

AMP1600047-R

2 Channel 50 W Power Amplifier with CW- and Pulse Generator 1 MHz ... 6000 MHz

Features

- compact 19", 5U device
- 2 equivalent RF outputs (both offer full bandwidth)
- high output level precision and long time stability
- VSWR monitoring
- internal CW and pulse generator (2nd generator as option)
- graphical user interface (GUI)

Applications

- direction finding
- EMC
- research & development



At a glance

AMP1600047-R is a compact solid-state power amplifier with integrated CW/pulse generator. It offers up to 50 W output power, which can be used on both outputs in parallel, under the condition that one output is used for the shortwave range (1...30 MHz) and the other one in a different frequency range. Total usable frequency range is from 1 MHz up to 6 GHz. The user can select between a fixed gain and an automatic-level (ALC) controlled mode. In ALC mode, AMP1600047-R provides directly and accurately the desired output power level with virtually no drift over time.

Optional 2nd internal generator

Customers can order AMP1600047-R with a 2nd internal generator, so that both outputs can be used in parallel from internal CW/pulse sources. Otherwise, a parallel use is possible, when connecting an external generator.

The internal generators can be locked to an external frequency reference if required.

They also offer a pulse modulation with flexible configuration of duty cycle and period.

Forward and reverse power measurement

Forward and reverse power is continuously monitored on both outputs. Alternatively, the user can select to display VSWR. Reflected power measurement serves also to protect the amplifier from excessive mismatch.

Graphical user interface (GUI)

AMP1600047-R is remote controlled via LAN or USB. An intuitive graphical user interface accessible by standard internet browsers allows to make all configurations and see the current state of the amplifier. Alternatively, a remote control via SCPI-like ASCII-string commands is also possible.

Result of many years of experience

AMP1600047-R runs a continuous self-test to detect any failure and alert the operator. Its thermal management adapts the active cooling to the current needs. It also reduces primary power consumption depending on amplifier state.

The device is delivered factory-calibrated and traceable to accepted standards.

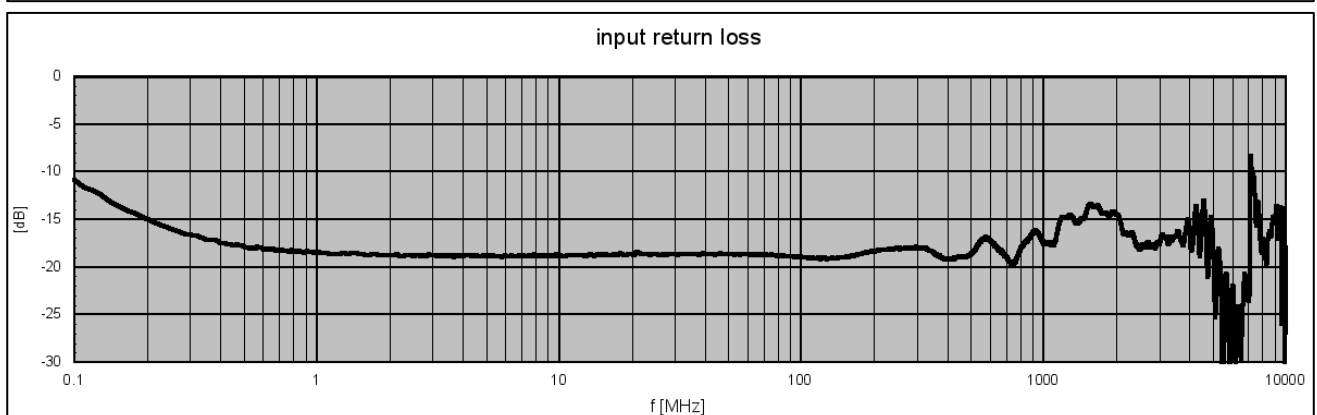
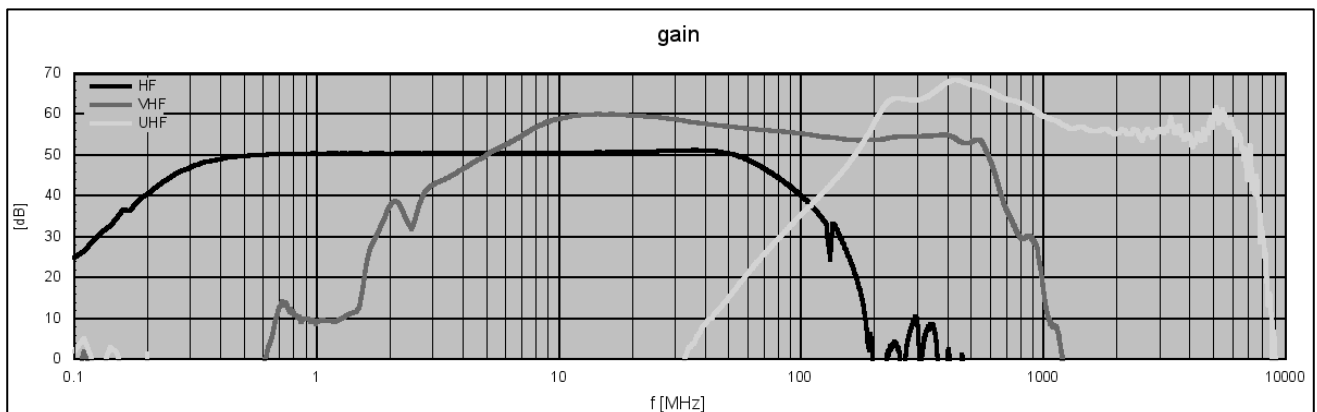
RF-Specification

