

High Dynamic Wideband TX Amplifier 5 ... 2200 MHz, 50  $\Omega$

## Features

- output power up to +31 dBm typ.
- high IP3
- high gain
- open/short stable
- VLF suppression
- available with TETRA suppression

## Applications

- FM, DAB, DVB-T, GNSS  
GSM / UMTS / LTE, ISM
- laboratory equipment
- driver for radiating cables
- tunnel radio
- R&D



## At a Glance

AMP5220031H-R is a high dynamic class A amplifier for the frequency range from 5 MHz up to 2200 MHz. The amplifier is therefore suitable for all common broadcast and navigation standards.

## High Dynamic Range

AMP5220031H-R offers an excellent dynamic range. The high 3<sup>rd</sup> order intercept point in combination with a low noise figure makes the device suitable for applications with highest demands.

## Driver Amplifier for Radiating Cables

AMP5220031H-R can be used as a driver amplifier in the field of tunnel radio. This way, RF broadcast signals are made available in tunnels or facilities, where radiating cables are installed. An internal high pass filter at the input of the amplifier avoids influences of signals in the low frequency range.

## Compact and Robust Design

The compact design in 19" 1 U construction of AMP5220031H-R is ideal for installations in system racks or for use as a tabletop device.

## Safe Coexistence

To prevent interference with trunked radio systems (TETRA), AMP5220031H-R is also available in a variant with a signal suppression filter in the frequency range 380 ... 430 MHz and an additional equalizer filter for GNSS signals.

## GNSS and Broadcast Signal Distribution

The variant 2 of AMP5220031H-R is especially designed as high-linear driver amplifier in applications with radiating cables for broadcast and navigation signals.

## RF Specifications Var. 1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{in} / Z_{out}$		50		Ohm	
low frequency	$f_{min}$			5	MHz	
high frequency	$f_{max}$	2200			MHz	
gain	$S_{21}$	43.0		48.5	dB	$f \leq 1700$ MHz
	$S_{21}$	41.0		46.0	dB	$f > 1700$ MHz
LF suppression	$S_{21}$		-50	-25	dBr	$f \leq 1$ MHz rel. 100 MHz $f > 1700$ MHz
input return loss	$S_{11}$	-12	-20		dB	
output return loss	$S_{22}$	-10	-18		dB	$f \leq 1700$ MHz $f > 1700$ MHz
		-6	-9			
reverse isolation	$S_{12}$		75		dB	
1 dB compression	$P_{1dB}$	+29	+31		dBm	
2 <sup>nd</sup> order intercept	OPIP2 <sup>1</sup>	+55	+65		dBm	
3 <sup>rd</sup> order intercept	OPIP3 <sup>1</sup>	+43	+48		dBm	
noise figure	NF		5.5	7.5	dB	
input power	$P_{IN}$			+10	dBm	output terminated with 50 Ohm
RF connectors						N female

Note 1: Tested at  $P_{out} = 2 \times +12$  dBm

## RF Specifications Var. 2 (with GNSS equalizer and TETRA suppression filter)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{in} / Z_{out}$		50		Ohm	
low frequency	$f_{min}$			5	MHz	
high frequency	$f_{max}$	2200			MHz	
gain	$S_{21}$	25	28	30	dB	$f \leq 15$ MHz
	$S_{21}$	28	30	32	dB	$15 \text{ MHz} \leq f \leq 200$ MHz
	$S_{21}$	30	32	34	dB	$f = 500$ MHz
	$S_{21}$	37	40	43	dB	$f \geq 1000$ MHz
TETRA suppression	f	380		430	MHz	
	$S_{21}$		-60	-40	dBr	rel. f 2000 MHz
LF suppression	$S_{21}$		-50	-25	dBr	$f \leq 1$ MHz rel. 100 MHz
input return loss	$S_{11}$		-12	-8	dB	$f < 50$ MHz
	$S_{11}$		-20	-11	dB	$50 \text{ MHz} \leq f \leq 1500$ MHz
	$S_{11}$		-12	-8	dB	$f > 1500$ MHz
output return loss	$S_{22}$		-16	-10	dB	$f \leq 1500$ MHz
	$S_{22}$		-12	-6	dB	$f > 1500$ MHz
1 dB compression	$P_{1dB}$	+28	+30		dBm	
2 <sup>nd</sup> order intercept	OPIP2 <sup>1</sup>	+55	+65		dBm	
3 <sup>rd</sup> order intercept	OPIP3 <sup>1</sup>	+43	+48		dBm	
noise figure	NF <sup>2</sup>		8	10	dB	$f \geq 1500$ MHz
input power	$P_{IN}$			+10	dBm	output terminated with 50 Ohm
RF connectors						N female

