R&S®BBA300
BROADBAND AMPLIFIER

Specifications

Specifications
Version 10.00

ROHDE&SCHWARZ
Make ideas real

CONTENTS

European directives

RoHS Europe, Directive 2011/65/EU:
Equipment category 9, fulfilled without any exceptions.

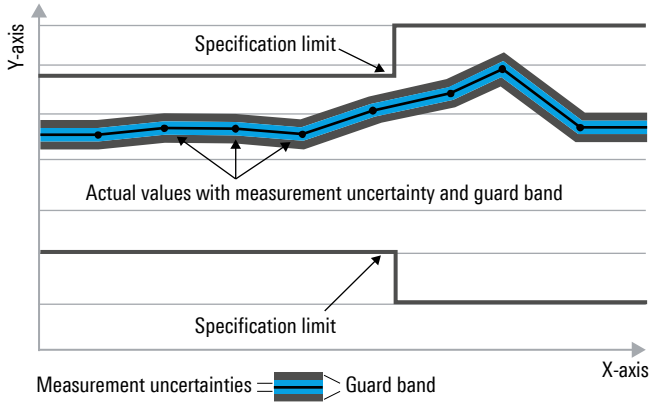
WEEE Europe, Directive 2012/19/EU:
No disposing with unsorted municipal waste; no return with collection of waste electrical and electronic equipment from private households. Separate collection necessary. Ask Rohde & Schwarz representatives about recovery.

Definitions

General
Product data applies under the following conditions:

- 15 minutes of warm-up operation
- All specified parameters are valid for an ambient temperature of +25 °C, input impedance of 50 Ω and output impedance of 50 Ω
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits
Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ± or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)
Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits
Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value, e.g. dimensions or resolution of a setting parameter. Compliance is ensured by design.

Typical data (typ.)
Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)
Characterize product performance by means of a representative value for the given parameter, e.g. nominal impedance. In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)
Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties
Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

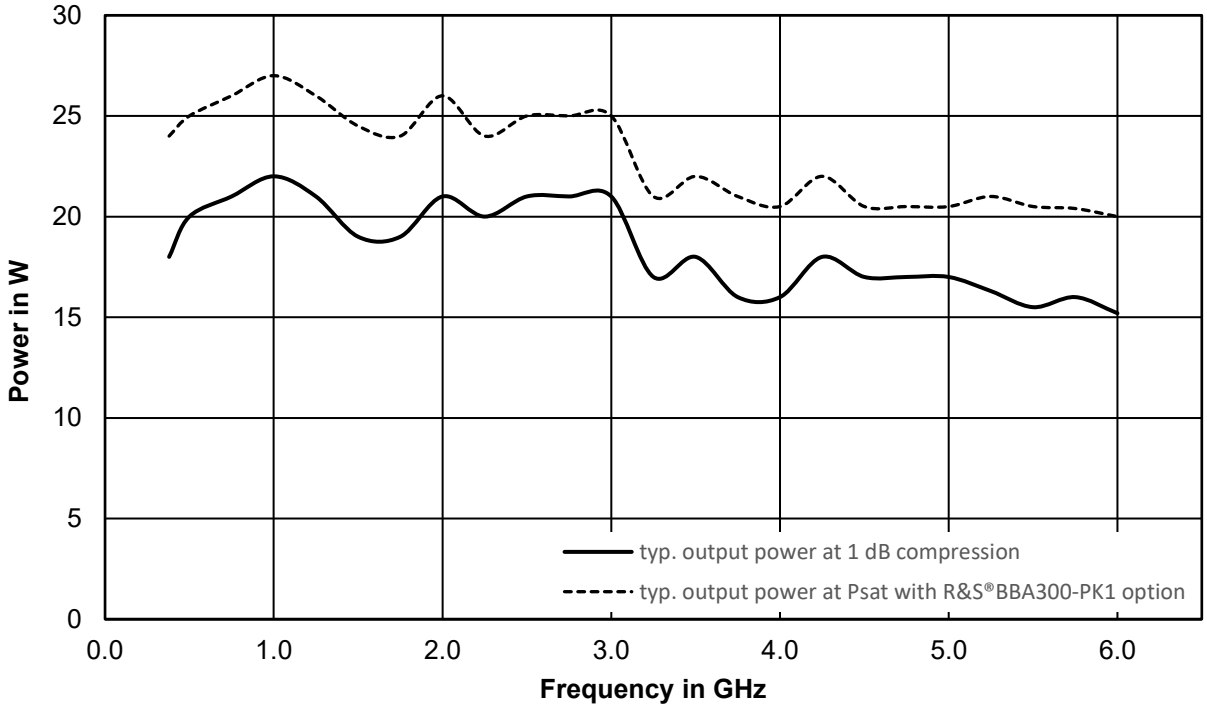
Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Frequency band CDE from 380 MHz to 6 GHz

R&S®BBA300-CDE15, power class: 15 W P1dB or 20 W P_{sat} [1]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		380 MHz to 6 GHz instantaneously
Nominal output load		50 Ω
Nominal output power		15 W (41.76 dBm)
Output power [2]	380 MHz to 6 GHz	min. 15 W (41.76 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [2]	380 MHz to 6 GHz	min. 20 W (43.00 dBm)
Output power at 1 dB compression [2]	380 MHz to 6 GHz	min. 15 W (41.76 dBm)
Nominal power gain	at 1 GHz	nom. 41.76 dB
Gain flatness	380 MHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 35.76 dBm/tone, 1 MHz spacing	nom. < –26 dBc
Harmonics at P1dB and class A		< –22 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	380 MHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	380 MHz to 6 GHz	nom. –114 dBm (1 Hz)

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

[1] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[2] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 16 kg (35 lb)

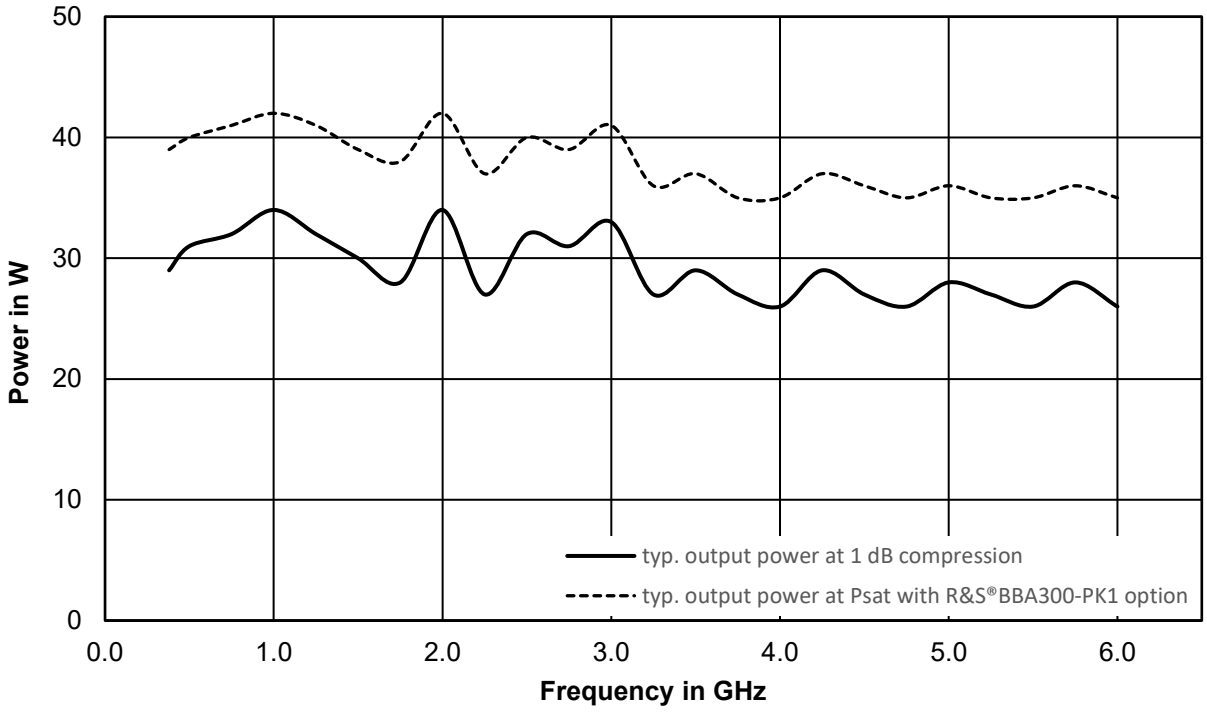
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 110 V	5.5 A
	at 230 V	2.6 A
Maximum AC power		600 VA

R&S®BBA300-CDE25, power class: 25 W P1dB or 35 W P_{sat} [3]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		380 MHz to 6 GHz instantaneously
Nominal output load		50 Ω
Nominal output power		25 W (44.0 dBm)
Output power [4]	380 MHz to 6 GHz	min. 25 W (44.0 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [4]	380 MHz to 6 GHz	min. 35 W (45.44 dBm)
Output power at 1 dB compression [4]	380 MHz to 6 GHz	min. 25 W (44.0 dBm)
Nominal power gain	at 1 GHz	nom. 44.0 dB
Gain flatness	380 MHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 38 dBm/tone, 1 MHz spacing	nom. < –21 dBc
Harmonics at P1dB and class A		< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	380 MHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	380 MHz to 6 GHz	nom. –114 dBm (1 Hz)

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

[3] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[4] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 16 kg (35 lb)

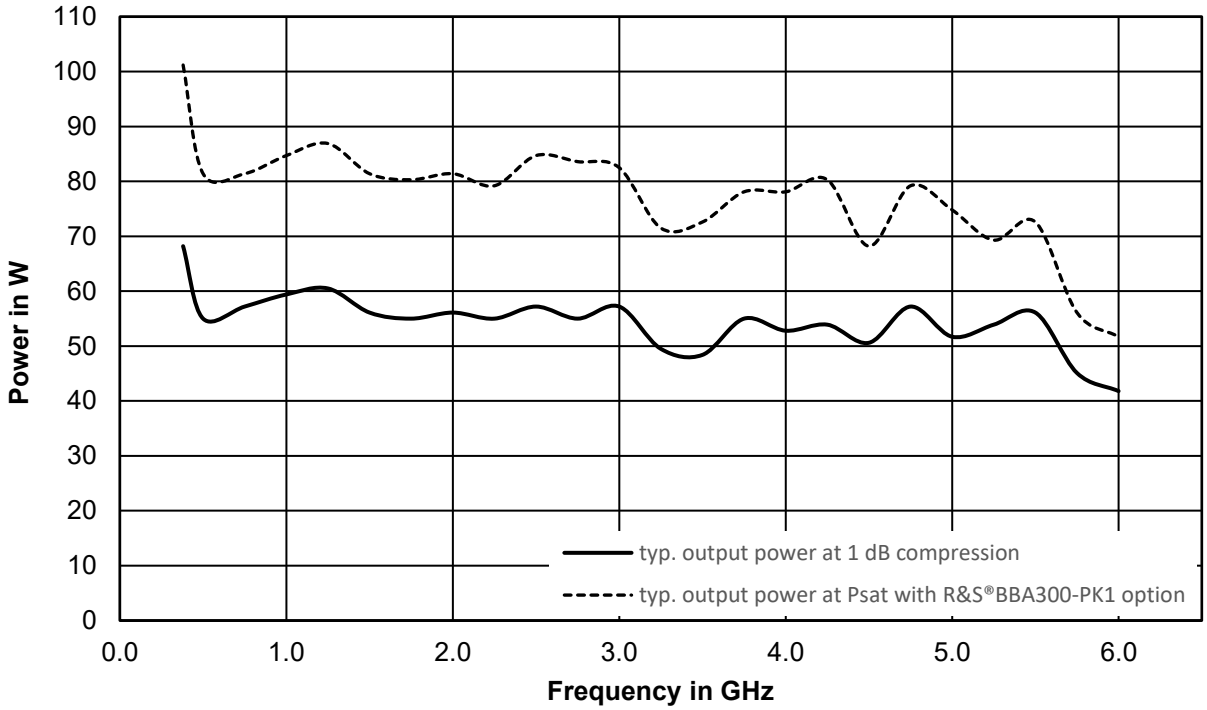
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 110 V	5.7 A
	at 230 V	2.7 A
Maximum AC power		620 VA

R&S®BBA300-CDE50, power class: 50 W P1dB or 75 W P_{sat} [5]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		380 MHz to 6 GHz instantaneously
Nominal output load		50 Ω
Nominal output power		50 W (47 dBm)
Output power [6]	380 MHz to 5.5 GHz	min. 50 W (47.00 dBm)
	> 5.5 GHz to 6 GHz	min. 40 W (46.00 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [6]	380 MHz to 2.1 GHz	min. 75 W (48.75 dBm)
	> 2.1 GHz to 4.3 GHz	min. 63 W (48.00 dBm)
	> 4.3 GHz to 5.6 GHz	min. 55 W (47.40 dBm)
	> 5.6 GHz to 6 GHz	min. 40 W (46.02 dBm)
Output power at 1 dB compression [6]	380 MHz to 2.6 GHz	min. 50 W (47.00 dBm)
	> 2.6 GHz to 5.6 GHz (except 3.2 to 3.6 GHz)	min. 45 W (46.50 dBm)
	3.2 GHz to 3.6 GHz	min. 42 W (46.23 dBm)
	> 5.6 GHz to 6 GHz	min. 35 W (45.44 dBm)
Nominal power gain	at 1 GHz	nom. 47 dB
Gain flatness	380 MHz to 6 GHz	< ±4.5 dB
Gain adjustment range		> 20 dB
Third order intermodulation (TOI)	2-tone at 39.44 dBm/tone, 1 MHz spacing	
	380 MHz to 5.5 GHz	nom. < –27 dBc
	>5.5 GHz to 6 GHz	nom. < –19 dBc
Harmonics at P1dB and class A	380 MHz to 2.6 GHz	< –20 dBc
	> 2.6 GHz to 3.2 GHz	< –18 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	380 MHz to 5 GHz	nom. < 10 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	at nominal gain	nom. < –114 dBm (1 Hz)

[5] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[6] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 16 kg (35 lb)

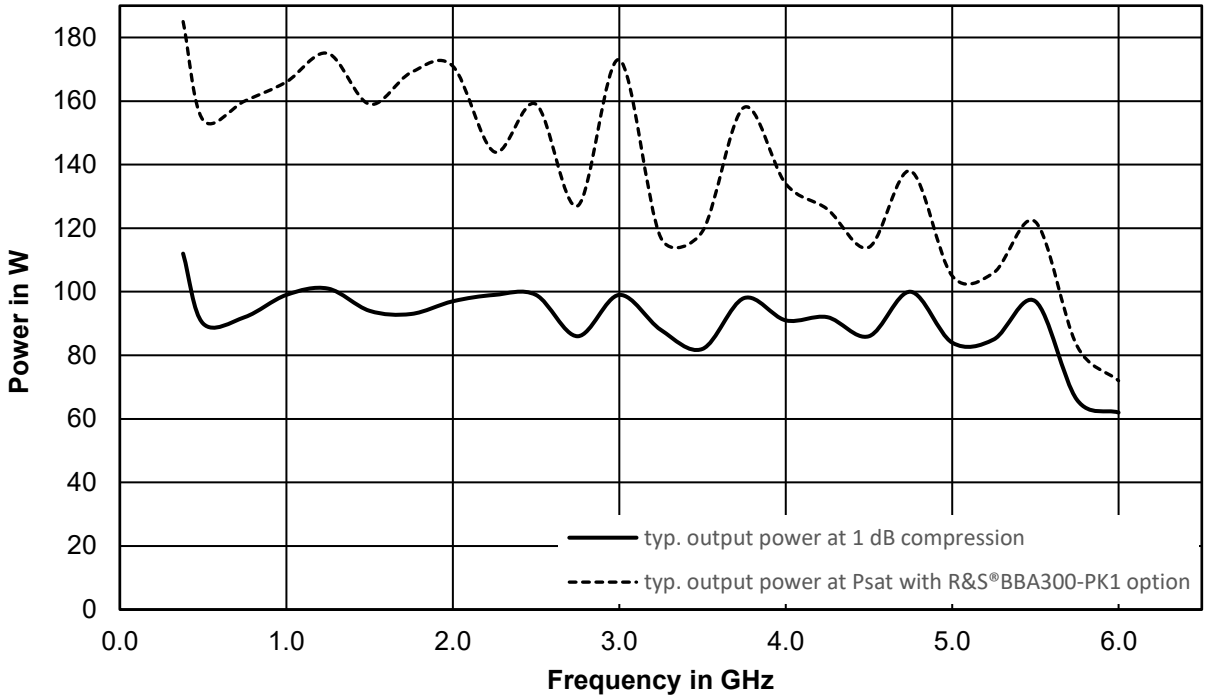
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 110 V	6.9 A
	at 230 V	3.3 A
Maximum AC power		750 VA