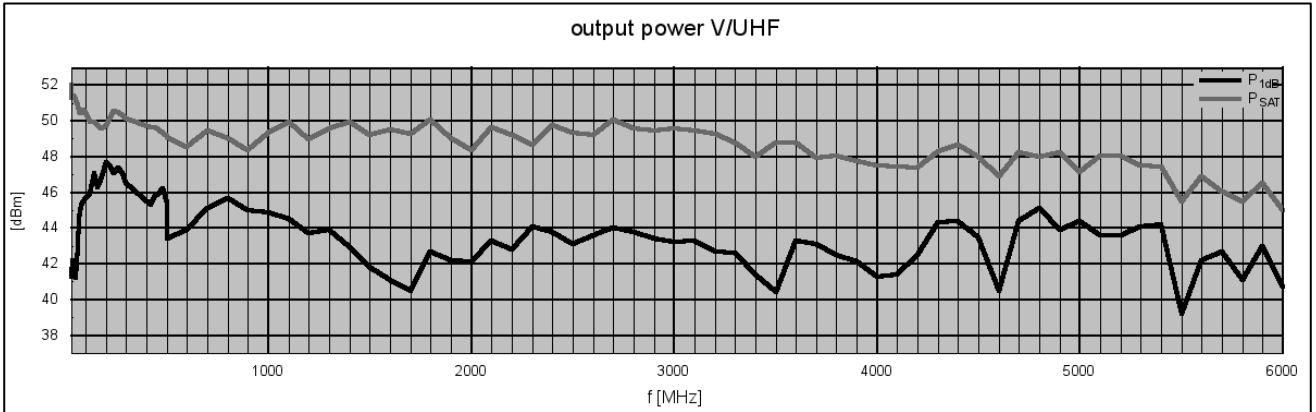
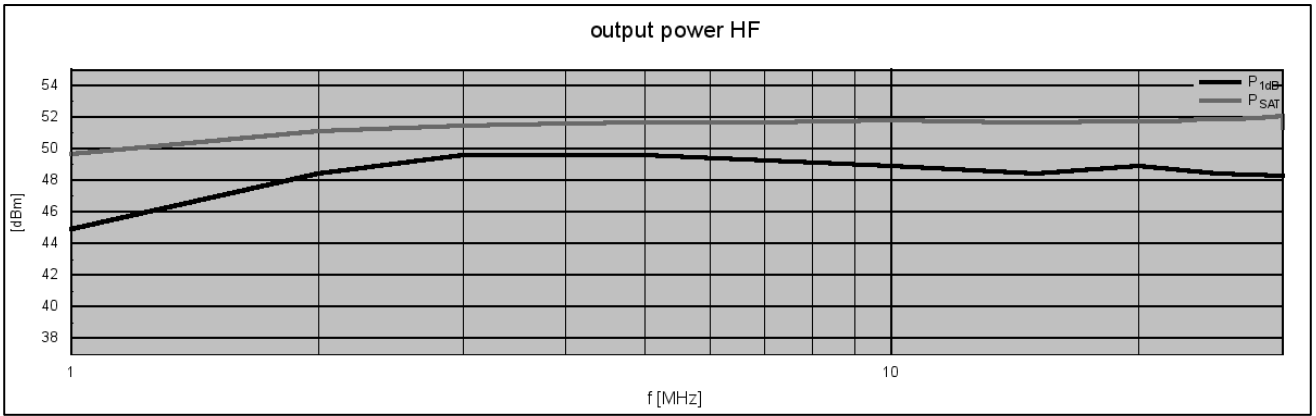
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Impedance	Z_{IN}/Z_{OUT}		50		Ω	
number of outputs	n_{OUT}		2			
low frequency	f_{MIN}			1	MHz	
high frequency	f_{MAX}	6000			MHz	
minimum output power	P_{RF_MIN}			+30.0	dBm	1 W
maximum output power	P_{RF_MAX}	+47.0	+49		dBm	$f \leq 3000$ MHz
	P_{RF_MAX}	+46.0	+48		dBm	3000 MHz < $f \leq 5000$ MHz
	P_{RF_MAX}	+44.0	+46		dBm	$f > 5000$ MHz
ALC resolution	ΔP_{RF}			0.05	dB	
level accuracy	dP_{RF}			± 0.5	dB	CW, RMS detection
harmonics	HD			-25	dBc	$f = 3$ GHz, $P_{RF} = +36$ dBm
non-harmonics	SD			-60	dBc	$P_{RF} = P_{1dB}$
output isolation	S_{23}		-130	-80	dB	
input isolation	S_{23}		-78	-75	dB	HF external to VHF (intern. gen.)
output path switching time	t_{OUT}		60	250	ms	
RF connectors	X_{RF}		N female			front panel
CW- und Pulse Generator						
number of generators	n_{GEN}		1	2		standard: 1, optional: 2