Note 1: Tested with  $P_{out} = 2 \times +12$  dBm

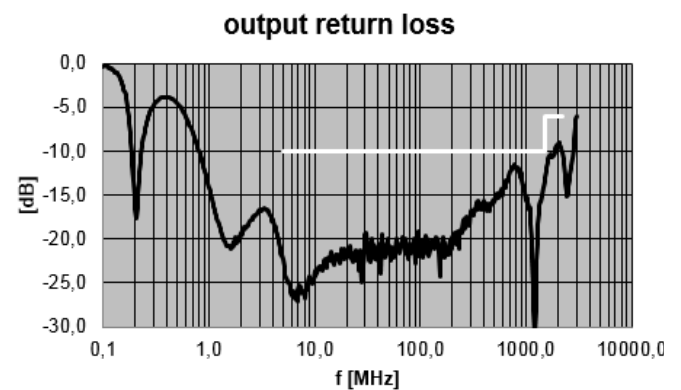
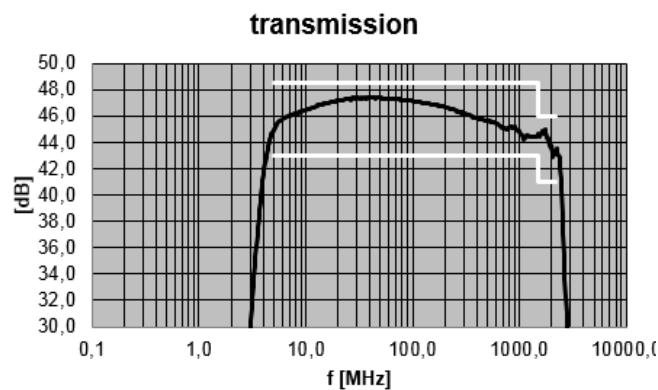
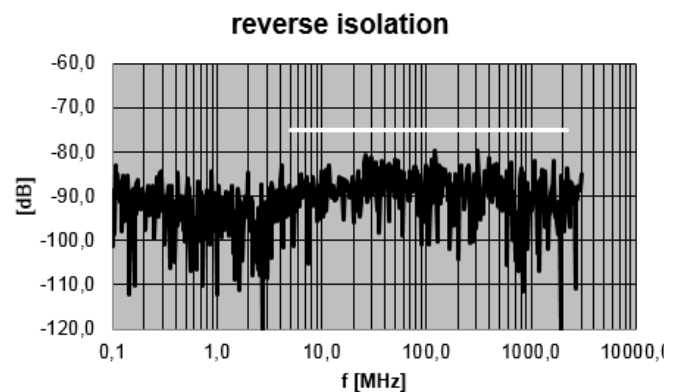
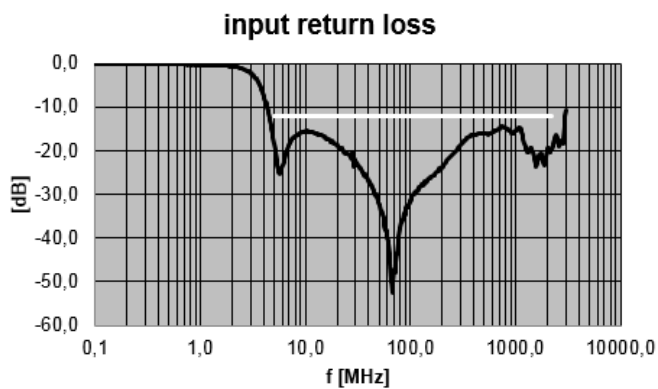
Note 2: Noise figure decreases for lower frequencies because of equalizer



