#### 6 Comments:

Warranty	12 months
RoHS-compliant	Yes

#### 7 Recommended accessories:

Shielding box of the series  
MSB-02xx or MSB-01xx  
RF-cables  
Control software



# RF-Matrix MX-14/6-HLS with integrated Air Interface Adapter AIAD-2x2/1-MIMO-6G

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## MX-14/6-HLS typical measurements:

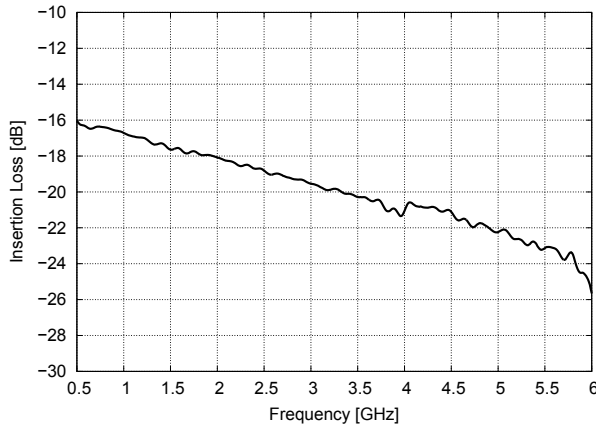


Fig. 1: Input port to output port insertion loss

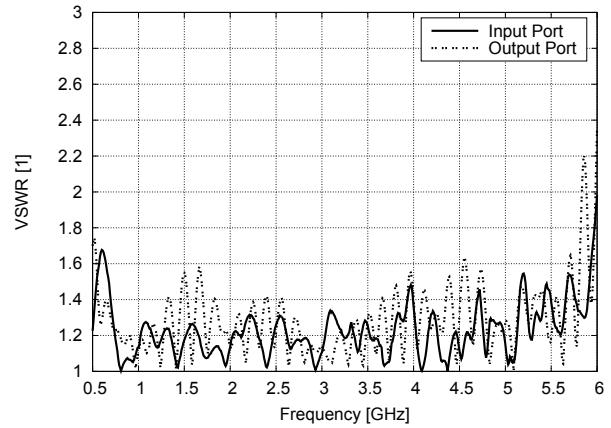


Fig. 2: VSWR for input and output ports

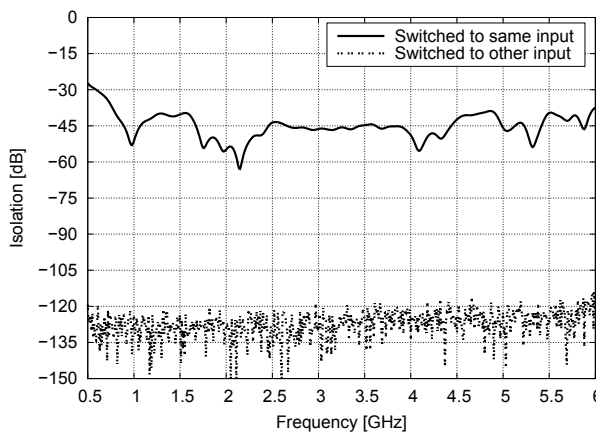


Fig. 3: Isolation between output ports

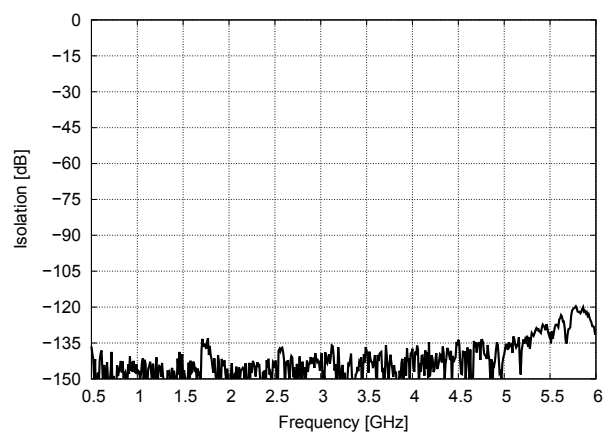
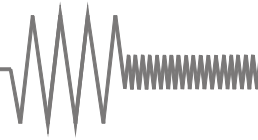


Fig. 4: Isolation between in- and output ports



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## AIAD-2x2/1-MIMO-6G typical measurements:

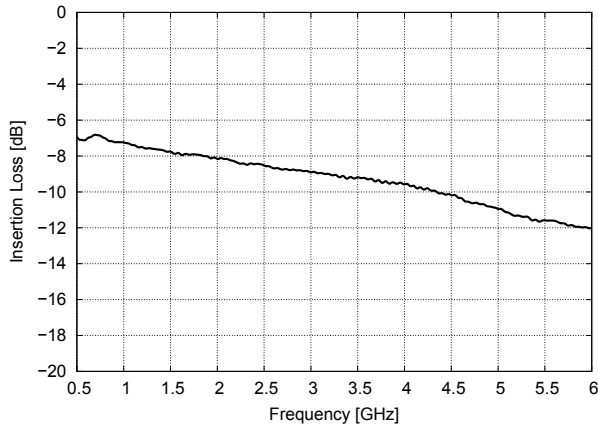


Fig. 1: Input port to output port insertion loss

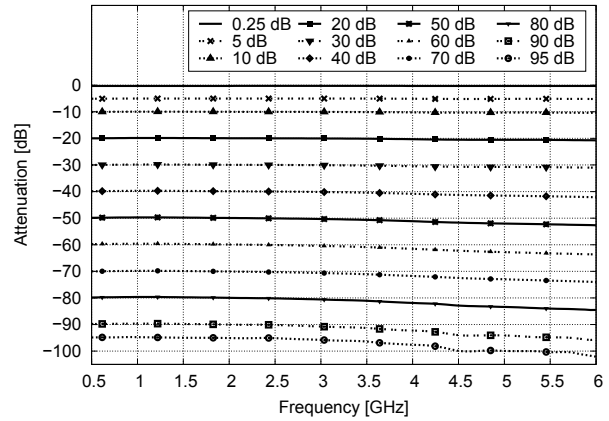


Fig. 2: Attenuation relative to insertion loss

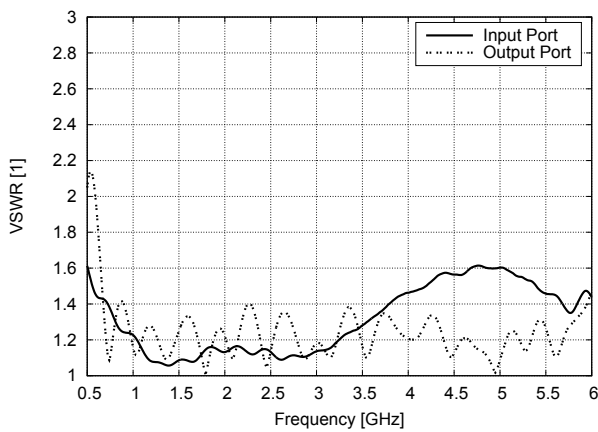


Fig. 3: VSWR for input and output ports

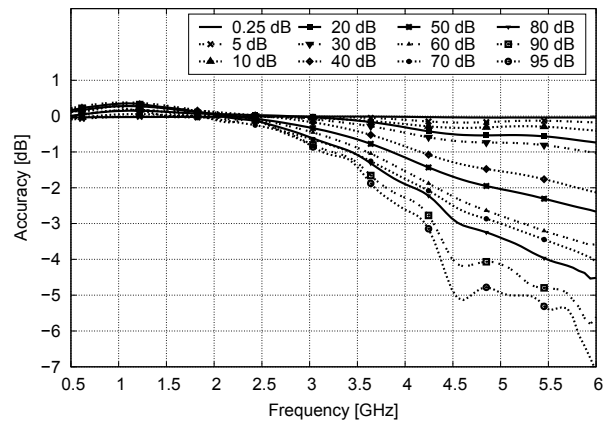


Fig. 4: Attenuation accuracy

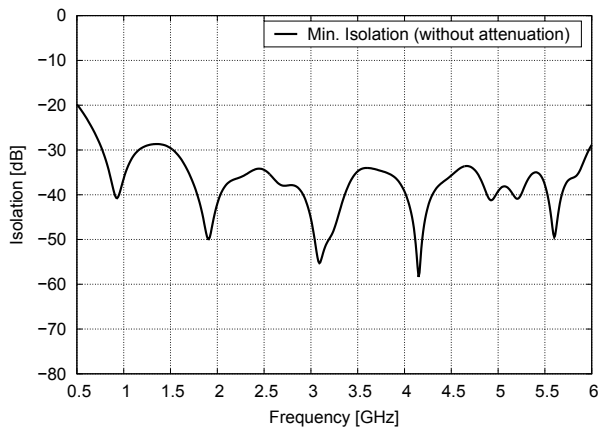


Fig. 5: Isolation between output ports

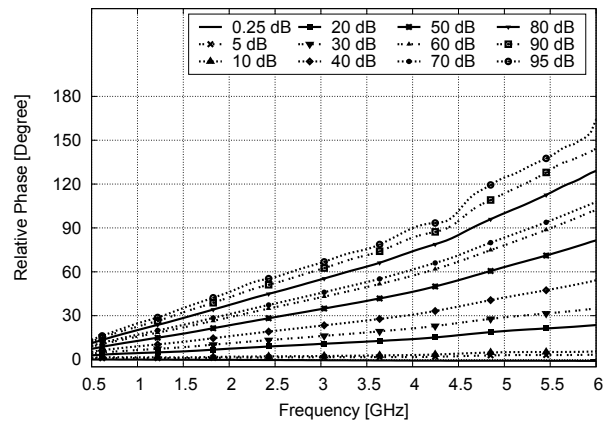
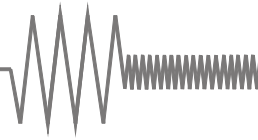


Fig. 6: Phase relative to insertion loss



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Views:

