

The AVBR60180U51 is a 125W high gain Solid State Broadband High Power Amplifier System utilizing the latest high power RF GaN transistors. Built in control and monitoring, protection functions to ensure high reliability. This amplifier is suitable for high power CW or Pulse Radar system applications, EMC application.



Features

6GHz-18GHz frequency range

Psat 51dBm typ., 50dBm Min

Power gain 53 dB typ.

50 ohm input/output impedance

Reverse and forward power Display

Solid-state Class AB Broadband design

Instantaneous ultra-broadband

Suitable for pulse or CW applications

ALC and MGC is available in options

High reliability and ruggedness

ELECTRICAL SPECIFICATIONS (T=25°C, VAC =220V, CW, Load VSWR<1.2)

Description	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	6		18	GHz
Output Power-CW * @ Pin=0dBm	PSAT	100	125		W
Power Gain @ Pin= 0dBm	Gp	50	53		dB
Power Gain Flatness	Δ Gp		± 1.5	± 2.0	dB
Gain Flatness Leveled (ALC)**	Δ Gp (ALC)		± 1.0	± 1.5	dB
Gain Adjustment Range (MGC***)	VVA	20			dB
Input Power for Rated PSAT	PIN	-5	0	2	dBm
2nd/3rd Harmonics @ Pin=-5 dBm	2 nd /3 rd		-15/-25	-9/-15	dBc
Small Signal Gain @ Pin= -25 dBm	Gs		62		dB
Small Signal Flatness @ Pin= -25 dBm	Δ Gs		± 2.5	± 3.5	dB
Spurious Signals@ Pin=0dBm	Spur		-70	-60	dBc
Input Return Loss	S11			-10	dB
Supply Voltage (47~61Hz) /Single-Phase	VAC	180	220/50Hz	260	V
Peak Power Consumption @ Pout =100~150W-CW	PD		1000	1600	W
System Turn-On Time	Ton			1	S

Note*: CW measurement performed in MGC Mode (Manual Gain Control)

Note**: ALC power can be set to the range of 30dBm~50dBm.

Note***: MGC can be set to the range of 0dB~30dB.

Datasheet: REV 2.0/11.10.2021

Unique Amplifier With Innovation

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TECHNICAL DATASHEET

AVBR60180U51

MECHANICAL SPECIFICATIONS

Cooling	Built-in internal forced air cooling system
Width*Height*Deep[mm]	482.6 x 221.5 x 500 (5U)
Weight[Kg]*	38 (Net Weight, without package)
RF Connector Input	Type N, Female
RF Connector Output	Type N, Female
DC Connector RS-232	Dsub-9, Male
AC Connector	3 position Standard Circular Connectors

ENVIRONMENTAL SPECIFICATIONS (Design to Meet)

Module Operation Temperature*1	-10	45	°C
Storage Temperature Range	-20	55	°C
Relative-Humidity	N/A		
Altitude*2	N/A		
Vibration/Shock*2	N/A		

Notes *1: Amplifier Operation Temperature can be extended to -40~65°C, Contact Sales for update.

Notes *2: Altitude /Vibration are designed with considerations, but without tests and experiments. Contact Sales for experimental verification.

LIMITS

Input RF drive level without damage	$Pin \leq 10$	dBm
Load VSWR @ POUT =80W	$VSWR \leq 5:1$	N/A
Thermal Degradation	55	°C
VSWR protection	Forward Power > 20W and VSWR>5:1	N/A

AC INTERFACE CONNECTOR-Standard Circular Connectors

Pin #	Description	Specifications
1	L	Live Wire
2	N	Neutral Wire
3	GND	Earth Wire

DC INTERFACE CONNECTOR –RS-232 [D-Sub 9-Pin, Male]

Pin #	Description	Specifications
1	GND	Ground
2	Shutdown	Amplifier Disable: TTL Logic High (3.3V) (Internally Pulled-Low)
3	RS-232-TxD	Transmitted Data - TxD
4	RS-232-RxD	Received Data - RxD
5	GND	GND, Sig.GND
6~9	Reserved	Reserved

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Front Panel LED Indicators**

Description	Specifications
RUN	GREEN: Internal DC supply turn on, Amplifier is awoken and ready to work.
TEMP	RED: Temperature is over-limited, Amplifier shutdown
FAN	RED: Fan is abnormal, Amplifier shutdown
ALARM	RED: Amplifier is abnormal, Amplifier shutdown, Connect D-Sub 9 to debug

**Note: LCD display is available; LED Indicator is for version without LCD.

Available options:

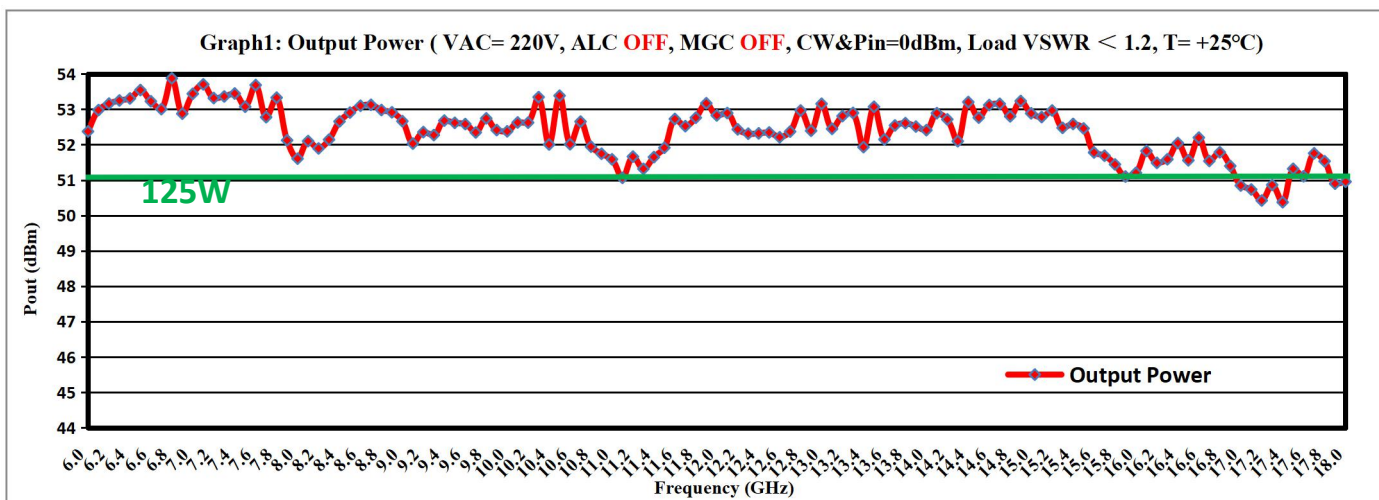
AVBR60180U51	180-260VAC, 1-phase, 47-63 Hz, Rear RF Connectors, Without LCD Display
AVBR60180U51-001	28 VDC, Rear RF Connectors , Without LCD Display
AVBR60180U51-002	180-260VAC, 1-phase, 47-63 Hz, Rear RF Connectors, With LCD Display(Forward power)
AVBR60180U51-003	180-260VAC, 1-phase, 47-63 Hz, Rear RF Connectors,, RS232 ALC and MGC functions, With LCD Display(Forward power, ALC, MGC)
AVBR60180U51-XXX	Other Feature: -LCD Control, Ethernet & Serial -Main RF Connectors: Input & Output [Front] -Sample Port: SMA-F [Forward & Reverse] -Blanking/Gating Port: BNC-F -Rack Slides, Handles and Rackmount Bracket

PLOTTED AND OTHER DATA

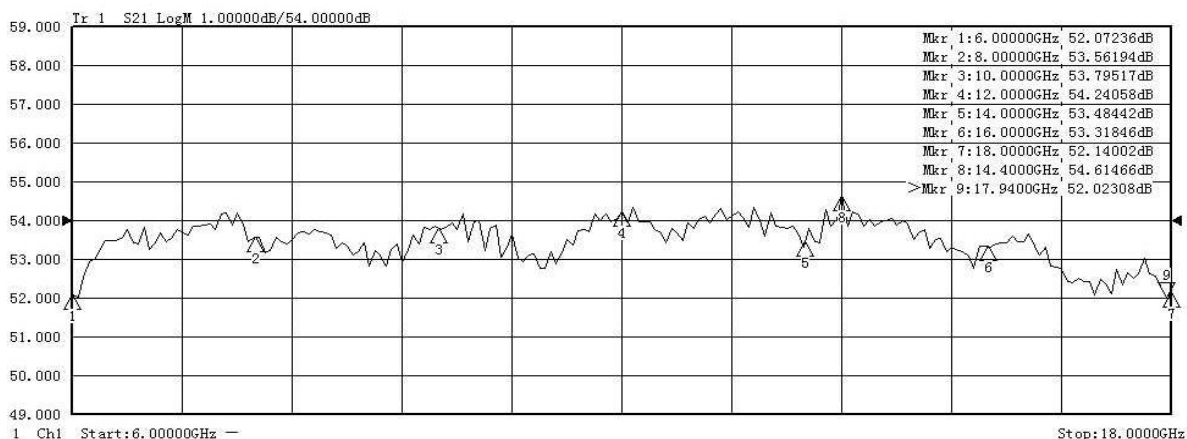
Notes:

1. Values at +25°C, sea level.
2. Handle only in approved ESD Workstation.

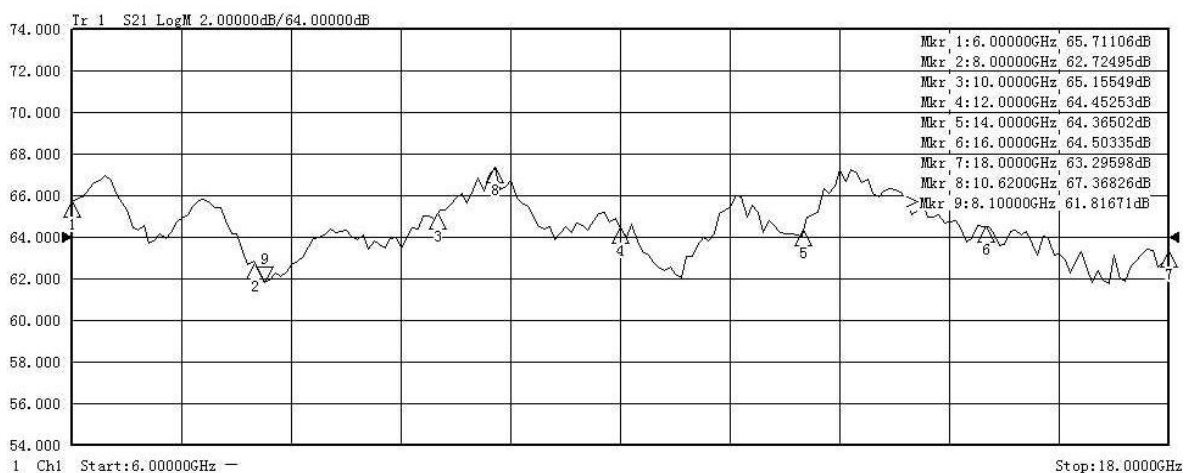
TYPICAL PERFORMANCE DATA [Ambient Temp:25°C, Load VSWR<1.2]



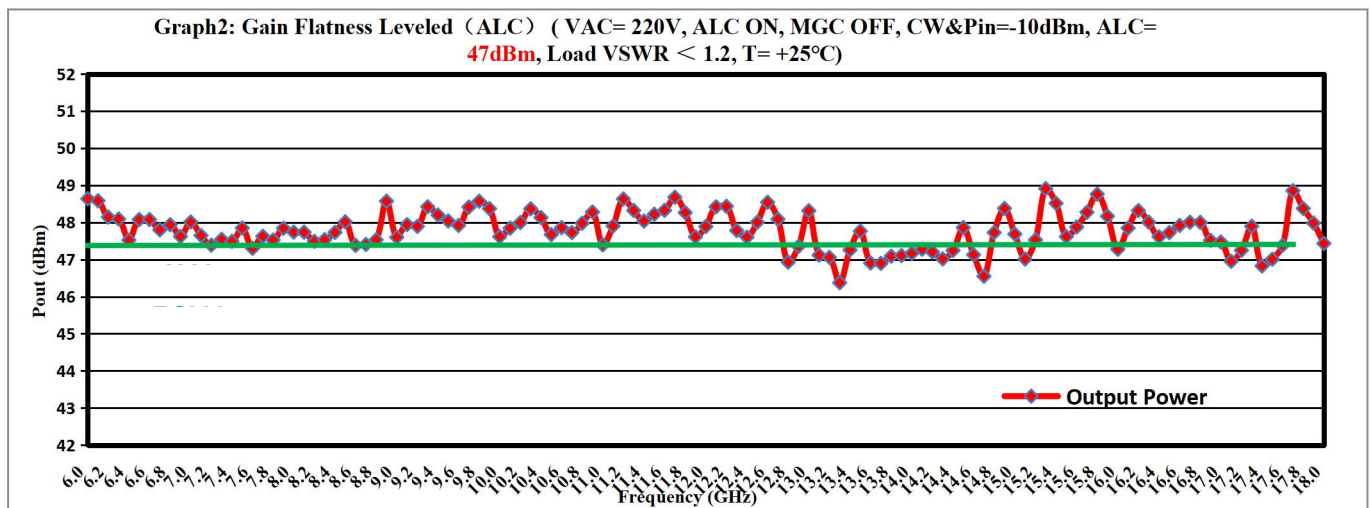
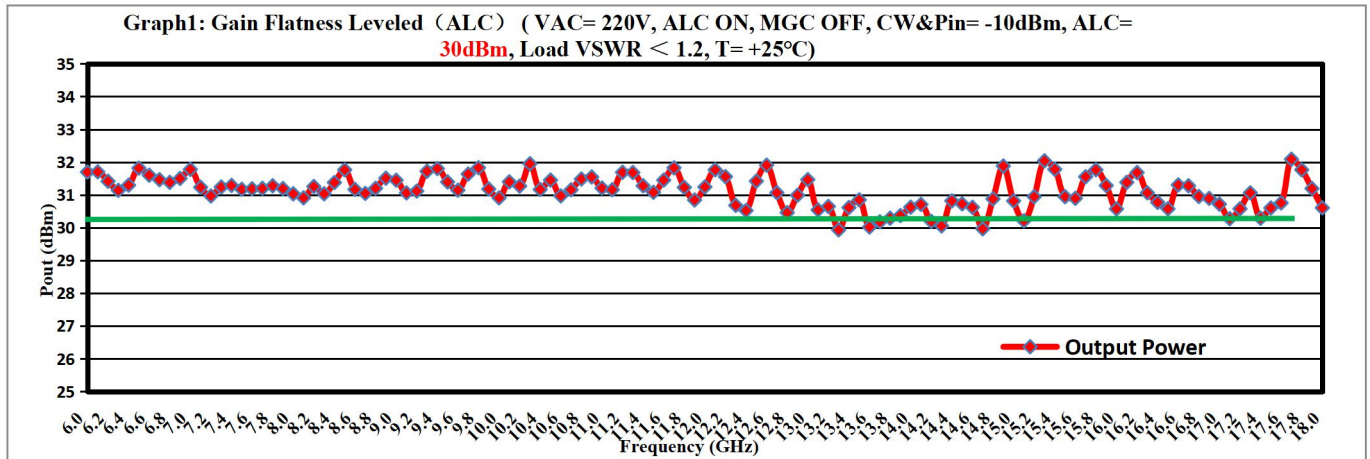
Power Gain S21@ Pin=0dBm (Ambient temp, +25±2°C, Load VSWR≤ 1.2), for Reference Only (Shipped Products)



Small signal gain @Pin=-25dBm (Ambient temp, +25±2°C, Load VSWR≤ 1.2), for Reference Only (Shipped Products)



TYPICAL PERFORMANCE DATA [Ambient Temp:25°C, Load VSWR<1.2, ALC functions]



TECHNICAL DATASHEET

AVBR60180U51

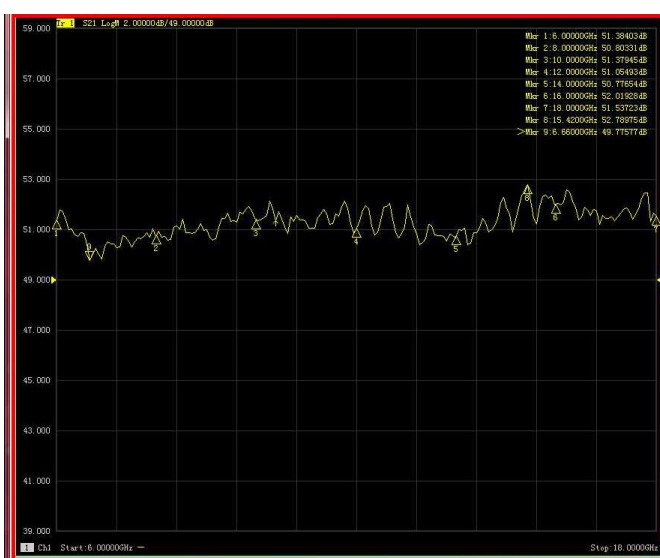
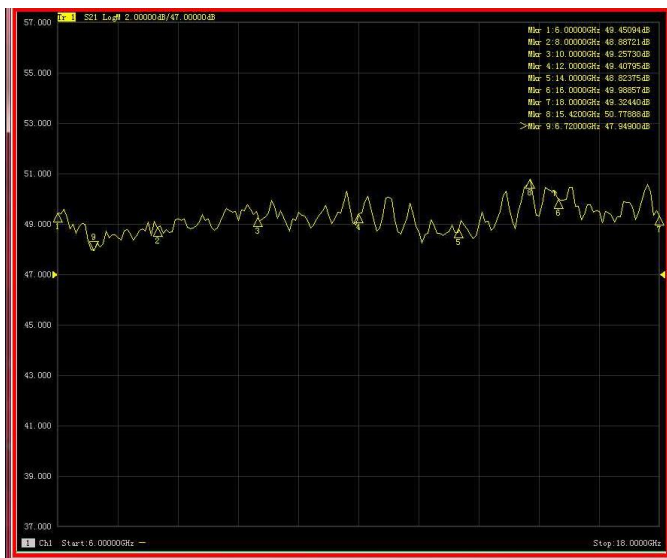
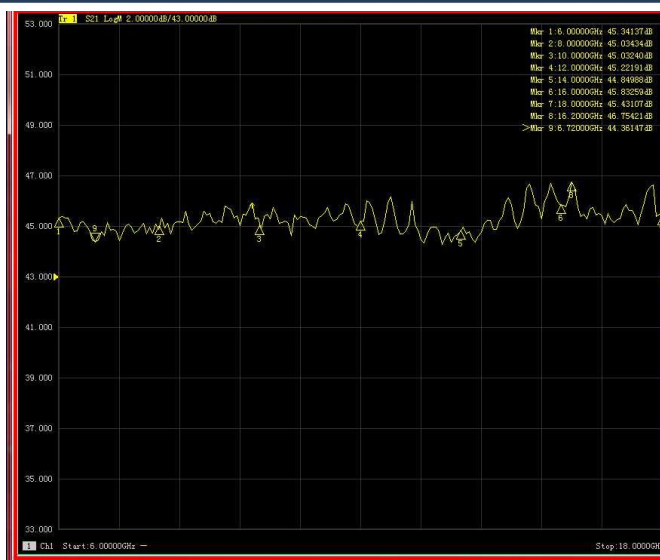
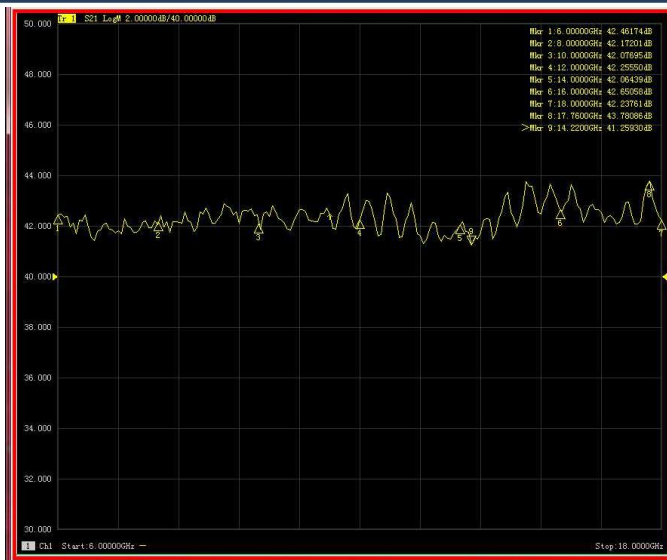