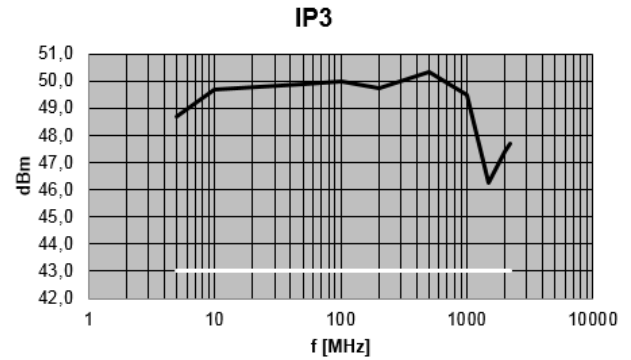
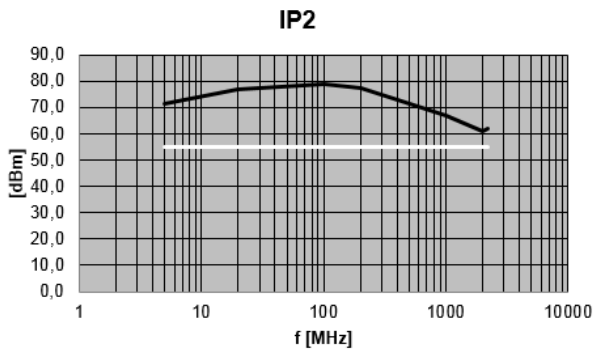
## Common Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	$U_{AC}$	90		260	V	AC
	f	50		400	Hz	
power consumption	P		13		VA	
dimensions	L x W x H	approx. 145 x 482 x 44			mm	19" 1 U without connectors and handles
weight	m		2200		g	
operating temp. range	$T_o$	+5		+40	°C	ambiance
storage temp. range	$T_s$	-40		+70	°C	
ordering information	AMP5220031H-R			1404.5102.1		
	AMP5220031H-R VAR2			1404.5102.2	additional TETRA suppression filter and GNSS equalizer	

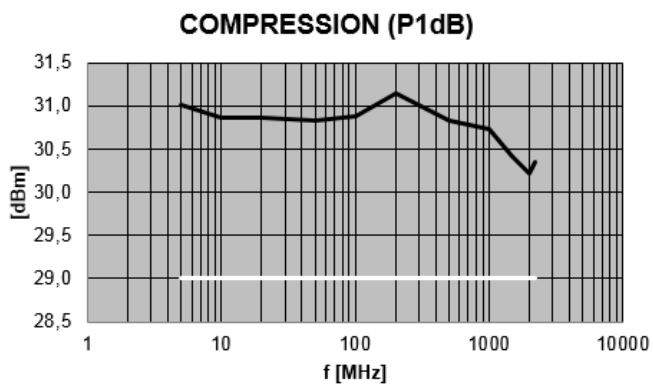
## S-Parameters Var. 1 (typical responses)



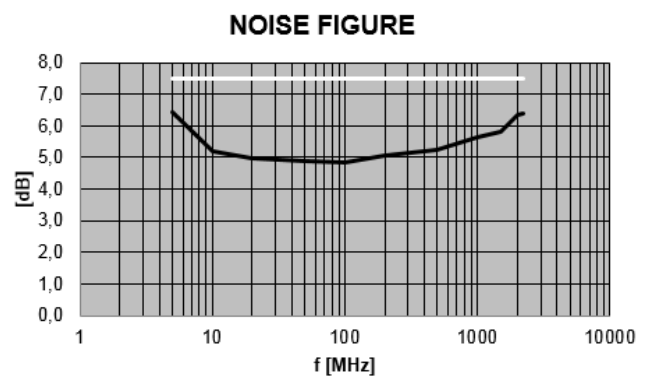
## Intermodulation (typical responses)