minimum HF-frequency	f_{MIN}			1	MHz	HF signal generator
maximum HF-frequency	f_{MAX}	30			MHz	HF signal generator
minimum V/UHF-freq.	f_{MIN}			30	MHz	V/UHF signal generator
maximum V/UHF- freq.	f_{MAX}	6000			MHz	V/UHF signal generator
frequency resolution	Δf_{GEN}		10		kHz	
frequency accuracy	df_{GEN}		± 5		ppm	
pulse width	t_W	1		9999	μs	
repetition rate	t_P	2		10000	μs	
Ext. generator input						
minimum frequency	f_{MIN_EXT}			1	MHz	
maximum frequency	f_{MAX_EXT}	6000			MHz	
input level	P_{GEN_EXT}		+0	+10	dBm	
RF connector	X_{GEN_EXT}		N female			
REF input						
impedance	Z_{IN}		50		Ω	
frequency	f_{REF}		10		MHz	
input level	P_{REF}	-20	10	+15	dBm	
DC offset	U_{DC}	-20		+20	V	AC coupled
RF connector	X_{REF}		BNC female			rear panel
REF output						
impedance	Z_{OUT}		50		Ω	
Frequency	f_{REF}		10		MHz	
output level	P_{REF}		+10		dBm	
amplitude	U_{REF}		5		V _{SS}	$R_{Load} > 1$ kOhm
DC offset	U_{OFS}		1.65		V	$R_{Load} > 1$ kOhm
RF connector	X_{REF}		BNC female			Rear panel