Figure left up: Power Gain S21@ Pin=-10dBm (MGC OFF and ALC=40dBm), for Reference Only (Shipped Products)

Figure right up: Power Gain S21@ Pin=-10dBm (MGC OFF and ALC=43dBm), for Reference Only (Shipped Products)

Figure left down: Power Gain S21@ Pin=-10dBm (MGC OFF and ALC=47dBm), for Reference Only (Shipped Products)

Figure right down: Power Gain S21@ Pin=-10dBm (MGC OFF and ALC=49dBm), for Reference Only (Shipped Products)

TYPICAL PERFORMANCE DATA [Ambient Temp:25°C, Load VSWR<1.2, MGC functions]

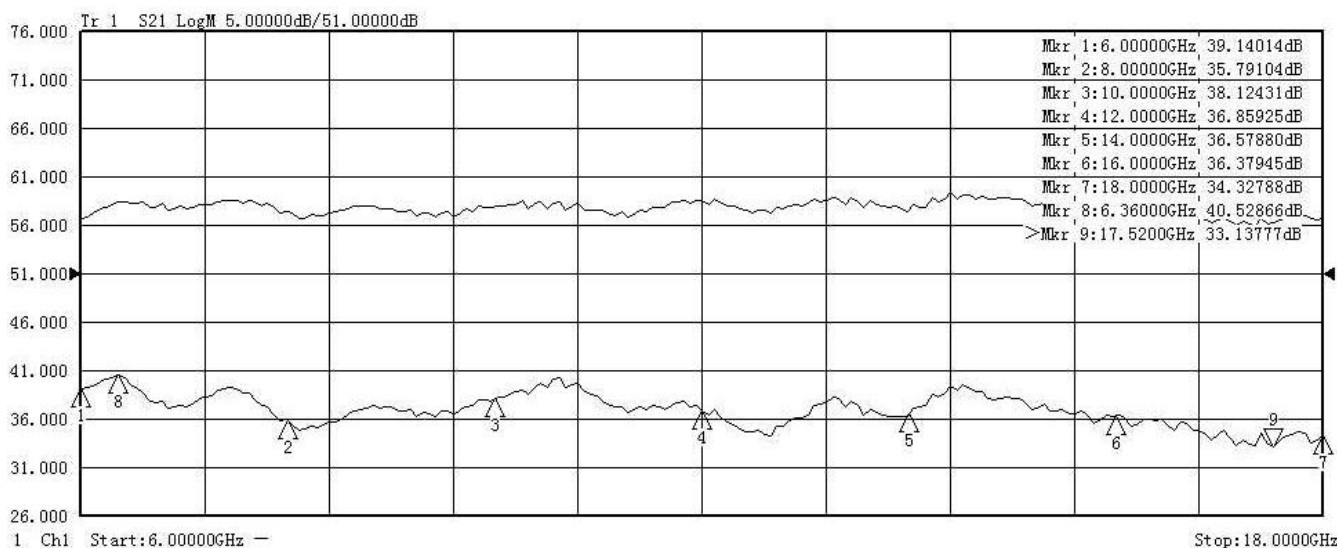
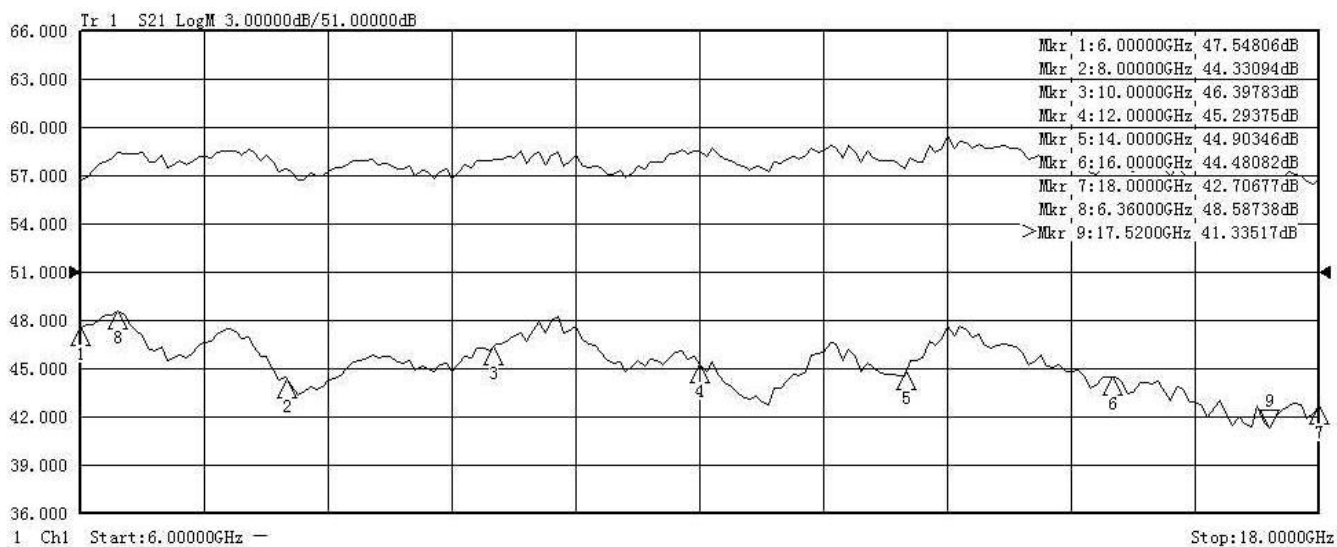


Figure up: Power Gain S21@ Pin=-5dBm (MGC OFF and MGC=20dB), for Reference Only (Shipped Products)

Figure down: Power Gain S21 @Pin=-5dBm (MGC OFF and MGC=30dB), for Reference Only (Shipped Products)

50dB Gain, 125W Psat, 6-18GHz
Solid State Broadband High Power Amplifier(CW&&Pulse)