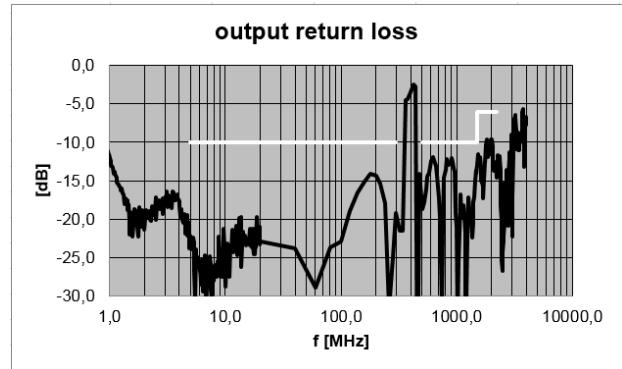
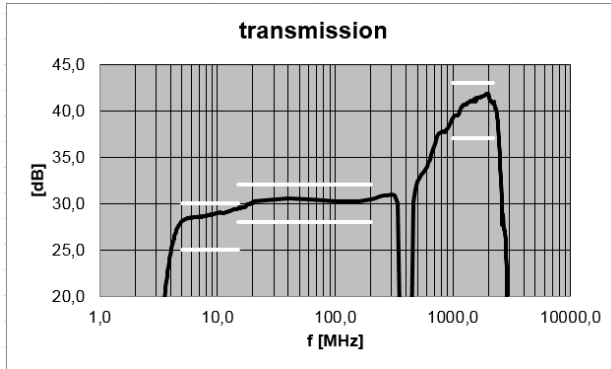
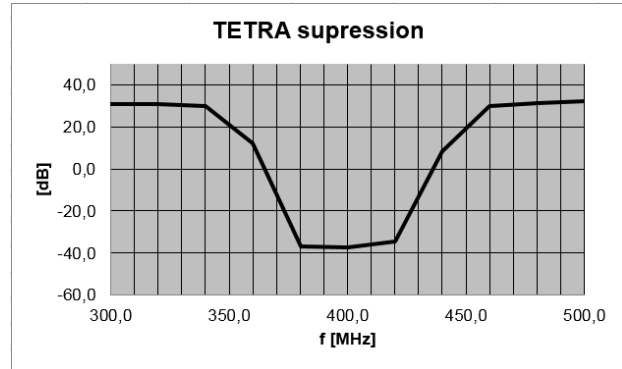
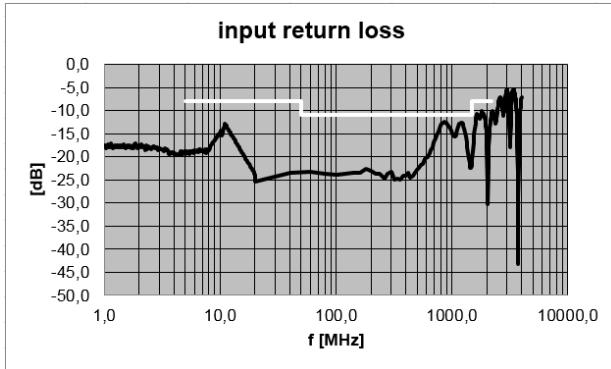
## Compression (typical responses)



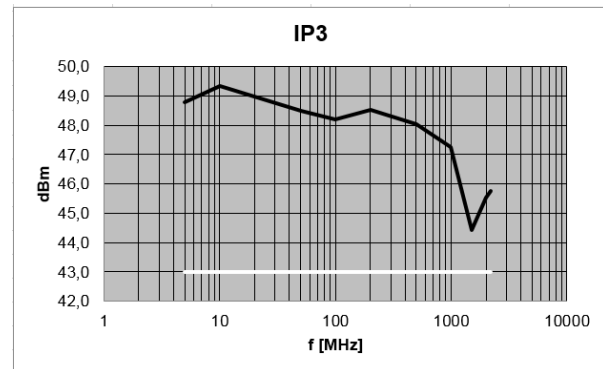
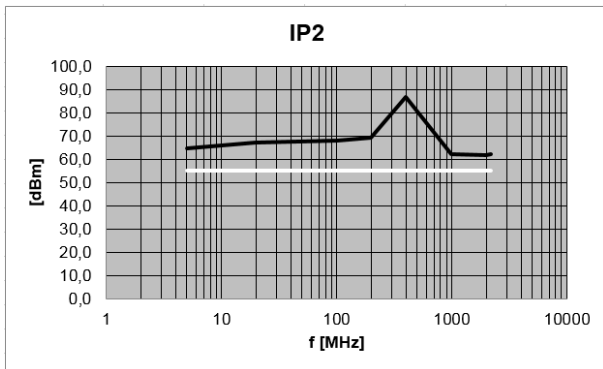
## Noise Figure (typical responses)