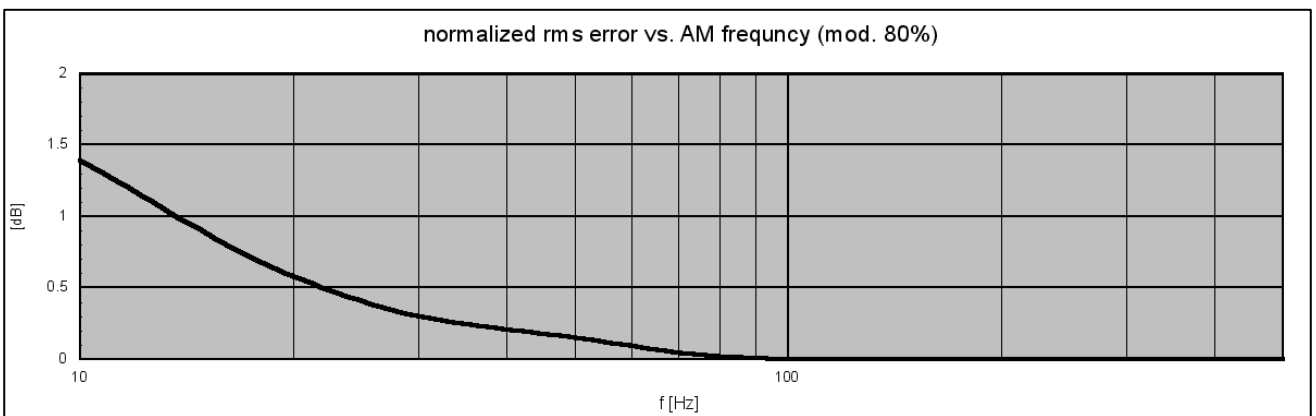
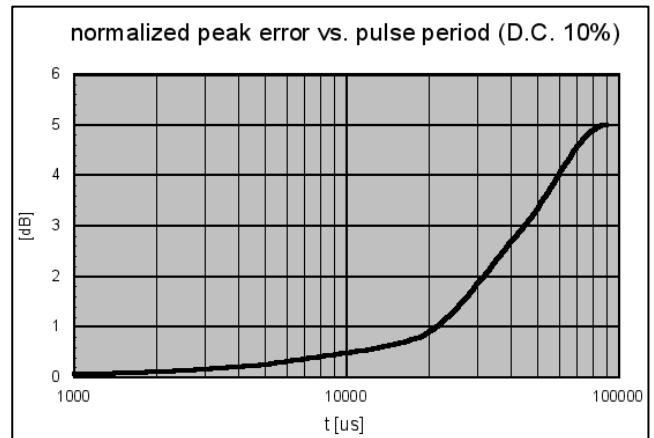
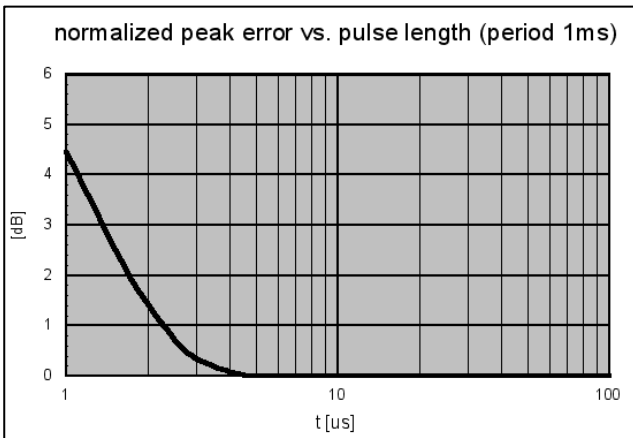
Common specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	U_{AC}	120	230	260	V	50 / 60 Hz
power consumption	P_{AC}		30		W	standby mode
			50		W	HF + V/UHF OFF
			800		W	RF power 2 x +47dBm
				1200	W	saturated in both channels
power socket	X_{AC}	IEC-60320 C14				
dimensions	B x H x T	approx. 483 x 222 x 460			mm	19", 5 HE
weight		35			kg	
remote interface		RJ45 10/100BaseT				ASCII strings
operating temp. range	T_o	+ 5		+ 45	°C	
storage temp. range	T_s	- 40		+ 70	°C	
Product conformity						
electromagnetic capability	EU: In line with EMC directive (2014/30/EC)					applied harmonized standards: EN61326-2-1, (for use in control and laboratory environments), EN55035, EN55032, EN61000-3-2, EN61000-3-3
electrical safety	EU: in line with low voltage directive (2014/35/EC)					Applied harmonized standards: EN 61010-1
order information	AMP1600047-R	P/N: 2105.5002.1				
	AMP1600047-R-O1	P/N: 2105.5002.O1				2 nd RF signal generator





Power accuracy in pulse mode



Appearances



Front view



Rear view



Appearance Graphic User Interface (GUI)

Control of AMP1600047-R



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HF Channel
1 ... 30 MHz

RF Source

Target

Mode

Frequency

Output Power

Pulse Width

Pulse Period

Modulation

Generator

Output Power

RMS: 47.0 dBm | 49.9 W
PEAK: 47.0 dBm | 49.9 W

Return Power

RMS: 10.6 dBm | 11.5 mW
PEAK: 12.9 dBm | 19.4 mW

Return Loss / VSWR

RMS: 36.4 dB | 1.03
PEAK: 34.1 dB | 1.04

...

V/UHF Channel
30 ... 6000 MHz

RF Source

Target

Mode

Frequency

Output Power

Pulse Width

Pulse Period

Modulation

Generator

Output Power

RMS: 47.0 dBm | 49.9 W
PEAK: 47.0 dBm | 49.9 W

Return Power

RMS: 27.7 dBm | 587.5 mW
PEAK: 28.2 dBm | 662.2 mW

Return Loss / VSWR

RMS: 19.3 dB | 1.24
PEAK: 18.8 dB | 1.26