R&S®BBA300-CDE90, power class: 90 W P1dB or 140 W P_{sat} [7]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		380 MHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		90 W (49.54 dBm)
Output power [8]	380 MHz to 5.5 GHz	min. 90 W (49.54 dBm)
	> 5.5 GHz to 6 GHz	min. 60 W (47.78 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [8]	380 MHz to 2 GHz	min. 140 W (51.50 dBm)
	> 2 GHz to 4.9 GHz	min. 110 W (50.40 dBm)
	> 4.9 GHz to 5.6 GHz	min. 95 W (49.77 dBm)
	> 5.6 GHz to 6 GHz	min. 75 W (48.75 dBm)
Output power at 1 dB compression [8]	380 MHz to 2.5 GHz	min. 90 W (49.54 dBm)
	> 2.5 GHz to 5.6 GHz	min. 80 W (49.00 dBm)
	> 5.6 GHz to 6 GHz	min. 60 W (47.78 dBm)
Nominal power gain	at 1 GHz	nom. 49.54 dB
Gain flatness	380 MHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 41.5 dBm/tone, 1 MHz spacing	
	380 MHz to 5.5 GHz	nom. < –27 dBc
	> 5.5 GHz to 6 GHz	nom. < –19 dBc
Harmonics at P1dB and class A	380 MHz to 2.6 GHz	< –20 dBc
	> 2.6 GHz to 3.2 GHz	< –18 dBc
	> 3.2 GHz to 6.0 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	380 MHz to 6 GHz	nom. < 10.0 dB
Noise power density	380 MHz to 6 GHz	nom. –111 dBm (1 Hz)

[7] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[8] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 25 kg (55 lb)

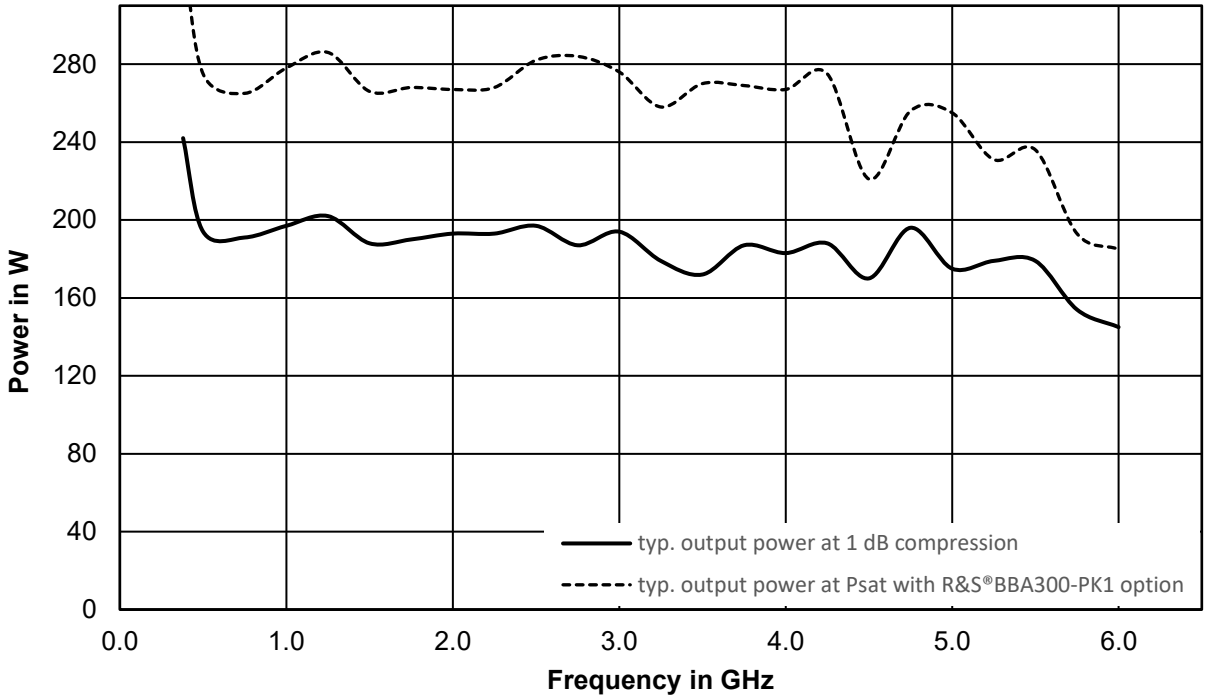
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	6.1 A
Maximum AC power		1.5 kVA

R&S®BBA300-CDE180, power class: 180 W P1dB or 250 W P_{sat} [9]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		380 MHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		180 W (52.55 dBm)
Output power [10]	380 MHz to 5.6 GHz	min. 185 W (52.67 dBm)
	> 5.6 GHz to 6 GHz	min. 120 W (50.80 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [10]	380 MHz to 3.2 GHz	min. 250 W (54.00 dBm)
	> 3.2 GHz to 4.4 GHz	min. 220 W (53.42 dBm)
	> 4.4 GHz to 5.6 GHz	min. 200 W (53.00 dBm)
	> 5.6 GHz to 6 GHz	min. 150 W (51.76 dBm)
Output power at 1 dB compression [10]	380 MHz to 2.7 GHz	min. 180 W (52.55 dBm)
	> 2.7 GHz to 5.6 GHz	min. 160 W (52.04 dBm)
	> 5.6 GHz to 6 GHz	min. 120W (50.80 dBm)
Nominal power gain	at 1 GHz	nom. 52.55 dB
Gain flatness	380 MHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 44.8 dBm/tone, 1 MHz spacing	
	380 MHz to 5.5 GHz	nom. < –28 dBc
	> 5.5 GHz to 6 GHz	nom. < –20 dBc
Harmonics at P1dB and class A	380 MHz to 2.6 GHz	< –20 dBc
	> 2.6 GHz to 3.2 GHz	< –18 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	380 MHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	380 MHz to 6 GHz	nom. –107 dBm (1 Hz)

[9] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[10] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 35 kg (77 lb)

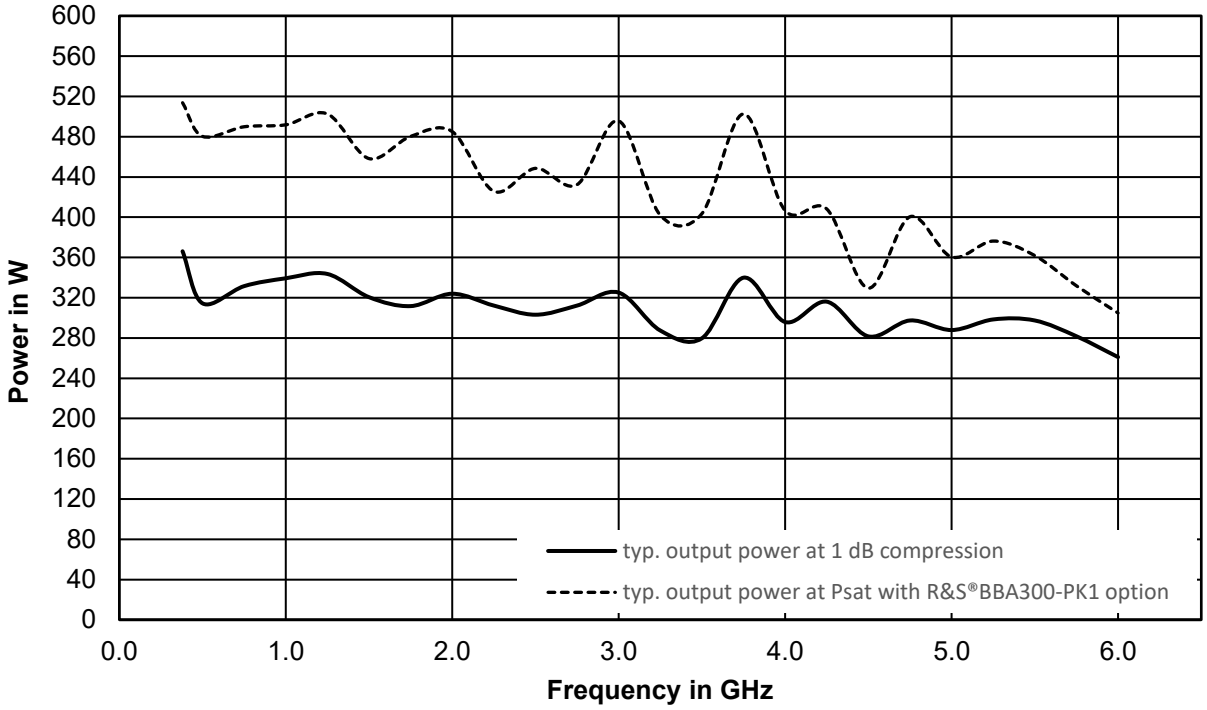
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	10.9 A
Maximum AC power		2.5 kVA

R&S®BBA300-CDE300, power class: 300 W P1dB or 450 W P_{sat} [11]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		380 MHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		300 W (54.78 dBm)
Output power [12]	380 MHz to 4.2 GHz	min. 310 W (54.91 dBm)
	> 4.2 GHz to 5.8 GHz	min. 270 W (54.31 dBm)
	> 5.8 GHz to 6 GHz	min. 260 W (54.15 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [12]	380 MHz to 2.2 GHz	min. 450 W (56.53 dBm)
	> 2.2 GHz to 4.2 GHz	min. 370 W (55.68 dBm)
	> 4.2 GHz to 5.8 GHz	min. 320 W (55.05 dBm)
	> 5.8 GHz to 6 GHz	min. 250 W (53.98 dBm)
Output power at 1 dB compression [12]	380 MHz to 2.6 GHz	min. 300 W (54.77 dBm)
	> 2.6 GHz to 5.8 GHz	min. 260 W (54.15 dBm)
	> 5.8 GHz to 6 GHz	min. 230 W (53.62 dBm)
Nominal power gain	at 1 GHz	nom. 54.78 dB
Gain flatness	380 MHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 47 dBm/tone, 1 MHz spacing	
	380 MHz to 5.5 GHz	nom. < –29 dBc
	> 5.5 GHz to 6 GHz	nom. < –20 dBc
Harmonics at P1dB and class A	380 MHz to 3.2 GHz	< –20 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	380 MHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 11.5 dB
Noise power density	380 MHz to 6 GHz	nom. –100 dBm (1 Hz)

[11] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[12] Applies only to standard 12 HU systems. For larger systems, the cable insertion loss must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 60 dB

Mechanical specifications

Dimensions and weight		
Dimensions	rack setup	19" 1/1, 12 HU, depth: 800 mm (31.5 in)
Weight		approx. 100 kg (220 lb)

RF and sample connectors		
RF input port	rear panel	N female
RF output port	rear panel	7/16 DIN female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

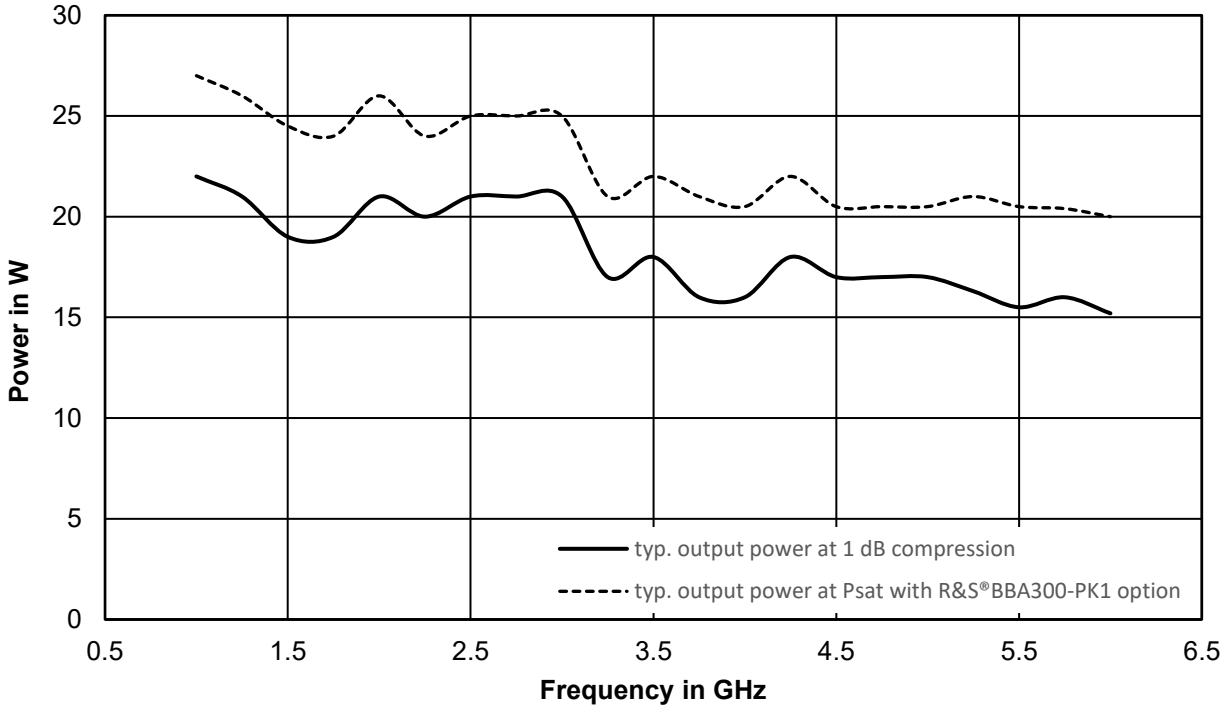
Electrical specifications

AC supply voltage		
Nominal operating voltage range		380 V to 415 V AC ± 10 %, three-phase, with N, 47 Hz to 63 Hz
		200 V to 240 V AC ± 10 %, three-phase, 47 Hz to 63 Hz
Rated current	at 230 V per phase	11.3 A | 11.3 A | 0.4 A
Maximum AC power		5.3 kVA

Frequency band DE from 1 GHz to 6 GHz

R&S®BBA300-DE15, power class: 15 W P1dB or 20 W P_{sat} [13]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz instantaneously
Nominal output load		50 Ω
Nominal output power		15 W (41.76 dBm)
Output power [14]	1 GHz to 6 GHz	min. 15 W (41.76 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [14]	1 GHz to 6 GHz	min. 20 W (43.00 dBm)
Output power at 1 dB compression [14]	1 GHz to 6 GHz	min. 15 W (41.76 dBm)
Nominal power gain	at 1 GHz	nom. 41.76 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 36.76 dBm/tone, 1 MHz spacing	nom. < –26 dBc
Harmonics at P1dB and class A		< –22 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	1 MHz to 6 GHz	nom. –114 dBm (1 Hz)

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

[13] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[14] Internal cable insertion loss for RF output on the front panel: 1 GHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 16 kg (35 lb)

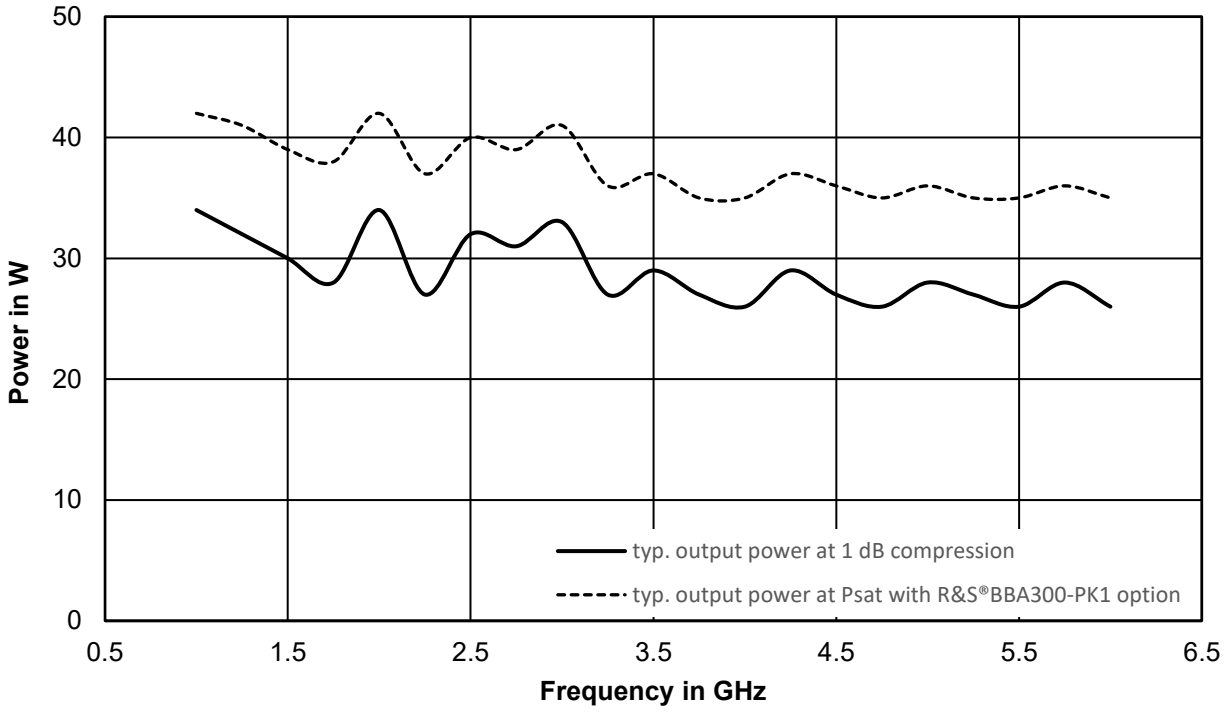
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 110 V	5.5 A
	at 230 V	2.6 A
Maximum AC power		600 VA

R&S®BBA300-DE25, power class: 25 W P1dB or 35 W P_{sat} [15]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz instantaneously
Nominal output load		50 Ω
Nominal output power		25 W (44.0 dBm)
Output power [16]	1 GHz to 6 GHz	min. 25 W (44.0 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [16]	1 GHz to 6 GHz	min. 35 W (45.44 dBm)
Output power at 1 dB compression [16]	1 GHz to 6 GHz	min. 25 W (44.0 dBm)
Nominal power gain	at 1 GHz	nom. 44.0 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 38 dBm/tone, 1 MHz spacing	nom. < –21 dBc
Harmonics at P1dB and class A		< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	1 GHz to 6 GHz	nom. –114 dBm (1 Hz)

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

[15] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[16] Internal cable insertion loss for RF output on the front panel: 1 GHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 16 kg (35 lb)

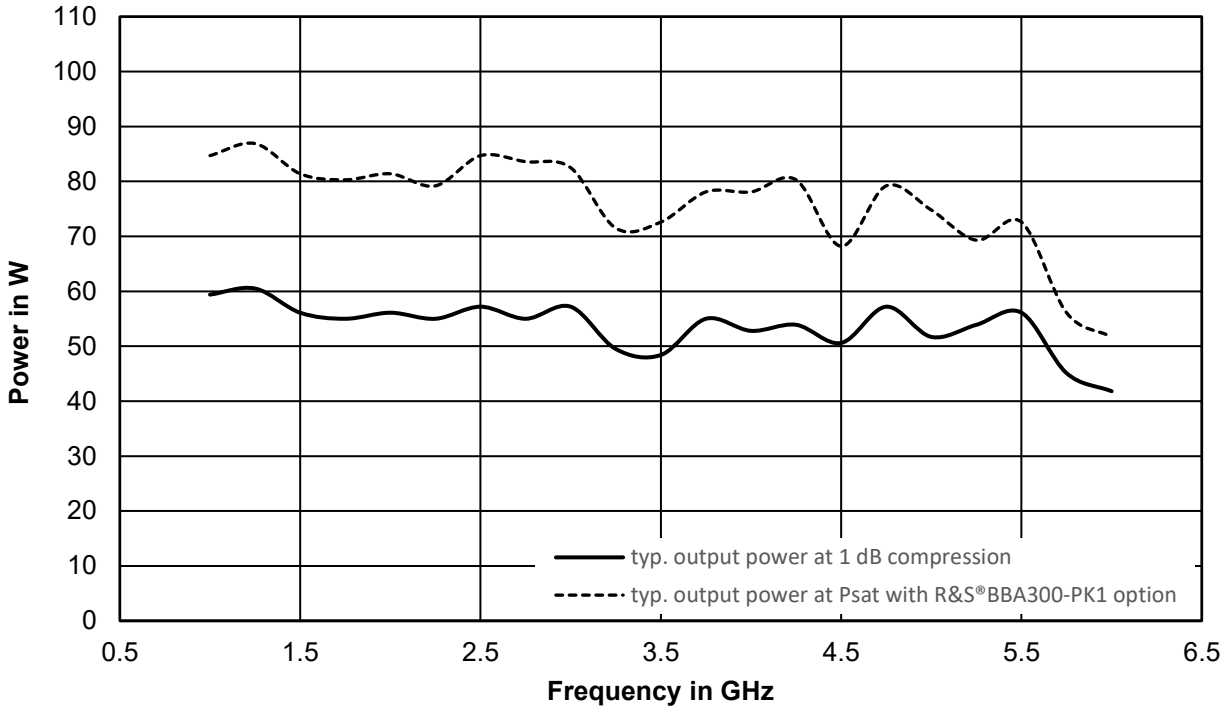
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 110 V	5.7 A
	at 230 V	2.7 A
Maximum AC power		620 VA

R&S®BBA300-DE50, power class: 50 W P1dB or 75 W P_{sat} [17]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz instantaneously
Nominal output load		50 Ω
Nominal output power		50 W (47 dBm)
Output power [18]	1 GHz to 5.5 GHz	min. 50 W (47.00 dBm)
	> 5.5 GHz to 6 GHz	min. 40 W (46.00 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [18]	1 GHz to 2.1 GHz	min. 75 W (48.75 dBm)
	> 2.1 GHz to 4.3 GHz	min. 63 W (48.00 dBm)
	> 4.3 GHz to 5.6 GHz	min. 55 W (47.40 dBm)
	> 5.6 GHz to 6 GHz	min. 40 W (46.02 dBm)
Output power at 1 dB compression [18]	1 GHz to 2.6 GHz	min. 50 W (47.00 dBm)
	> 2.6 GHz to 5.6 GHz (except 3.2 to 3.6 GHz)	min. 45 W (46.50 dBm)
	3.2 GHz to 3.6 GHz	min. 42 W (46.23 dBm)
	> 5.6 GHz to 6 GHz	min. 35 W (45.44 dBm)
Nominal power gain	at 1 GHz	nom. 47 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Gain adjustment range		> 20 dB
Third order intermodulation (TOI)	2-tone at 39.44 dBm/tone, 1 MHz spacing	
	1 GHz to 5.5 GHz	nom. < –27 dBc
	> 5.5 GHz to 6 GHz	nom. < –19 dBc
Harmonics at P1dB and class A	1 GHz to 2.6 GHz	< –20 dBc
	> 2.6 GHz to 3.2 GHz	< –18 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 5 GHz	nom. < 10 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	at nominal gain	nom. < –114 dBm (1 Hz)

[17] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[18] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 16 kg (35 lb)

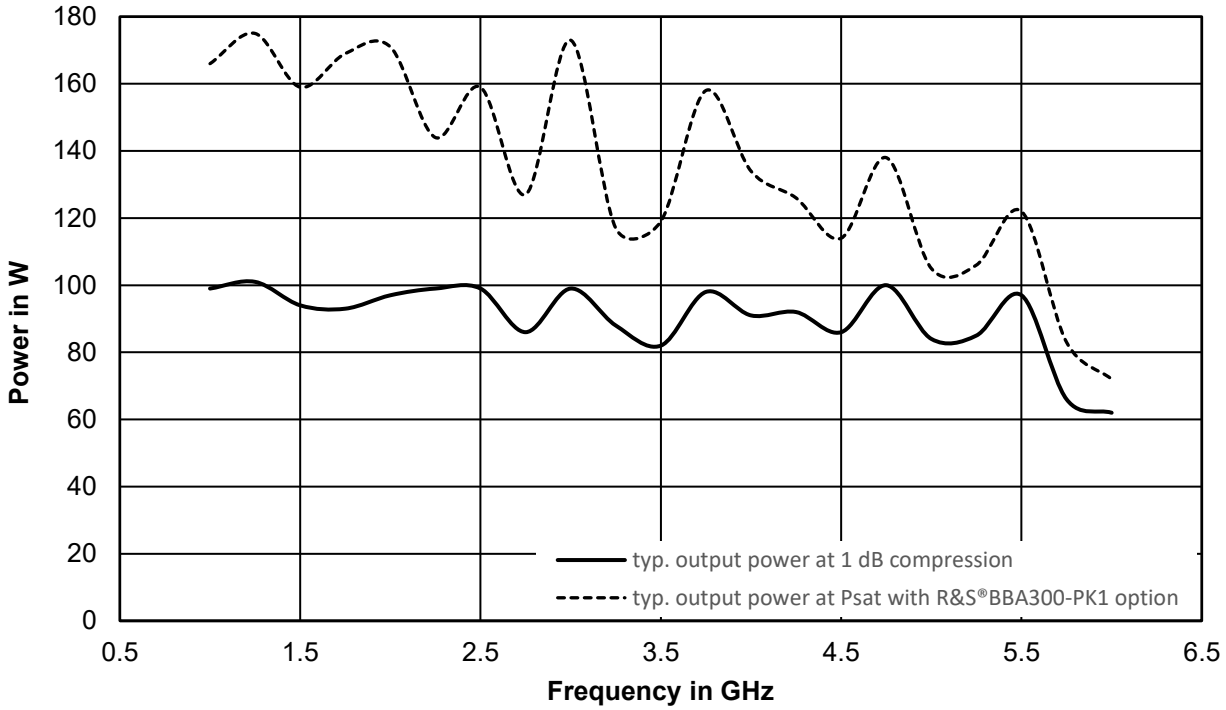
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 110 V	6.9 A
	at 230 V	3.3 A
Maximum AC power		750 VA

R&S®BBA300-DE90, power class: 90 W P1dB or 140 W P_{sat} [19]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		90 W (49.54 dBm)
Output power [20]	1 GHz to 5.5 GHz	min. 90 W (49.54 dBm)
	> 5.5 GHz to 6 GHz	min. 60 W (47.78 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [20]	1 GHz to 2 GHz	min. 140 W (51.50 dBm)
	> 2 GHz to 4.9 GHz	min. 110 W (50.40 dBm)
	> 4.9 GHz to 5.6 GHz	min. 95 W (49.77 dBm)
	> 5.6 GHz to 6 GHz	min. 75 W (48.75 dBm)
Output power at 1 dB compression [20]	1 GHz to 2.5 GHz	min. 90 W (49.54 dBm)
	> 2.5 GHz to 5.6 GHz	min. 80 W (49.00 dBm)
	> 5.6 GHz to 6 GHz	min. 60 W (47.78 dBm)
Nominal power gain	at 1 GHz	nom. 49.54 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Gain adjustment range		> 20 dB
Third order intermodulation (TOI)	2-tone at 41.5 dBm/tone, 1 MHz spacing	
	1 GHz to 5.5 GHz	nom. < –27 dBc
	> 5.5 GHz to 6 GHz	nom. < –19 dBc
Harmonics at P1dB and class A	1 GHz to 2.6 GHz	< –20 dBc
	> 2.6 GHz to 3.2 GHz	< –18 dBc
	> 3.2 GHz to 6.0 GHz	< –25 dBc
Spurious at P1dB an class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 6 GHz	nom. < 10.0 dB
Noise power density	1 GHz to 6 GHz	nom. –111 dBm (1 Hz)

[19] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[20] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 25 kg (55 lb)

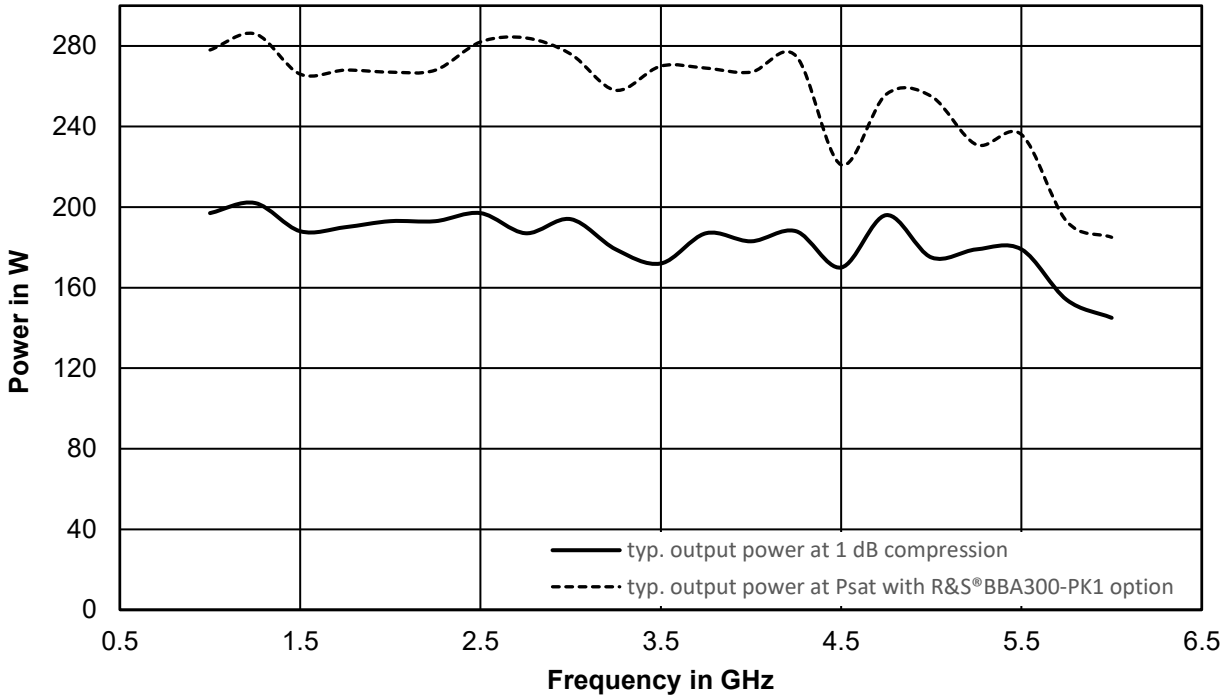
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	6.1 A
Maximum AC power		1.5 kVA

R&S®BBA300-DE180, power class: 180 W P1dB or 250 W P_{sat} [21]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		180 W (52.55 dBm)
Output power [22]	1 GHz to 5.6 GHz	min. 185 W (52.67 dBm)
	> 5.6 GHz to 6 GHz	min. 120 W (50.80 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [22]	1 GHz to 3.2 GHz	min. 250 W (54.00 dBm)
	> 3.2 GHz to 4.4 GHz	min. 220 W (53.42 dBm)
	> 4.4 GHz to 5.6 GHz	min. 200 W (53.00 dBm)
	> 5.6 GHz to 6 GHz	min. 150 W (51.76 dBm)
Output power at 1 dB compression [22]	1 GHz to 2.7 GHz	min. 180 W (52.55 dBm)
	> 2.7 GHz to 5.6 GHz	min. 160 W (52.04 dBm)
	> 5.6 GHz to 6 GHz	min. 120 W (50.80 dBm)
Nominal power gain	at 1 GHz	nom. 52.55 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Gain adjustment range		> 20 dB
Third order intermodulation (TOI)	2-tone at 44.8 dBm/tone, 1 MHz spacing	
	1 GHz to 5.5 GHz	nom. < –28 dBc
	> 5.5 GHz to 6 GHz	nom. < –20 dBc
Harmonics at P1dB and class A	1 GHz to 2.6 GHz	< –20 dBc
	> 2.6 GHz to 3.2 GHz	< –18 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 10.5 dB
Noise power density	1 GHz to 6 GHz	nom. –107 dBm (1 Hz)

[21] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[22] Internal cable insertion loss for RF output on the front panel: 380 MHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 35 kg (77 lb)

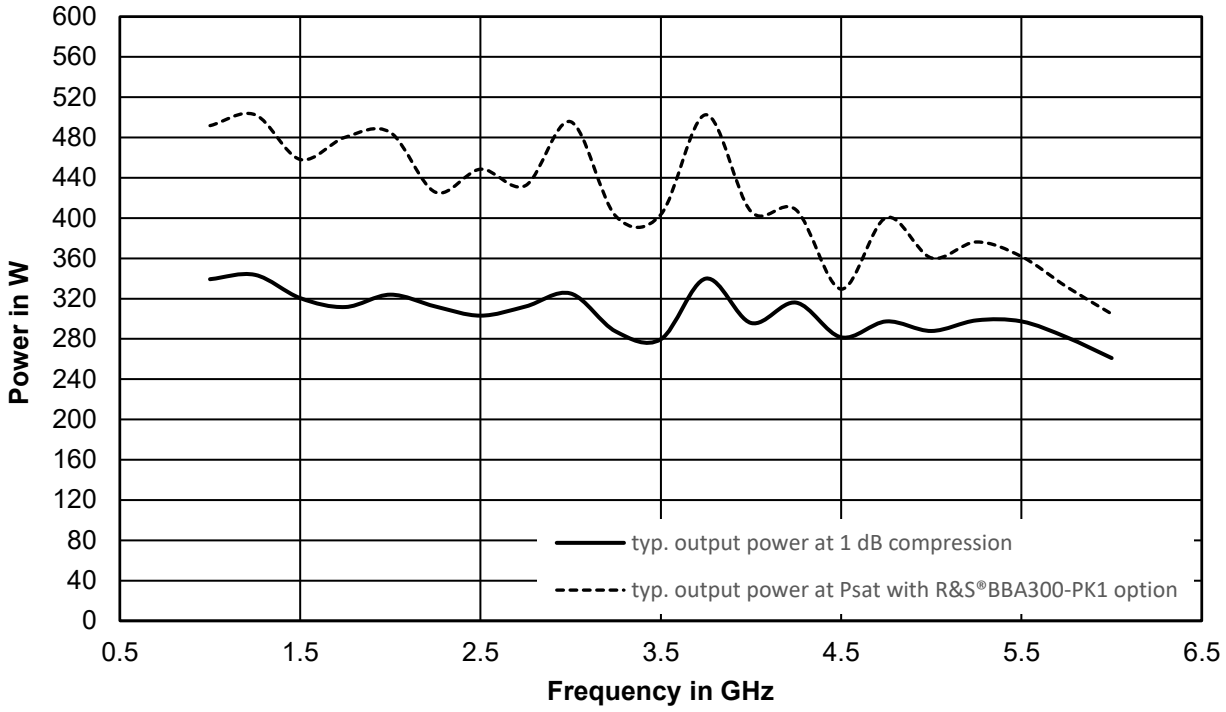
RF and sample connectors		
RF input port	either front panel or rear panel	N female
RF output port	either front panel or rear panel	N female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	10.9 A
Maximum AC power		2.5 kVA

R&S®BBA300-DE300, power class: 300 W P1dB or 450 W P_{sat} [23]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		300 W (54.78 dBm)
Output power [24]	1 GHz to 4.2 GHz	min. 310 W (54.91 dBm)
	> 4.2 GHz to 5.8 GHz	min. 270 W (54.31 dBm)
	> 5.8 GHz to 6 GHz	min. 260 W (54.15 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [24]	1 GHz to 2.2 GHz	min. 450 W (56.53 dBm)
	> 2.2 GHz to 4.2 GHz	min. 370 W (55.68 dBm)
	> 4.2 GHz to 5.8 GHz	min. 320 W (55.05 dBm)
	> 5.8 GHz to 6 GHz	min. 250 W (53.98 dBm)
Output power at 1 dB compression [24]	1 GHz to 2.6 GHz	min. 300 W (54.77 dBm)
	> 2.6 GHz to 5.8 GHz	min. 260 W (54.15 dBm)
	> 5.8 GHz to 6 GHz	min. 230 W (53.62 dBm)
Nominal power gain	at 1 GHz	nom. 54.78 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Third order intermodulation (TOI)	2-tone at 47 dBm/tone, 1 MHz spacing	
	1 GHz to 5.5 GHz	nom. < –29 dBc
	> 5.5 GHz to 6 GHz	nom. < –20 dBc
Harmonics at P1dB and class A	1 GHz to 3.2 GHz	< –20 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 5 GHz	nom. < 10.0 dB
	> 5 GHz to 6 GHz	nom. < 11.5 dB
Noise power density	1 GHz to 6 GHz	nom. –100 dBm (1 Hz)

[23] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[24] Applies only to standard 12 HU systems. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 60 dB

Mechanical specifications

Dimensions and weight		
Dimensions	rack setup	19" 1/1, 12 HU, depth: 800 mm (31.5 in)
Weight		approx. 100 kg (220 lb)

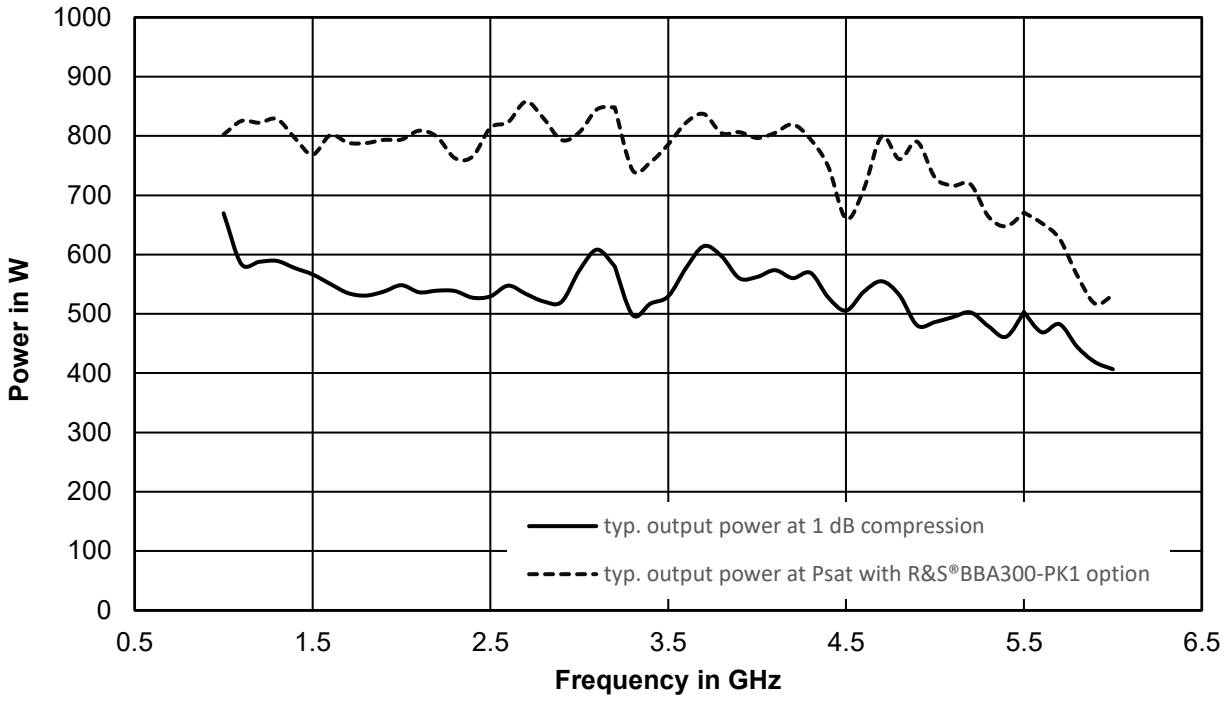
RF and sample connectors		
RF input port	rear panel	N female
RF output port	rear panel	7/16 DIN female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		380 V to 415 V AC ± 10 %, three-phase, with N, 47 Hz to 63 Hz
		200 V to 240 V AC ± 10 %, three-phase, 47 Hz to 63 Hz
Rated current	at 230 V per phase	11.3 A | 11.3 A | 0.4 A
Maximum AC power		5.3 kVA

R&S®BBA300-DE500, power class: 500 W P1dB, or 750 W P_{sat} [25]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		500 W (56.99 dBm)
Output power [26]	1 GHz to 3.2 GHz	min. 550 W (57.40 dBm)
	> 3.2 GHz to 5.5 GHz	min. 450 W (56.53 dBm)
	> 5.5 GHz to 6 GHz	min. 370 W (55.68 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [26]	1 GHz to 3.2 GHz	min. 750 W (58.75 dBm)
	> 3.2 GHz to 5.5 GHz	min. 500 W (57.00 dBm)
	> 5.5 GHz to 6 GHz	min. 400W (56.0 dBm)
Output power at 1 dB compression [26]	1 GHz to 3.2 GHz	min. 500 W (56.99 dBm)
	> 3.2 GHz to 5.5 GHz	min. 400 W (56.0 dBm)
	> 5.5 GHz to 6 GHz	min. 350 W (55.44 dBm)
Nominal power gain	at 1 GHz	nom. 57 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Third order intermodulation (IM3)	2-tone at 49.44 dBm/tone, 1 MHz spacing	nom. < –20 dBc
Harmonics at P1dB and class A	1 GHz to 3.2 GHz	< –20 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 5 GHz	nom. <12 dB
	> 5 GHz to 6 GHz	nom. <12 dB
Noise power density	1 GHz to 6 GHz	nom. –94 dBm (1 Hz)

[25] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[26] Applies only to standard 20 HU systems. For larger systems, the cable insertion loss must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Nominal forward output power	at VSWR < 6:1 or set load tolerance	continuous, without foldback
	at VSWR > 6:1 or set load tolerance	continuous, with gradual foldback to approx. 50 % of output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 60 dB

Mechanical specifications

System size		
Dimensions	rack setup	19" rack, 14 HU, depth: 1000 mm (39.4 in)
	rack size	20 HU or higher
Weight		approx. 130 kg (286 lb)

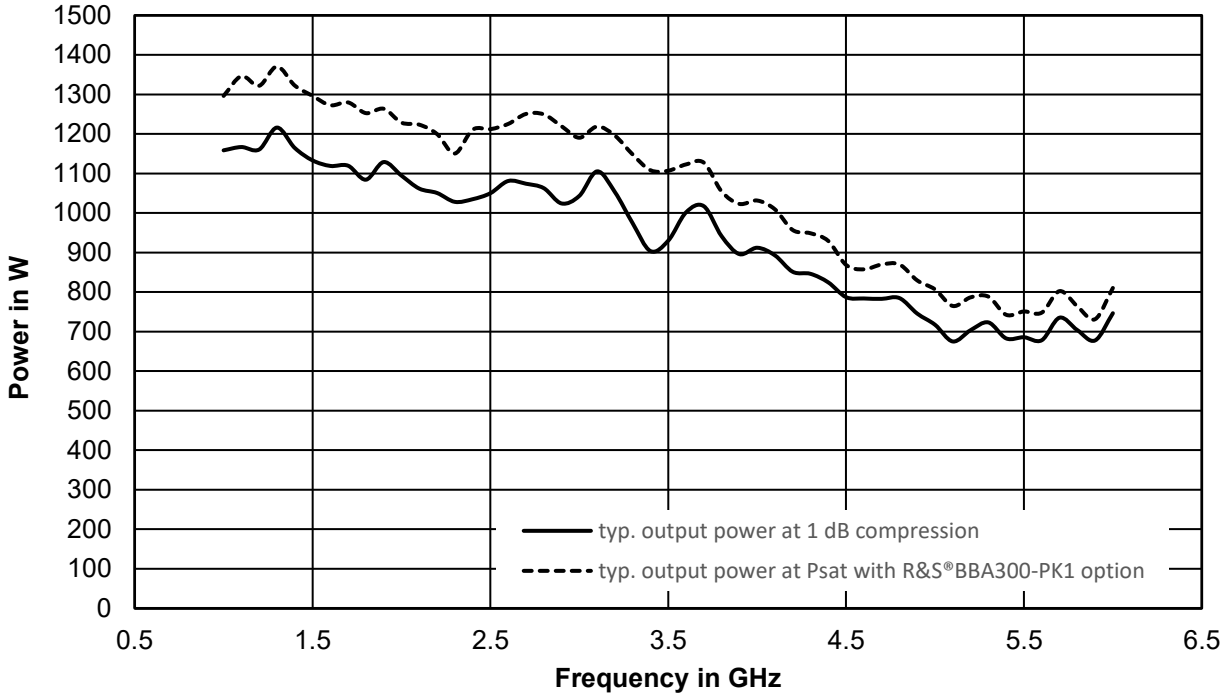
RF and sample connectors		
RF input port	rear panel	N female
RF output port	rear panel	7/16 DIN female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		380 V to 415 V AC ± 10 %, three-phase, with N, 47 Hz to 63 Hz
		200 V to 240 V AC ± 10 %, three-phase, 47 Hz to 63 Hz
Rated current	at 230 V per phase	11 A
Maximum AC power		7.8 kVA

R&S®BBA300-DE1000, power class: 950 W P1dB, or 1100 W P_{sat}

Frequency response at 1 dB compression and P_{sat}



RF specifications

Main parameters		
Frequency range		1 GHz to 6 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		1000 W (60.00 dBm)
Output power [27]	1 GHz to 3.2 GHz	min. 1100 W (60.41 dBm)
	> 3.2 GHz to 4.4 GHz	min. 800 W (59.03 dBm)
	> 4.4GHz to 6 GHz	min. 700 W (58.45 dBm)
Output power at 1 dB compression [27]	1 GHz to 3.2 GHz	min. 950 W (59.78 dBm)
	> 3.2 GHz to 4.0GHz	min. 800 W (59.03 dBm)
	> 4.0 GHz to 6 GHz	min. 600 W (57.80dBm)
Nominal power gain	at 1 GHz	nom. 60 dB
Gain flatness	1 GHz to 6 GHz	< ±4.5 dB
Third order intermodulation (IM3)	2-tone at 51.80 dBm/tone, 1 MHz spacing	nom. < –20 dBc
Harmonics at P1dB and class A	1 GHz to 3.2 GHz	< –20 dBc
	> 3.2 GHz to 6 GHz	< –25 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	1 GHz to 6 GHz	nom. < 14 dB
Noise power density	1 GHz to 6 GHz	nom. < –91 dBm (1 Hz)

[27] Applies only to standard 30 HU systems. For larger systems, the cable insertion loss must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+7 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	reflected power <250 W	continuous, without foldback
	reflected power >250 W	with gradual foldback to approx. 25 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 60 dB

Mechanical specifications

System size		
Dimensions	rack setup	19" rack, 30 HU, depth: 1000 mm (39.4 in)
	rack size	30 HU or higher
Weight		approx. 380 kg (838 lb)

RF and sample connectors		
RF input port	rear panel	N female
RF output port	rear panel	7/16 DIN female
RF sample port	forward output power, optional	N female
	reflected output power, optional	N female

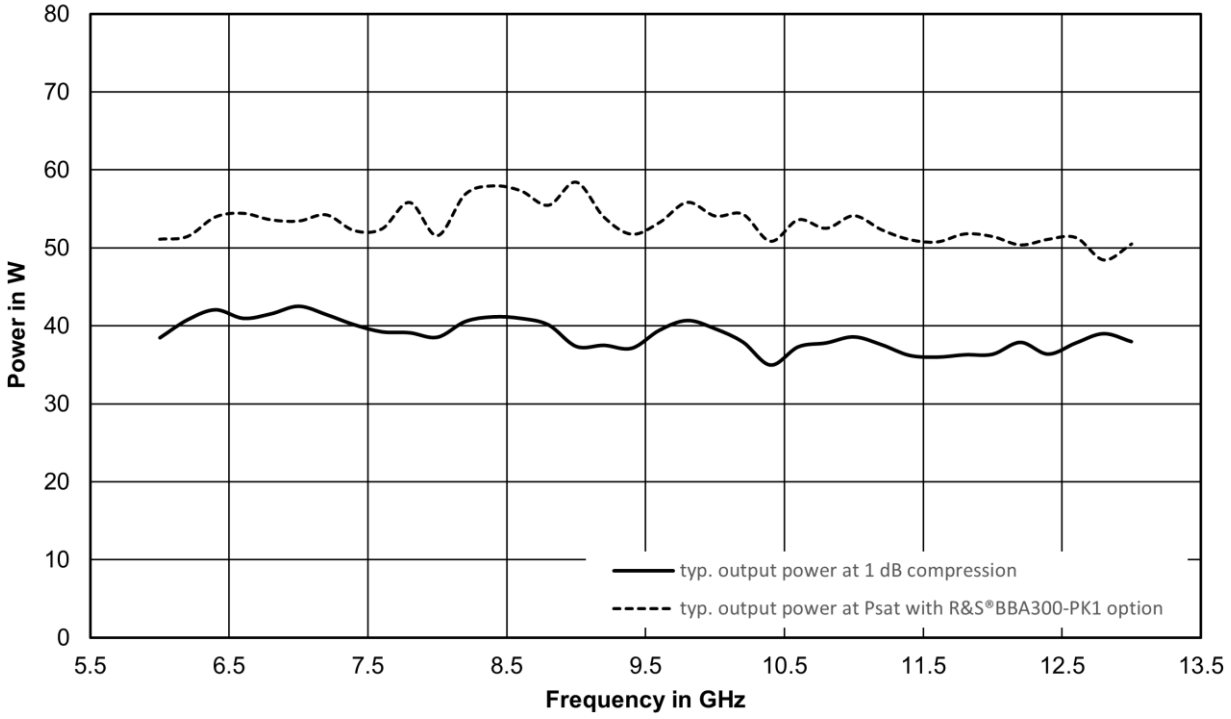
Electrical specifications

AC supply voltage		
Nominal operating voltage range		380 V to 415 V AC ± 10 %, three-phase, with N, 47 Hz to 63 Hz
		200 V to 240 V AC ± 10 %, three-phase, 47 Hz to 63 Hz
Rated current	at 230 V per phase	22.6 A | 22.6 A | 23.0 A
Maximum AC power		15.4 kVA

Frequency band F from 6 GHz to 13 GHz

R&S®BBA300-F30, power class: 30 W P1dB or 40 W P_{sat} [28]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 13 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		30 W (44.77 dBm)
Output power [29]	6 GHz to 13 GHz	min. 30 W (44.77 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [29]	6 GHz to 13 GHz	min. 40 W (46.00 dBm)
Output power at 1 dB compression [29]	6 GHz to 13 GHz	min. 30 W (44.77 dBm)
Nominal power gain	at 11 GHz	nom. 44.77 dB
Gain flatness	6 GHz to 13 GHz	< ±3.0 dB
Third order intermodulation (TOI)	2-tone at 38.77 dBm/tone, 1 MHz spacing	
	6 GHz to 13 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 13 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 13 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 13 GHz	nom. –107 dBm (1 Hz)

[28] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[29] Internal cable insertion loss for RF output on the front panel: 6 GHz to 12 GHz: 1 dB; 12 GHz to 18 GHz: 1.5 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 49 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 23 kg (51 lb)

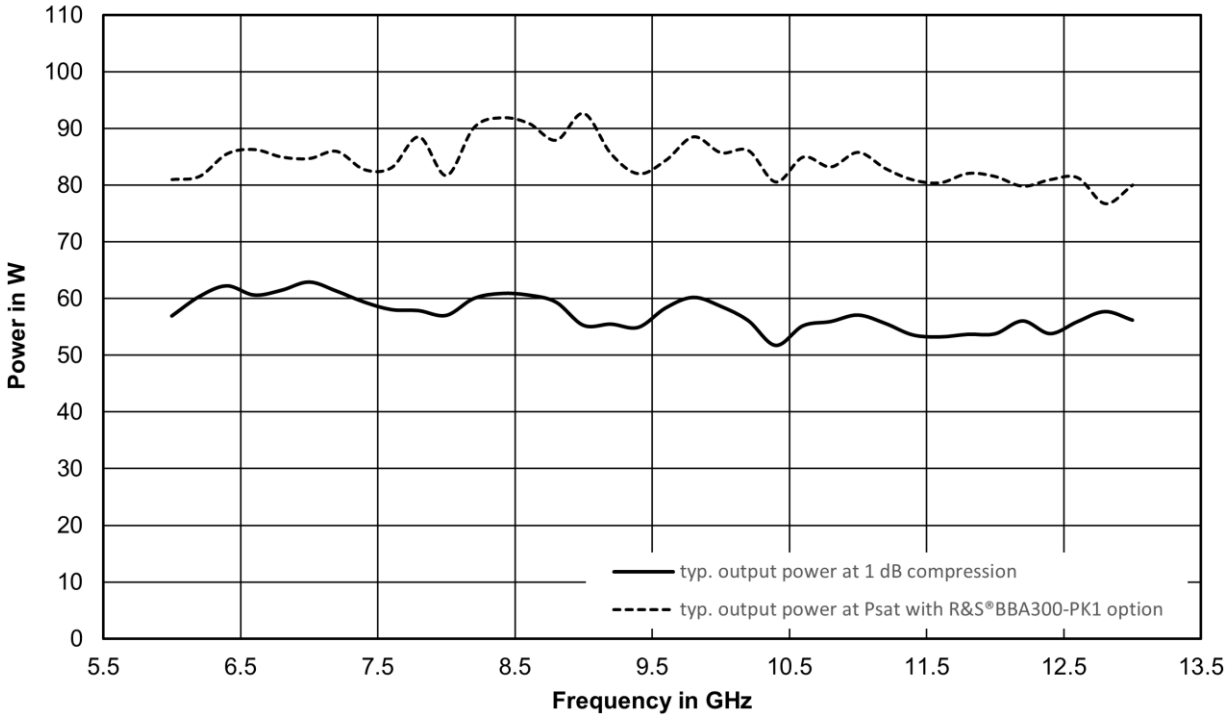
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	precision N female
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single-phase, 47 Hz to 63 Hz
Rated current	at 230 V	4.0 A
Maximum AC power		900 VA

R&S®BBA300-F50, power class: 50 W P1dB or 80 W P_{sat} [30]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 13 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		50 W (47.00 dBm)
Output power [31]	6 GHz to 13.0 GHz	min. 50 W (47.00 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [31]	6 GHz to 12.6 GHz	min. 80 W (49.90 dBm)
	> 12.6 GHz to 13.0 GHz	min. 70 W (48.50 dBm)
Output power at 1 dB compression [31]	6 GHz to 13.0 GHz	min. 50 W (47.00 dBm)
Nominal power gain	at 11 GHz	nom. 47.00 dB
Gain flatness	6 GHz to 13 GHz	< ±3.0 dB
Third order intermodulation (TOI)	2-tone at 41.0 dBm/tone, 1 MHz spacing	
	6 GHz to 13 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 13 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 13 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 13 GHz	nom. –107 dBm (1 Hz)

[30] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[31] Internal cable insertion loss for RF output on the front panel: 6 GHz to 12 GHz: 1 dB; 12 GHz to 18 GHz: 1.5 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 49 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 23 kg (51 lb)

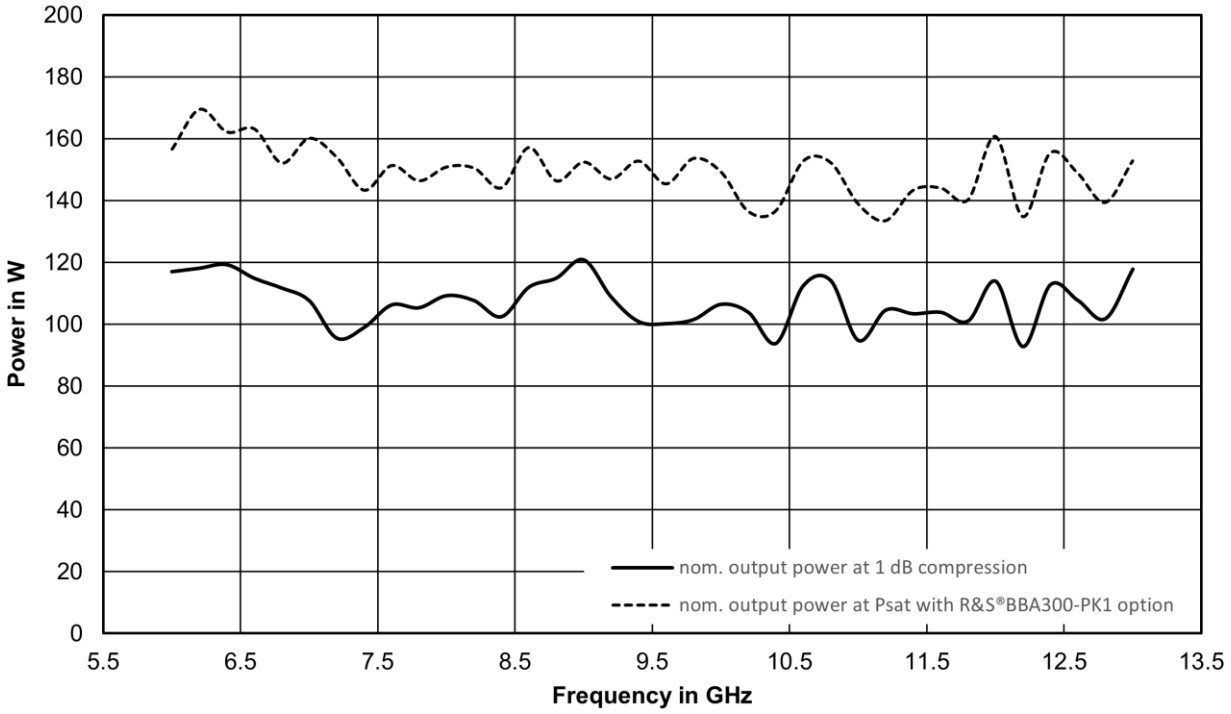
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	precision N female
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single-phase, 47 Hz to 63 Hz
Rated current	at 230 V	4.0 A
Maximum AC power		900 VA

R&S®BBA300-F90, power class: 90 W P1dB or 135 W P_{sat} [32]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 13 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		90 W (49.54 dBm)
Output power [33]	6 GHz to 13 GHz	min. 90 W (49.54 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [33]	6 GHz to 12.6 GHz	min. 135 W (51.30 dBm)
	> 12.6 GHz to 13.0 GHz	min. 125 W (51.00 dBm)
Output power at 1 dB compression [33]	6 GHz to 13 GHz	min. 90 W (49.54 dBm)
Nominal power gain	at 11 GHz	nom. 49.00 dB
Gain flatness	6 GHz to 13 GHz	< ±3.5 dB
Third order intermodulation (TOI)	2-tone at 42.7 dBm/tone, 1 MHz spacing	
	6 GHz to 13 GHz	nom. < –20 dBc
Harmonics at P1dB and class A	6 GHz to 13 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 13 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 13 GHz	nom. –104 dBm (1 Hz)

[32] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[33] Applies only to the standard WRD650 output on the rear panel. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 240 mm × 640 mm (18.26 in × 9.44 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 5 HU
Weight		approx. 30 kg (66 lb)

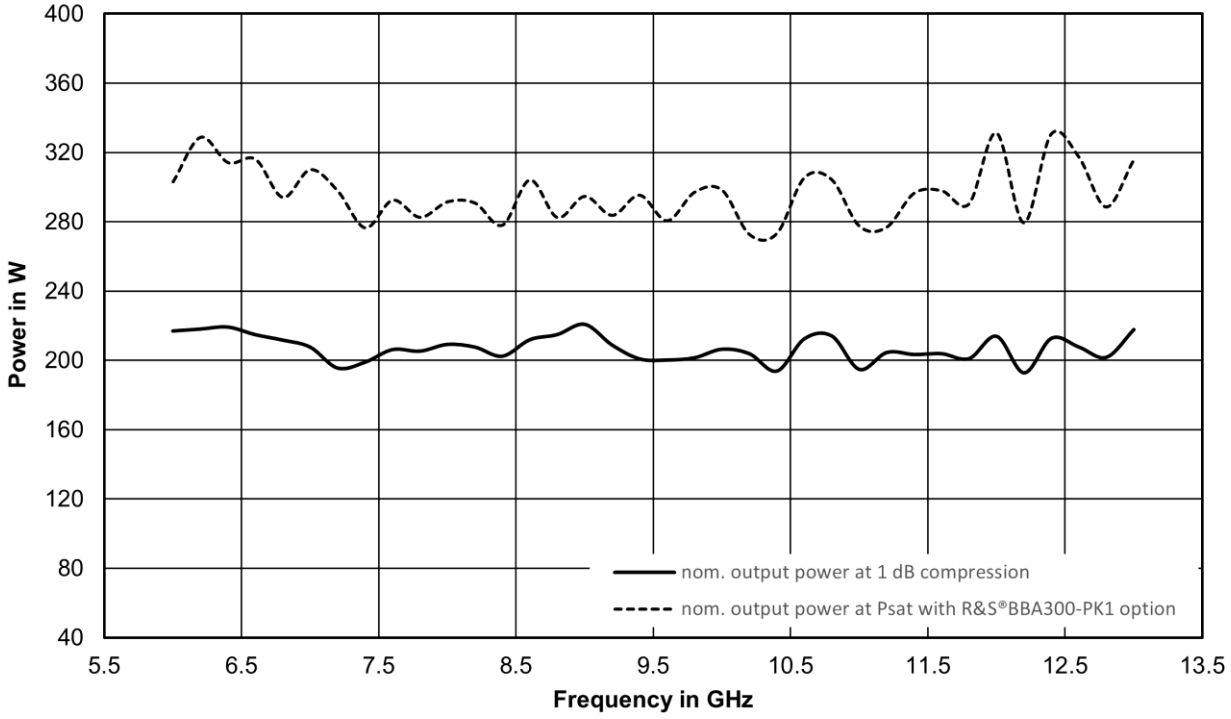
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	WRD650
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	8.2 A
Maximum AC power		1.9 kVA

R&S®BBA300-F180, power class: 180 W P1dB or 250 W P_{sat} [34]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 13 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		180 W (52.55 dBm)
Output power [35]	6 GHz to 13 GHz	min. 182 W (52.60 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [35]	6 GHz to 13 GHz	min. 250 W (54.0 dBm)
Output power at 1 dB compression [35]	6 GHz to 13 GHz	min. 182 W (52.60 dBm)
Nominal power gain	at 11 GHz	nom. 52.55 dB
Gain flatness	6 GHz to 13 GHz	< ±3.5 dB
Third order intermodulation (IM3)	2-tone at 46.5 dBm/tone, 1 MHz spacing	
	6 GHz to 13 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 13 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 13 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 13 GHz	nom. –100 dBm (1 Hz)

[34] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[35] Applies only to the standard WRD650 output on the rear panel. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample and detected sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 240 mm × 640 mm (18.26 in × 9.44 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 5 HU
Weight		approx. 38 kg (84 lb)

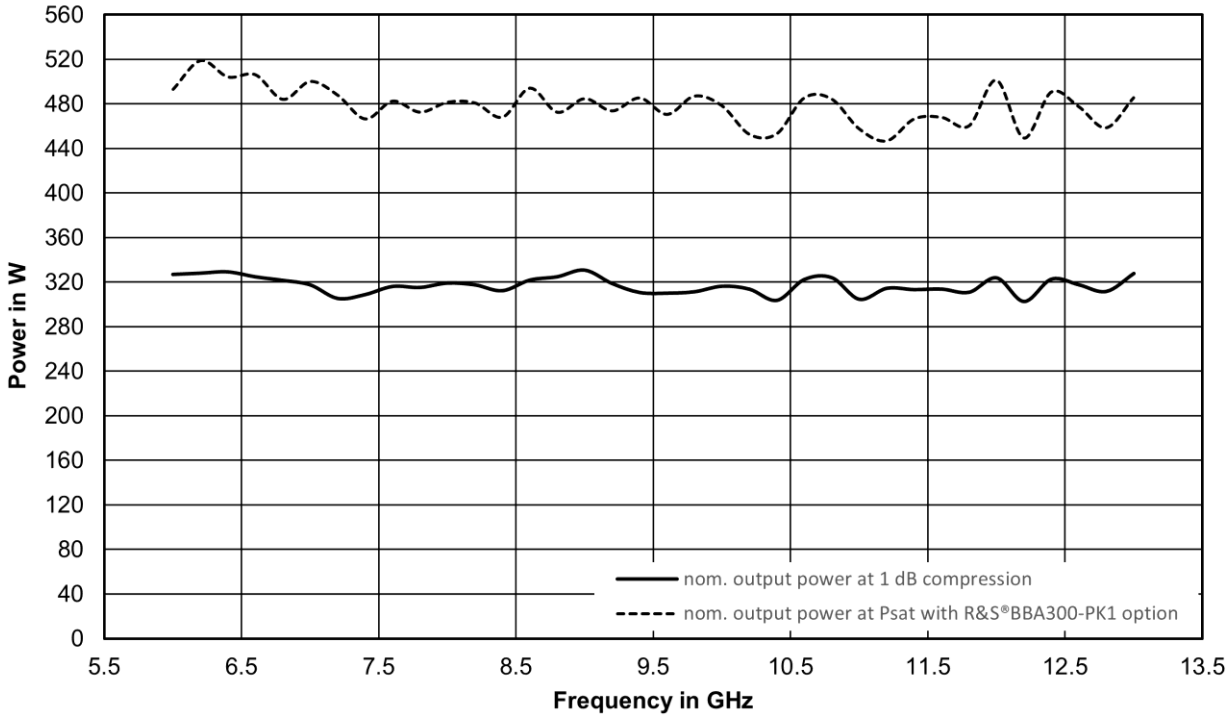
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	WRD650
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	15.6 A
Maximum AC power		3.6 kVA

R&S®BBA300-F300, power class: 300 W P1dB or 450 W P_{sat} [36]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 13 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		300 W (54.78 dBm)
Output power [37]	6 GHz to 13 GHz	min. 310 W (54.91 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [37]	6 GHz to 13 GHz	min. 450 W (56.53 dBm)
Output power at 1 dB compression [37]	6 GHz to 13 GHz	min. 300 W (54.78 dBm)
Nominal power gain	at 11 GHz	nom. 54.78 dB
Gain flatness	6 GHz to 13 GHz	< ±4.0 dB
Third order intermodulation (IM3)	2-tone at 46.5 dBm/tone, 1 MHz spacing	
	6 GHz to 13 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 13 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 13 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 13 GHz	nom. –97 dBm (1 Hz)

[36] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[37] Applies only to the standard WRD650 output on the rear panel. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample and detected sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	rack setup	19" 1/1, 12 HU, depth: 1000 mm (39.4 in)
Weight		approx. 110 kg (242.5 lb)

RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	WRD650
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

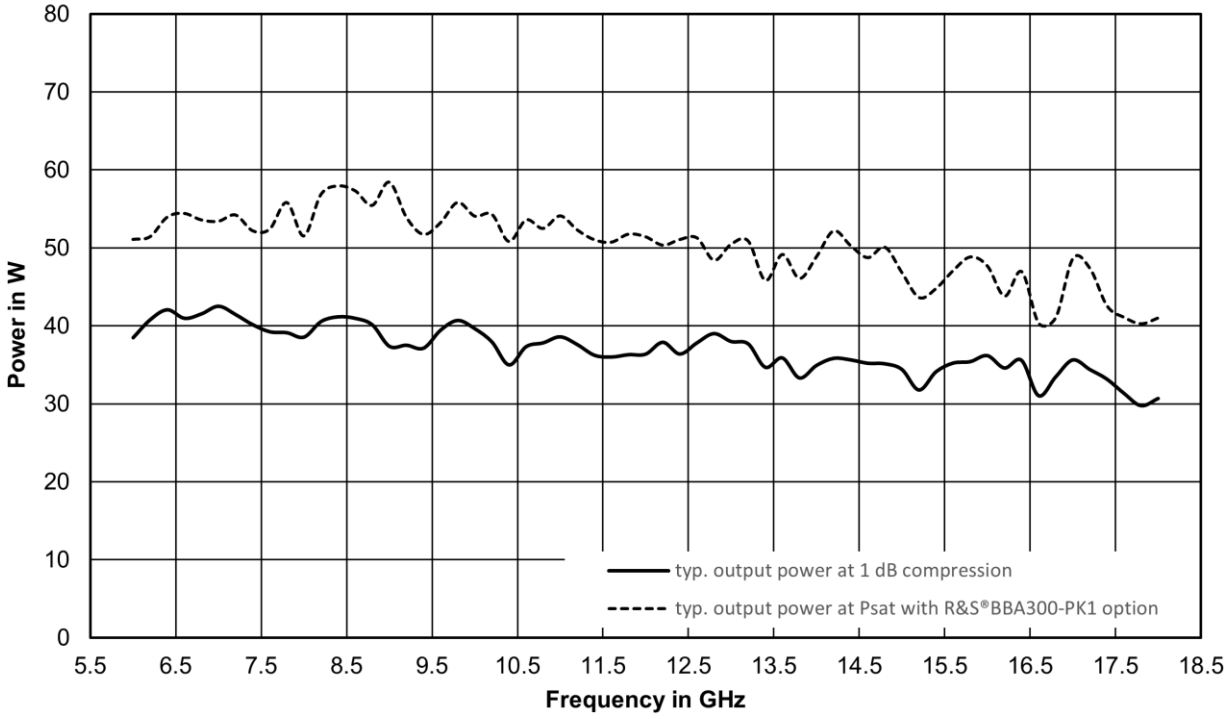
Electrical specifications

AC supply voltage		
Nominal operating voltage range		380 V to 415 V AC ± 10 %, three-phase, with N, 47 Hz to 63 Hz
		200 V to 240 V AC ± 10 %, three-phase, 47 Hz to 63 Hz
Rated current	at 230 V	32 A
Maximum AC power		7.3 kVA

Frequency band FG from 6 GHz to 18 GHz

R&S®BBA300-FG30, power class: 30 W P1dB or 40 W P_{sat} [38]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 18 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		30 W (44.77 dBm)
Output power [39]	6 GHz to 18 GHz	min. 30 W (44.77 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [39]	6 GHz to 18 GHz	min. 40 W (46.00 dBm)
Output power at 1 dB compression [39]	6 GHz to 18 GHz	min. 30 W (44.77 dBm)
Nominal power gain	at 11 GHz	nom. 44.77 dB
Gain flatness	6 GHz to 18 GHz	< ±3.0 dB
Third order intermodulation (TOI)	2-tone at 38.77 dBm/tone, 1 MHz spacing	
	6 GHz to 18 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 18 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 18 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 18 GHz	nom. –107 dBm (1 Hz)

[38] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[39] Internal cable insertion loss for RF output on the front panel: 6 GHz to 12 GHz: 1 dB; 12 GHz to 18 GHz: 1.5 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 49 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 4 HU
Weight		approx. 23 kg (51 lb)

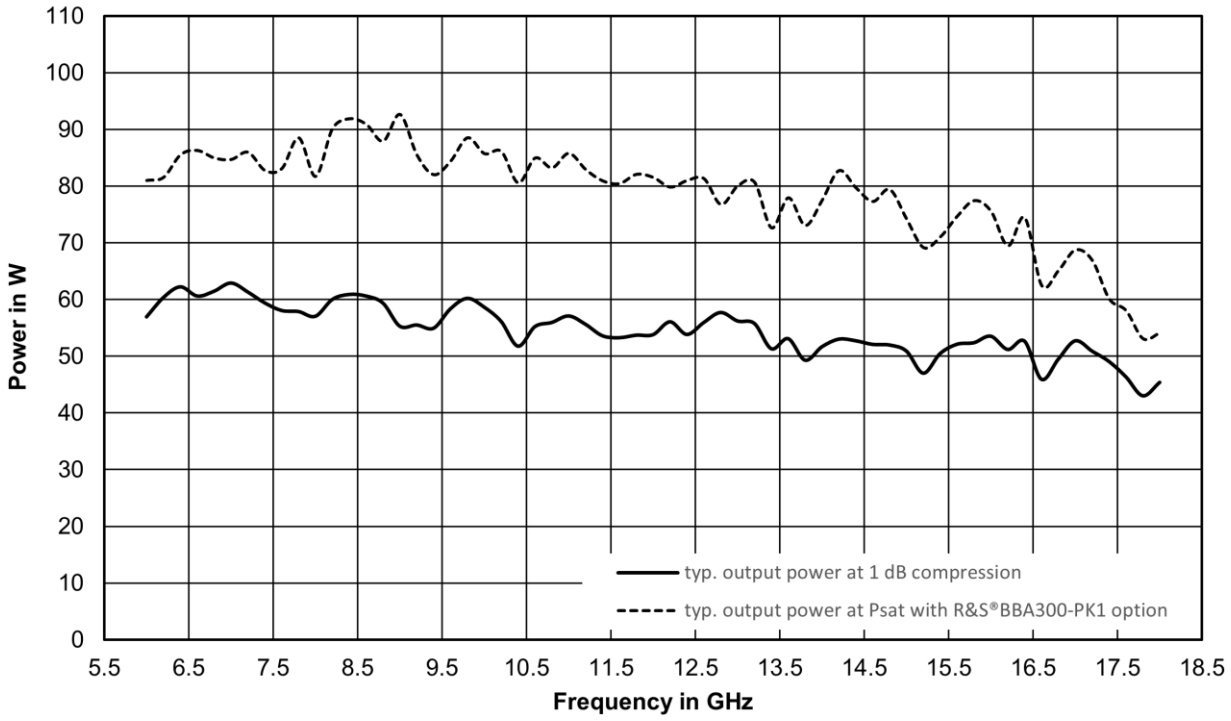
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	precision N female
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single-phase, 47 Hz to 63 Hz
Rated current	at 230 V	4.0 A
Maximum AC power		900 VA

R&S®BBA300-FG50, power class: 50 W P1dB or 80 W P_{sat} [40]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 18 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		50 W (47.00 dBm)
Output power [41]	6 GHz to 13.3 GHz	min. 50 W (47.00 dBm)
	13.3 GHz to 18 GHz	min. 44 W (46.00 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [41]	6 GHz to 12.6 GHz	min. 80 W (49.00 dBm)
	> 12.6 GHz to 16.0 GHz	min. 70 W (48.50 dBm)
	> 16.0 GHz to 18.0 GHz	min. 63 W (48.00 dBm)
Output power at 1 dB compression [41]	6 GHz to 13.3 GHz	min. 50 W (47.00 dBm)
	> 13.3 GHz to 18.0 GHz	min. 44 W (46.43 dBm)
Nominal power gain	at 11 GHz	nom. 47.00 dB
Gain flatness	6 GHz to 18 GHz	< ±3.0 dB
Third order intermodulation (TOI)	2-tone at 40.0 dBm/tone, 1 MHz spacing	
	6 GHz to 18 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 18 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 18 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 18 GHz	nom. –107 dBm (1 Hz)

[40] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[41] Internal cable insertion loss for RF output on the front panel: 6 GHz to 12 GHz: 1 dB; 12 GHz to 18 GHz: 1.5 dB.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 49 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 196 mm × 640 mm (18.26 in × 7.72 in × 25.19 in)
	for rackmounting	19" $^1/_1$, 4 HU
Weight		approx. 23 kg (51 lb)

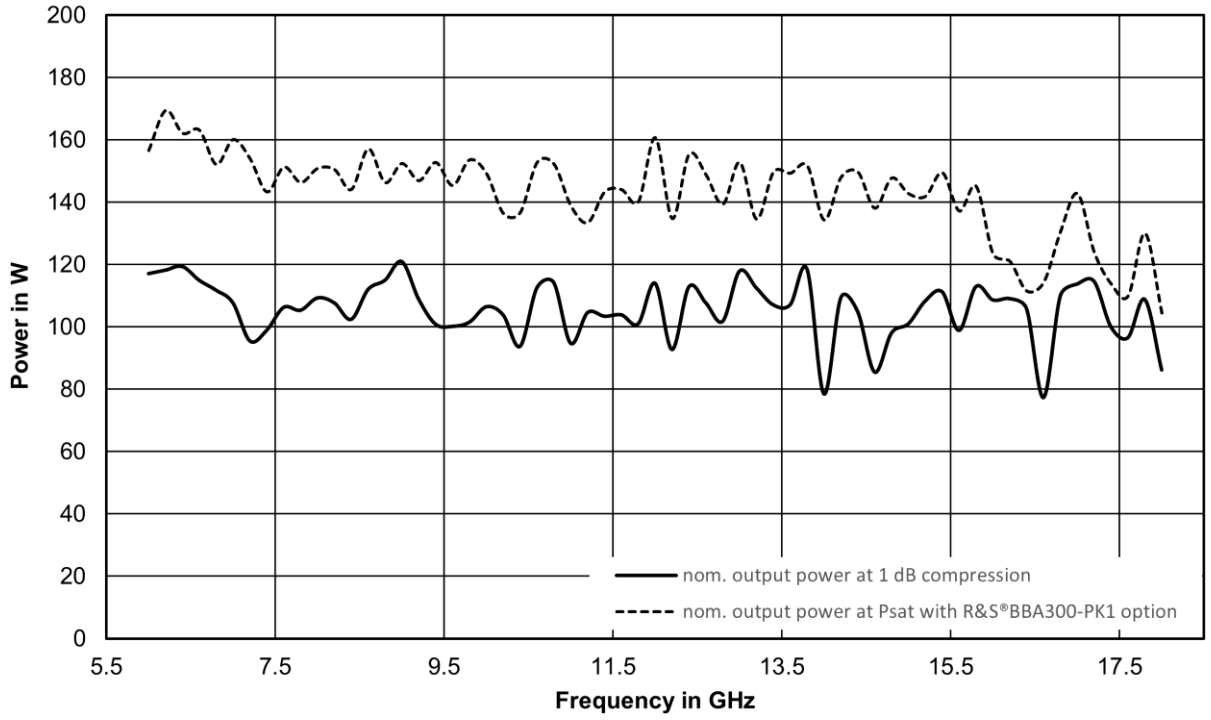
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	precision N female
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		100 V to 240 V AC ± 10 %, single-phase, 47 Hz to 63 Hz
Rated current	at 230 V	4.0 A
Maximum AC power		900 VA

R&S®BBA300-FG90, power class: 90 W P1dB or 135 W P_{sat} [42]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 18 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		90 W (49.54 dBm)
Output power [43]	6 GHz to 13.3 GHz	min. 90 W (49.54 dBm)
	> 13.3 GHz to 18 GHz	min. 75 W (48.75 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [43]	6 GHz to 12.6 GHz	min. 135 W (51.30 dBm)
	> 12.6 GHz to 15.0 GHz	min. 125 W (51.00 dBm)
	> 15.0 GHz to 16.0 GHz	min. 115 W (50.60 dBm)
	> 16.0 GHz to 18.0 GHz	min. 93 W (49.70 dBm)
Output power at 1 dB compression [43]	6 GHz to 13.3 GHz	min. 90 W (49.54 dBm)
	> 13.3 GHz to 18.0 GHz	min. 75 W (48.75 dBm)
Nominal power gain	at 11 GHz	nom. 49.00 dB
Gain flatness	6 GHz to 18 GHz	< ±3.5 dB
Third order intermodulation (TOI)	2-tone at 42.7 dBm/tone, 1 MHz spacing	
	6 GHz to 18 GHz	nom. < –20 dBc
Harmonics at P1dB and class A	6 GHz to 18 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 18 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 18 GHz	nom. –104 dBm (1 Hz)

[42] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[43] Applies only to the standard WRD650 output on the rear panel. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		nom. 0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 240 mm × 640 mm (18.26 in × 9.44 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 5 HU
Weight		approx. 30 kg (66 lb)

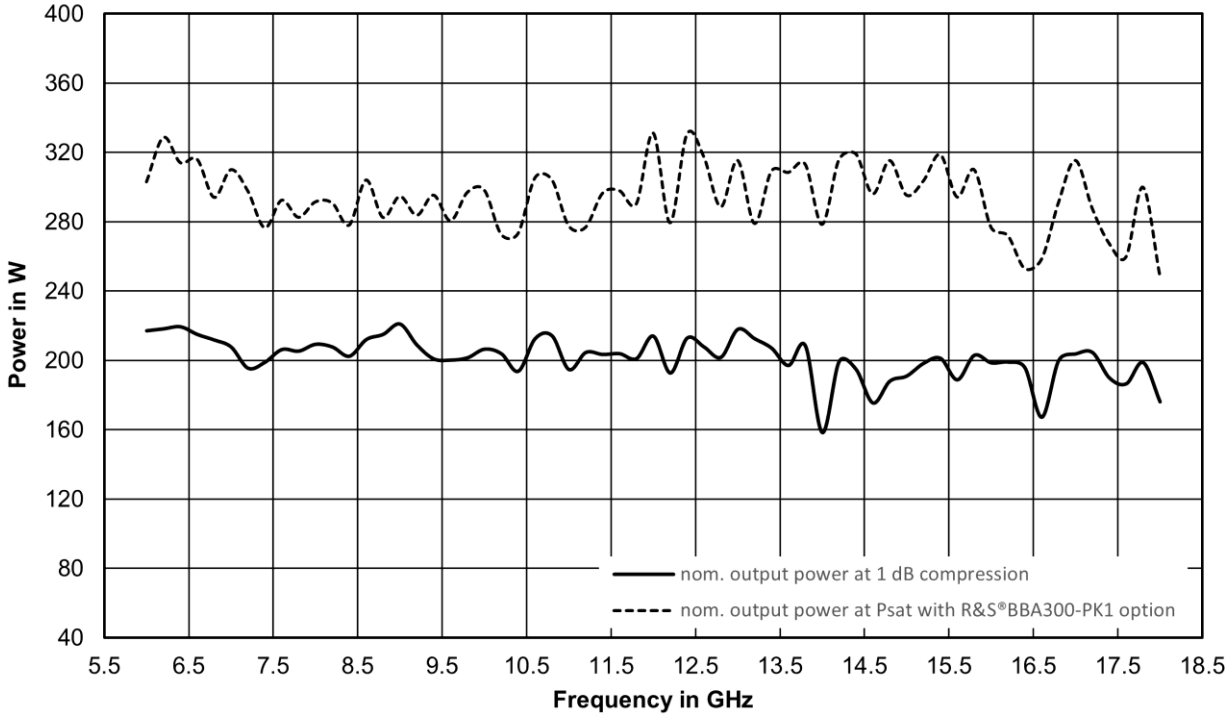
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	WRD650
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	8.2 A
Maximum AC power		1.9 kVA

R&S®BBA300-FG180, power class: 180 W P1dB or 250 W P_{sat} [44]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 18 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		180 W (52.55 dBm)
Output power [45]	6 GHz to 13.3 GHz	min. 182 W (52.60 dBm)
	> 13.3 GHz to 18 GHz	min. 140 W (51.50 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [45]	6 GHz to 15.0 GHz	min. 250 W (54.0 dBm)
	> 15.0 GHz to 18 GHz	min. 215 W (53.40 dBm)
Output power at 1 dB compression [45]	6 GHz to 13.3 GHz	min. 182 W (52.60 dBm)
	> 13.3 GHz to 18 GHz	min. 140 W (51.50 dBm)
Nominal power gain	at 11 GHz	nom. 52.55 dB
Gain flatness	6 GHz to 18 GHz	< ±3.5 dB
Third order intermodulation (IM3)	2-tone at 46.5 dBm/tone, 1 MHz spacing	
	6 GHz to 18 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 18 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 18 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 18 GHz	nom. –100 dBm (1 Hz)

[44] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[45] Applies only to the standard WRD650 output on the rear panel. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample and detected sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	W × H × D, incl. fans, handles and stand	464 mm × 240 mm × 640 mm (18.26 in × 9.44 in × 25.19 in)
	for rackmounting	19" $^{1}/_{1}$, 5 HU
Weight		approx. 38 kg (84 lb)

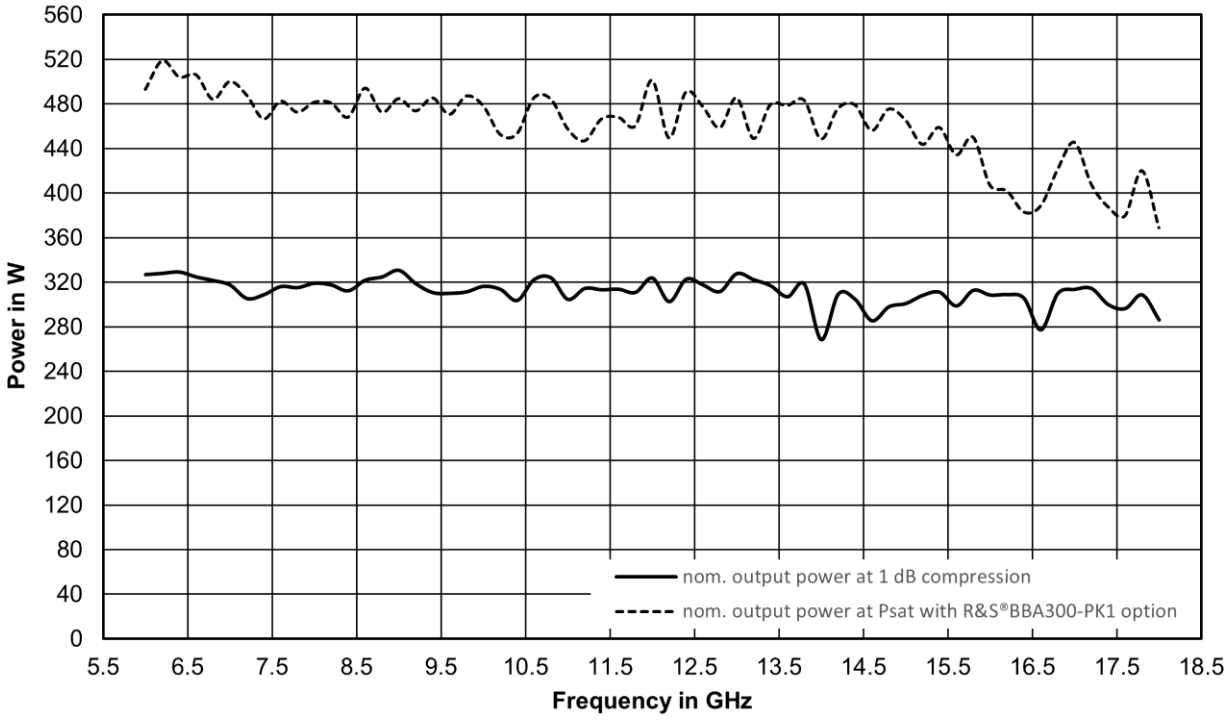
RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	WRD650
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		200 V to 240 V AC ± 10 %, single phase, 47 Hz to 63 Hz
Rated current	at 230 V	15.6 A
Maximum AC power		3.6 kVA

R&S®BBA300-FG300, power class: 300 W P1dB or 450 W P_{sat} [46]

Frequency response at 1 dB compression and P_{sat} with R&S®BBA300-PK1 option



RF specifications

Main parameters		
Frequency range		6 GHz to 18 GHz, instantaneously
Nominal output load		50 Ω
Nominal output power		300 W (54.78 dBm)
Output power [47]	6 GHz to 13.3 GHz	min. 310 W (54.91 dBm)
	> 13.3 GHz to 18 GHz	min. 270 W (54.31 dBm)
Output power in high power mode (R&S®BBA-PK1 option) [47]	6 GHz to 17.0 GHz	min. 450 W (56.53 dBm)
	> 17.0 GHz to 18 GHz	min. 340 W (55.31 dBm)
Output power at 1 dB compression [47]	6 GHz to 13.3 GHz	min. 300 W (54.78 dBm)
	> 13.3 GHz to 18 GHz	min. 260 W (54.15 dBm)
Nominal power gain	at 11 GHz	nom. 54.78 dB
Gain flatness	6 GHz to 18 GHz	< ±4.3 dB
Third order intermodulation (IM3)	2-tone at 46.5 dBm/tone, 1 MHz spacing	
	6 GHz to 18 GHz	nom. < –21 dBc
Harmonics at P1dB and class A	6 GHz to 18 GHz	< –20 dBc
Spurious at P1dB and class A	carrier offset > 100 kHz	nom. –80 dBc, max. –70 dBc
Noise figure at maximum gain	6 GHz to 12 GHz	nom. < 10.0 dB
	> 12 GHz to 18 GHz	nom. < 13.0 dB
Noise power density	6 GHz to 18 GHz	nom. –97 dBm (1 Hz)

[46] Value for P_{sat} achievable in high power mode (requires R&S®BBA-PK1 option).

[47] Applies only to the standard WRD650 output on the rear panel. For larger systems, adapter and cable insertion losses must also be taken into account.

Adjustable parameters		
Gain adjustment range		> 20 dB
Bias adjustment	with R&S®BBA-PK1 option	continuous adjustment between class A and class AB
Power mode and load tolerance adjustment	with R&S®BBA-PK1 option	continuous adjustment between P_{sat} at VSWR 2:1 (high power mode) and P1dB at VSWR 6:1 (VSWR mode)

Input		
Nominal input impedance		50 Ω
Input level for nominal output power		0 dBm
Input VSWR	at 50 Ω	nom. max. 2:1
Maximum input level	RF	+8 dBm
	DC	0 V

Output		
Nominal output impedance		50 Ω
Output mismatch tolerance	VSWR < 6:1 or set load tolerance	without foldback
	VSWR > 6:1 or set load tolerance	with gradual foldback to approx. 50 % of nominal output power, depending on load impedance
Output mismatch protection, VSWR		100 %, without damage

RF sample and detected sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	approx. 55 dB

Mechanical specifications

Dimensions and weight		
Dimensions	rack setup	19" 1/1, 12 HU, depth: 1000 mm (39.4 in)
Weight		approx. 110 kg (242.5 lb)

RF and sample connectors		
RF input port	rear panel	precision N female
RF output port	rear panel	WRD650
RF sample port	forward output power, optional	precision N female
	reflected output power, optional	precision N female

Electrical specifications

AC supply voltage		
Nominal operating voltage range		380 V to 415 V AC ± 10 %, three-phase, with N, 47 Hz to 63 Hz
		200 V to 240 V AC ± 10 %, three-phase, 47 Hz to 63 Hz
Rated current	at 230 V	32 A
Maximum AC power		7.3 kVA

General data

Modulation specifications

Modulation capability		AM, FM, φM, PM or OFDM

Cooling specifications

Air cooling		forced air, built-in fans, air entry at front, air exit at rear

Control specifications

Remote control		
Ethernet		RJ-45, 10 Mbit/s/100, auto-negotiation, half/full duplex

Local HMI		
Local display		200 × 48 pixel, monochrome
Manual controls	resting pushbutton	mains switch
	operation pushbuttons	• system standby/on • RF standby/operate • local/remote
	menu pushbuttons	• arrow up, down, left, right • ok • back
LED status information		• system standby/on • RF standby/operate • mute ready • interlock • error • local/remote

Web GUI		
Remote web GUI	via Ethernet	RJ-45, 10 Mbit/s/100 Mbit/s, auto-negotiation, half/full duplex

Environmental specifications

Temperature loading	operating temperature range	0 °C to +40 °C
	storage temperature range	–40 °C to +70 °C
Damp heat		max. +40 °C at 95 % relative humidity, without condensation
Altitude	operating	up to 2000 m
	storage	up to 4600 m
Mechanical resistance test values of desktop models	vibration, sinusoidal	5 Hz to 55 Hz, displacement: 0.15 mm, > 55 Hz to 150 Hz, acceleration: 0.5 g, in line with EN 60068-2-6
	vibration, random	effective acceleration ≤ 1.2 g, 8 Hz to 500 Hz, acceleration density: 0.003 g^2/Hz, in line with EN 60068-2-64
	shock	18 sawtooth shocks, each 40 g in 11 ms, in line with EN 60068-2-27, MIL-STD-810E method no. 516.4, procedure I
Calibration interval		no calibration needed
Electromagnetic compatibility	immunity	in line with EN 61326-1, table 2, industrial environment

Electromagnetic emissions	overall	in line with EN 55011 (CISPR 11), industrial area, ISM group 1 class A and FCC 47 CFR part 18 §18.305
	conducted emissions	in line with EN 55011, group 1 class A
	radiated emissions from 30 MHz to 18 GHz	equipment for use in shielded areas only, normative limits of EN 55011 group 1, class A and FCC 47 CFR, part 18 §18.305 exceeded: • up to 30 dB − for R&S®BBA300-CDE and R&S®BBA300-DE: up to 90 W − for R&S®BBA300-F and R&S®BBA300-FG: up to 90 W • up to 65 dB − for R&S®BBA300-CDE and R&S®BBA300-DE: up to 1000 W for R&S®BBA300-F and R&S®BBA300-FG: up to 300 W
Exposure to electromagnetic fields	all-around the enclosure	in line with the limits of 2014/35, 26. BImSchV, DGUV15 exposure limit 2 (protection of health and safety of workers, consumers and the general public)
Electrical safety		in line with EN 61010-1:2010, IEC 61010-1:2011 + Corr. 2011 (third edition), CAN/CSA-C22.2 no. 61010-1-12, UL 61010-1 third edition, May 11, 2012

Protection

RF		
Load VSWR		unlimited
Interlock [48]		1 automatic interlock, 1 interactive interlock
Input protection against bias voltage	optional	DC block level ≤ 50 V DC

Power supply		
Transient voltage compatibility		category II, in line with IEC 60364-4-443
Short-circuit breaking capacity		automatic all-pole 20 A circuit breaker

Miscellaneous		
Thermal overload		shutdown at thermal overload

Product conformity

EU legislation	EU: in line with Data Act – Regulation (EU) 2023/2854	for details, see user documentation

[48] The interlock interface of the R&S®BBA300 is a functional interlock and not a safety interlock. To realize a safety interlock on system level, a second independent safeguard has to be installed on system level.

General RF specifications

Amplifier type		class A amplifier
	with option adjust operation point and high power (requires R&S®BBA-PK1 option)	class A and AB amplifier

The specified nominal output power is valid for all amplifiers in a 4 HU chassis with RF output on the rear panel and for single band rack models at the RF connection panel.

For single and dual band amplifiers in a 4 HU chassis with RF output on the front panel cable insertion loss reduces the output power:

Cable insertion loss for **single band** power amplifiers in 4 HU chassis with RF output on the **front panel**	0 Hz to 1 GHz	≤ 0.15 dB
	> 1 GHz to 2 GHz	≤ 0.25 dB
	> 2 GHz to 3 GHz	≤ 0.35 dB
	> 3 GHz to 6 GHz	≤ 0.60 dB
	> 6 GHz to 10 GHz	≤ 0.80 dB
	> 10 GHz to 12 GHz	≤ 1.00 dB
	> 12 GHz to 16 GHz	≤ 1.20 dB
	> 16 GHz to 18 GHz	≤ 1.40 dB

Cable and switch insertion loss for **dual band** power amplifiers in 4 HU chassis with RF output on the **front panel**	0 Hz to 1 GHz	≤ 0.25 dB
	> 1 GHz to 2 GHz	≤ 0.35 dB
	> 2 GHz to 3 GHz	≤ 0.50 dB
	> 3 GHz to 6 GHz	≤ 0.80 dB
	> 6 GHz to 10 GHz	≤ 1.00 dB
	> 10 GHz to 12 GHz	≤ 1.20 dB
	> 12 GHz to 16 GHz	≤ 1.40 dB
	> 16 GHz to 18 GHz	≤ 1.70 dB

Cable and switch insertion loss for **dual band** power amplifiers in 4 HU chassis with RF output on the **rear panel**	0 Hz to 1 GHz	≤ 0.20 dB
	> 1 GHz to 2 GHz	≤ 0.30 dB
	> 2 GHz to 3 GHz	≤ 0.40 dB
	> 3 GHz to 6 GHz	≤ 0.70 dB
	> 6 GHz to 10 GHz	≤ 0.90 dB
	> 10 GHz to 12 GHz	≤ 1.10 dB
	> 12 GHz to 16 GHz	≤ 1.30 dB
	> 16 GHz to 18 GHz	≤ 1.60 dB

In case of rack integration, the loss due to cables and RF switches must be taken into account. The insertion loss of RF switches is specified under “Switching specifications” in these specifications.

RF switching specifications – input and measurement

RF input switch, R&S®BBA-B110 option		
Switch type		1:2 or 2:1, mechanical
RF input port	at desktop model or rack connection panel	N female
	switch	SMA female
Frequency range		0 Hz to 18 GHz
Switching time		< 10 ms
Life		10 000 000 cycles
Insertion loss	0 Hz to 3 GHz	≤ 0.15 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.20 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.25 dB, without cable loss
	> 12.4 GHz to 18 GHz	≤ 0.35 dB, without cable loss

RF input switch, R&S®BBA-B116 option		
Switch type		1:6, mechanical
RF input port	at rack connection panel	N female
	switch	SMA female
Frequency range		0 Hz to 18 GHz
Switching time		< 15 ms
Life		5 000 000 cycles
Insertion loss	0 Hz to 3 GHz	≤ 0.20 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.30 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.40 dB, without cable loss
	> 12.4 GHz to 18 GHz	≤ 0.50 dB, without cable loss

RF sample port switch, dual-port, R&S®BBA-B142 option		
Switch type		2 × 2:1, mechanical
RF or detected sample ports	at desktop model or rack connection panel	N female
	switches	SMA female
Frequency range		0 Hz to 18 GHz
Switching time		< 10 ms
Life		10 000 000 cycles
RF sample signal level		max. 10 dBm
Insertion loss	0 Hz to 3 GHz	≤ 0.15 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.20 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.25 dB, without cable loss
	> 12.4 GHz to 18 GHz	≤ 0.35 dB, without cable loss

RF sample port switch, dual-port, R&S®BBA-B146 option		
Switch type		2 × 6:1, mechanical
RF or detected sample ports	at rack connection panel	N female
	switches	SMA female
Frequency range		0 Hz to 18 GHz
Switching time		< 10 ms
Life		5 000 000 cycles
RF sample signal level		max. 10 dBm
Insertion loss	0 Hz to 3 GHz	≤ 0.20 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.30 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.40 dB, without cable loss
	> 12.4 GHz to 18 GHz	≤ 0.50 dB, without cable loss

RF switching specifications – output

RF output switch, R&S®BBA-B120 option		
Switch type		2:1 or 1:2, mechanical
RF output port		N female
Frequency range		0 Hz to 12.4 GHz
Switching time		< 15 ms
Life		1 000 000 cycles
Average forward RF power	0 Hz to 1 GHz	max. 700 W × $1/\sqrt{VSWR}$
	> 1 GHz to 2 GHz	max. 500 W × $1/\sqrt{VSWR}$
	> 2 GHz to 3 GHz	max. 400 W × $1/\sqrt{VSWR}$
	> 3 GHz to 8 GHz	max. 250 W × $1/\sqrt{VSWR}$
	> 8 GHz to 12.4 GHz	max. 200 W × $1/\sqrt{VSWR}$
Insertion loss	0 Hz to 1 GHz	≤ 0.15 dB, without cable loss
	> 1 GHz to 2 GHz	≤ 0.20 dB, without cable loss
	> 2 GHz to 3 GHz	≤ 0.25 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.35 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.50 dB, without cable loss

RF output switch, R&S®BBA-B121 option		
Switch type		2:2, mechanical
RF output port		7/16 female
Frequency range		0 Hz to 6 GHz
Switching time		< 100 ms
Life		≥ 500 000 cycles
Average forward RF power	0 Hz to 1 GHz	max. 2.0 kW × $1/\sqrt{VSWR}$
	> 1 GHz to 2 GHz	max. 1.4 kW × $1/\sqrt{VSWR}$
	> 2 GHz to 3 GHz	max. 1.1 kW × $1/\sqrt{VSWR}$
	> 3 GHz to 4 GHz	max. 1.0 kW × $1/\sqrt{VSWR}$
	> 4 GHz to 5 GHz	max. 0.9 kW × $1/\sqrt{VSWR}$
	> 5 GHz to 6 GHz	max. 0.8 kW × $1/\sqrt{VSWR}$
Insertion loss	0 Hz to 2 GHz	≤ 0.05 dB, without cable loss
	> 2 GHz to 5 GHz	≤ 0.10 dB, without cable loss
	> 5 GHz to 6 GHz	≤ 0.15 dB, without cable loss

RF output switch, R&S®BBA-B122 option		
Switch type		2:2, mechanical
RF output port		$^{7}/_{8}$" EIA
Frequency range		0 Hz to 3.5 GHz
Switching time		< 120 ms
Life		≥ 250 000 cycles
Average forward RF power	0 Hz to 0.1 GHz	max. 8 kW × $1/\sqrt{VSWR}$
	> 0.1 GHz to 0.23 GHz	max. 5 kW × $1/\sqrt{VSWR}$
	> 0.23 GHz to 0.86 GHz	max. 2.5 kW × $1/\sqrt{VSWR}$
	> 0.86 GHz to 2 GHz	max. 1.8 kW × $1/\sqrt{VSWR}$
	> 2 GHz to 3 GHz	max. 1.4 kW × $1/\sqrt{VSWR}$
	> 3 GHz to 3.5 GHz	max. 1.3 kW × $1/\sqrt{VSWR}$
Insertion loss	0 Hz to 1 GHz	≤ 0.03 dB, without cable loss
	> 1 GHz to 2 GHz	≤ 0.05 dB, without cable loss
	> 2 GHz to 3.5 GHz	≤ 0.20 dB, without cable loss

RF output switch, R&S®BBA-B123 option		
Switch type		2:2, mechanical
RF output port		1 $^{5}/_{8}$" EIA
Frequency range		0 Hz to 2 GHz
Switching time		< 120 ms
Life		≥ 250 000 cycles
Average forward RF power	0 Hz to 0.1 GHz	max. 19 kW × $1/\sqrt{VSWR}$
	> 0.1 GHz to 0.23 GHz	max. 12.7 kW × $1/\sqrt{VSWR}$
	> 0.23 GHz to 0.86 GHz	max. 6.6 kW × $1/\sqrt{VSWR}$
	> 0.86 GHz to 1.6 GHz	max. 4.8 kW × $1/\sqrt{VSWR}$
	> 1.6 GHz to 2 GHz	max. 4.3 kW × $1/\sqrt{VSWR}$
Insertion loss	0 Hz to 0.86 GHz	≤ 0.05 dB, without cable loss
	> 0.86 GHz to 2 GHz	≤ 0.10 dB, without cable loss

RF output switch, R&S®BBA-B125 option		
Switch type		2:1, mechanical
RF output port		precision N female
Frequency range		0 Hz to 18.0 GHz
Switching time		< 15 ms
Life		≥ 2 500 000 cycles
Average forward RF power	0 Hz to 1 GHz	max. 700 W × $1/\sqrt{VSWR}$
	> 1 GHz to 2 GHz	max. 500 W × $1/\sqrt{VSWR}$
	> 2 GHz to 3 GHz	max. 400 W × $1/\sqrt{VSWR}$
	> 3 GHz to 8 GHz	max. 250 W × $1/\sqrt{VSWR}$
	> 8 GHz to 12.4 GHz	max. 200 W × $1/\sqrt{VSWR}$
	> 12.4 GHz to 18 GHz	max. 165 W × $1/\sqrt{VSWR}$
Insertion loss	0 Hz to 1 GHz	≤ 0.15 dB, without cable loss
	> 1 GHz to 2 GHz	≤ 0.20 dB, without cable loss
	> 2 GHz to 3 GHz	≤ 0.25 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.35 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.5 dB, without cable loss
	> 12.4 GHz to 18 GHz	≤ 0.7 dB, without cable loss

RF output switch, R&S®BBA-B126 option		
Switch type		6:1, mechanical
RF output port		N female
Frequency range		0 Hz to 12.4 GHz
Switching time		< 15 ms
Life		≥ 2 000 000 cycles
Average forward RF power	0 Hz to 1 GHz	max. 700 W × $1/\sqrt{VSWR}$
	> 1 GHz to 2 GHz	max. 500 W × $1/\sqrt{VSWR}$
	> 2 GHz to 3 GHz	max. 400 W × $1/\sqrt{VSWR}$
	> 3 GHz to 8 GHz	max. 250 W × $1/\sqrt{VSWR}$
	> 8 GHz to 12.4 GHz	max. 200 W × $1/\sqrt{VSWR}$
Insertion loss	0 Hz to 1 GHz	≤ 0.15 dB, without cable loss
	> 1 GHz to 2 GHz	≤ 0.20 dB, without cable loss
	> 2 GHz to 3 GHz	≤ 0.25 dB, without cable loss
	> 3 GHz to 8 GHz	≤ 0.35 dB, without cable loss
	> 8 GHz to 12.4 GHz	≤ 0.5 dB, without cable loss

Fast amplifier mute specifications

Fast amplifier mute, R&S®BBA-K130 option		
External mute signal		TTL
Mute on delay	amplifier switches to mute mode, RF turns off	nom. < 8 µs
Mute off delay	amplifier leaves mute mode, RF turns on	
	R&S®BBA300-CDE, R&S®BBA300-DE	nom. < 8 µs
	R&S®BBA300-F, R&S®BBA300-FG	nom. < 15 µs
Pulse width	at 50 % duty cycle	nom. ≥ 200 µs

Adapter specifications

Adapter, WRD650 to N (precision), female, 90°, R&S®BBA-B132 option		
Frequency range		6 GHz to 18 GHz
Input power [49]		
Adapter	CW, VSWR < 1.5:1	nom. max. 500 W
	CW, VSWR < 6:1	nom. max. 300 W
	pulse modulation, max. 50 % duty cycle, max. 100 Hz, VSWR < 6:1	nom. max. 600 W
Adapter and cable (LL335 or similar)	CW, VSWR < 1.5:1	nom. max. 250 W
	CW, VSWR < 6:1	nom. max. 150 W
	pulse modulation, max. 50 % duty cycle, max. 100 Hz, VSWR < 6:1	nom. max. 300 W
VSWR	at 50 Ω	
	6 GHz to 7 GHz	nom. max. 1.5:1
	7 GHz to 18 GHz	nom. max. 1.3:1
Insertion loss		nom. max. 0.15 dB
Flange type		WRD650
Connector		N female (precision), 90°

Caution: The adapter can get very hot during operation. Appropriate measures shall be taken to avoid unintentional contact, e.g. by mechanical barriers and/or access only for trained personnel.

[49] The power rating of the components connected to the adapter, e.g. cable or waveguide, shall have the same power rating as the adapter. Otherwise the weakest element determines the maximum permissible power. To prevent damage, appropriate measures shall be taken to limit the maximum power.

Ordering information

R&S®BBA300 single-band power amplifiers

Frequency band from 380 MHz to 6 GHz

Designation	Type	Configuration No.
15 W (20 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE15
25 W (35W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE25
50 W (75 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE50
90 W (140 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE90
180 W (250 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE180
300 W (450 W), air-cooled, 12 HU, rack model	R&S®BBA300	BBA300-CDE300

Frequency band from 1 GHz to 6 GHz

Designation	Type	Configuration No.
15 W (20 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE15
25 W (35 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE25
50 W (75 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE50
90 W (140 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE90
180 W (250 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE180
300 W (450 W), air-cooled, 12 HU, rack model	R&S®BBA300	BBA300-DE300
500 W (750 W), air-cooled, 14 HU, rack model	R&S®BBA300	BBA300-DE500
950 W (1100 W), air-cooled, 30 HU, rack model	R&S®BBA300	BBA300-DE1000

Frequency band from 6 GHz to 13 GHz

Designation	Type	Configuration No.
30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-F30
50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-F50
90 W (130 W), air-cooled, 5 HU, desktop model	R&S®BBA300	BBA300-F90
180 W (300 W), air-cooled, 5 HU, desktop model	R&S®BBA300	BBA300-F180
300 W (450 W), air-cooled, 12 HU, rack model	R&S®BBA300	BBA300-F300

Frequency band from 6 GHz to 18 GHz

Designation	Type	Configuration No.
30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-FG30
50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-FG50
90 W (130 W), air-cooled, 5 HU, desktop model	R&S®BBA300	BBA300-FG90
180 W (300 W), air-cooled, 5 HU, desktop model	R&S®BBA300	BBA300-FG180
300 W (450 W), air-cooled, 12 HU, rack model	R&S®BBA300	BBA300-FG300

Accessories supplied: power cord, user manual on CD

R&S®BBA300 dual-band power amplifiers

Frequency band from 380 MHz to 13 GHz

Designation	Type	Configuration No.
25 W (20 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE25F30
50 W (75W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE50F30
50 W (75 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE50F50
90 W (140 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE90F30
90 W (140 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE90F50

Frequency band from 380 MHz to 18 GHz

Designation	Type	Configuration No.
25 W (20 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE25FG30
50 W (75W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE50FG30
50 W (75 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE50FG50
90 W (140 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE90FG30
90 W (140 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE90FG50

Frequency band from 1 GHz to 13 GHz

Designation	Type	Configuration No.
25 W (20 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE25F30
50 W (75W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE50F30
50 W (75 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE50F50
90 W (140 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE90F30
90 W (140 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE90F50

Frequency band from 1 GHz to 18 GHz

Designation	Type	Configuration No.
25 W (20 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE25FG30
50 W (75W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE50FG30
50 W (75 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE50FG50
90 W (140 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE90FG30
90 W (140 W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE90FG50

Accessories supplied: power cord, user manual on CD

R&S®BBA300 twin-band power amplifiers

Frequency band from 380 MHz to 6 GHz

Designation	Type	Configuration No.
15 W (20 W)/15 W (20 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE15CDE15
25 W (35 W)/25 W (35 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE25CDE25
50 W (75 W)/50 W (75 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE50CDE50
90 W (140 W)/90 W (140 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-CDE90CDE90

Frequency band from 1 GHz to 6 GHz

Designation	Type	Configuration No.
15 W (20 W)/15 W (20 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE15DE15
25 W (35 W)/25 W (35 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE25DE25
50 W (75 W)/50 W (75 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE50DE50
90 W (140 W)/90 W (140 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-DE90DE90

Frequency band from 6 GHz to 13 GHz

Designation	Type	Configuration No.
30 W (40 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-F30F30
50 W (80W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-F50F50
90 W (130 W)/90 W (130 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-F90F90

Frequency band from 6 GHz to 18 GHz

Designation	Type	Configuration No.
30 W (40 W)/30 W (40 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-FG30FG30
50 W (80W)/50 W (80 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-FG50FG50
90 W (130 W)/90 W (130 W), air-cooled, 4 HU, desktop model	R&S®BBA300	BBA300-FG90FG90

Accessories supplied: power cord, user manual on CD

Options

Designation	Type	Order No.
Hardware options		
GPIB remote control	R&S®BBA-B101	5355.8250.02 [50]
PoE switch	R&S®BBA-B102	5355.8243.30
Optical remote control	R&S®BBA-B105	5355.8266.13
RF input switch (1:2 or 2:1, N) [51]	R&S®BBA-B110	5355.8866.17 [50]
RF input switch (1:6, N)	R&S®BBA-B116	5355.8950.12
RF output switch (2:1 or 1:2, N) [51]	R&S®BBA-B120	5355.8795.15 [50]
RF output switch (2:2, 7/16) [51]	R&S®BBA-B121	5355.8895.12 [50]
RF output switch (2:1 or 1:2, N) [51]	R&S®BBA-B125	5355.8795.25 [50]
RF output switch (6:1, N)	R&S®BBA-B126	5355.8995.12
RF output switch (2:1, WRD650)	R&S®BBA-B127	5355.8772.02
DC block input protection (N)	R&S®BBA-B132	5353.9236.03
Adapter, WRD650 to N (precision), female, 90°	R&S®BBA-B134	5358.8767.03
Sample ports, for forward and reflected RF power (N) [51]	R&S®BBA-B140	5355.8837.02 [50]
Sample port switch (2 × 2:1, N) [51]	R&S®BBA-B142	5355.8872.18 [50]
Sample port switch (2 × 6:1, N)	R&S®BBA-B146	5355.8972.12
10" touchscreen	R&S®BBA-B200	Contact your local Rohde & Schwarz sales office.
Frequency extension, 380 MHz to 6 GHz, for R&S®BBA300-DE	R&S®BBA-B211	Contact your local Rohde & Schwarz sales office.
Frequency extension, 6 GHz to 18 GHz, for R&S®BBA300-F	R&S®BBA-B212	Contact your local Rohde & Schwarz sales office.
Software options		
Setting bias point and high power	R&S®BBA-PK1	5352.8407.14 [50]
Automatic RF on	R&S®BBA-K9	5352.8088.02
Fast amplifier mute	R&S®BBA-K130	5352.8220.02

Service

Service level agreements

Rohde & Schwarz offers maintenance and support services to maximize and protect the investment of customers' Rohde & Schwarz products. Details are given in the "Service Levels Description for Rohde & Schwarz Broadband Amplifiers" document (PD 3607.6467.92).

Calibration information

An optional calibration can be ordered for the R&S®BBA300. Note that the simple acceptance rule is selected for the declaration of conformity (cf. ILAC-G8:09/2019, section 4.2.1).

System upgrades

Upgrades in frequency band and/or RF output power are available on request.

[50] The last two digits of the order number vary depending on the system configuration.

[51] Internal cable insertion loss for RF input on the front panel: 1 GHz to 4.2 GHz: 0.4 dB; 4.2 GHz to 5.7 GHz: 0.55 dB; 5.7 GHz to 6 GHz: 0.7 dB.

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