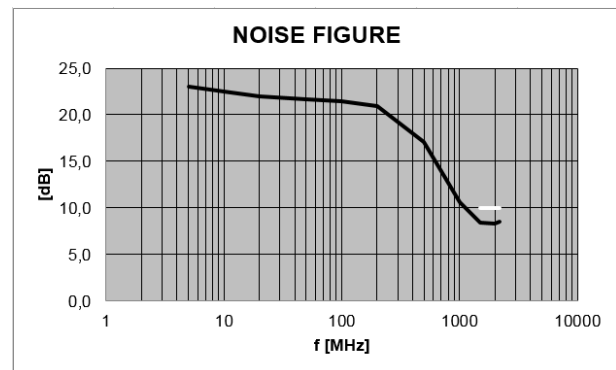
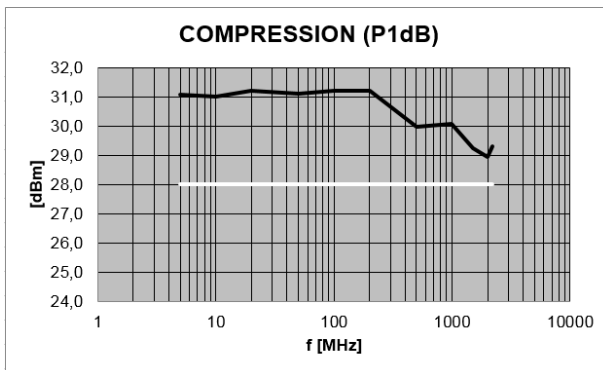
## S-Parameters Var. 2 (with GNSS equalizer and TETRA suppression filter)



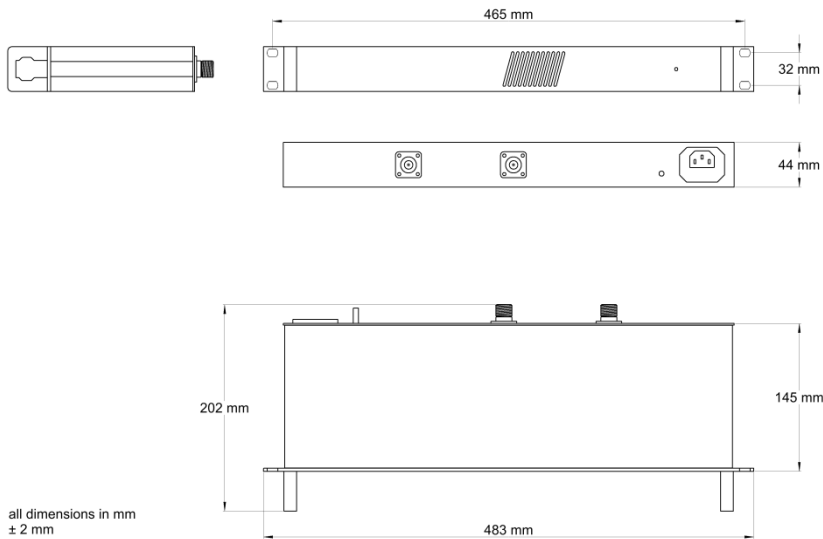
## Intermodulation Var. 2 (with GNSS equalizer and TETRA suppression filter)



## Compression / Noise Figure Var. 2 (with GNSS equalizer and TETRA suppression filter)



## Mechanical Drawings



## Front View



## Rear View