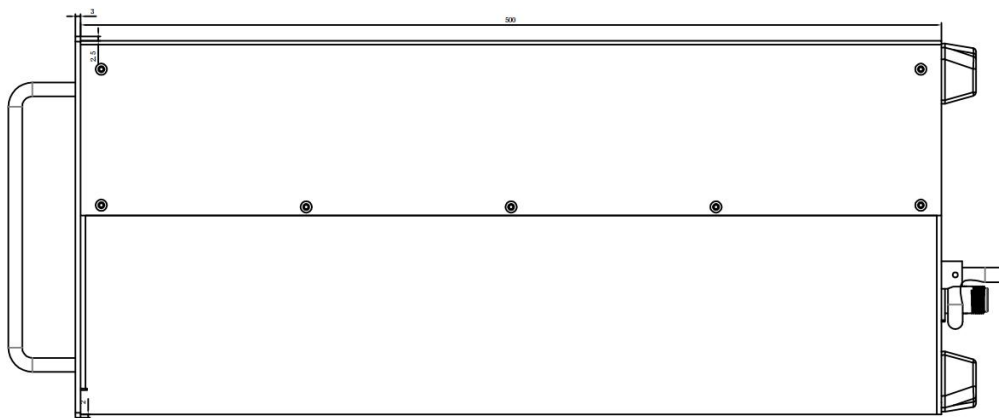
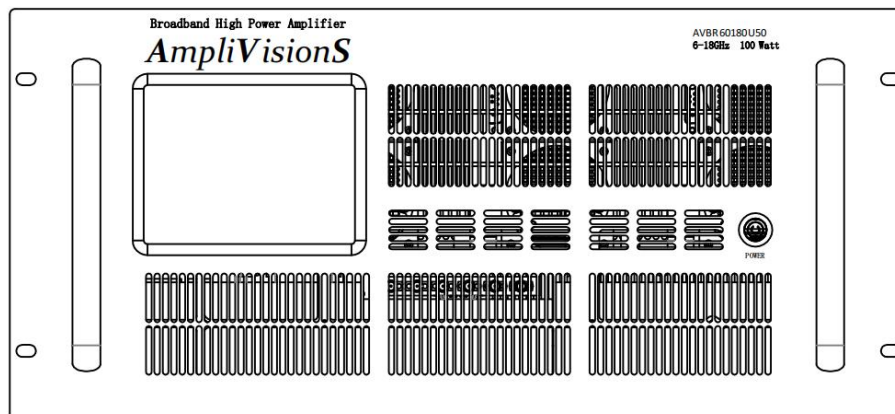
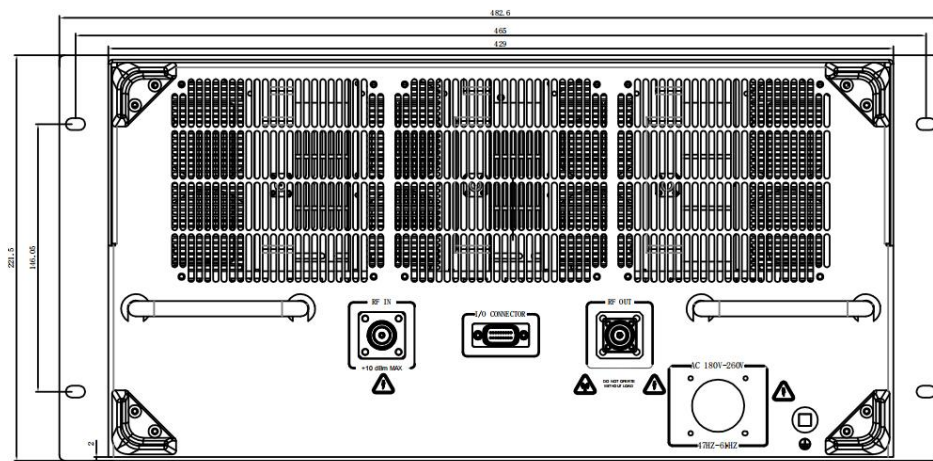
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TECHNICAL DATASHEET

AVBR60180U51

Rack Mounted System - Detailed Dimensions (mm)-Standard Case Style-A5U1 (Rear RF connector View)

Outlines:



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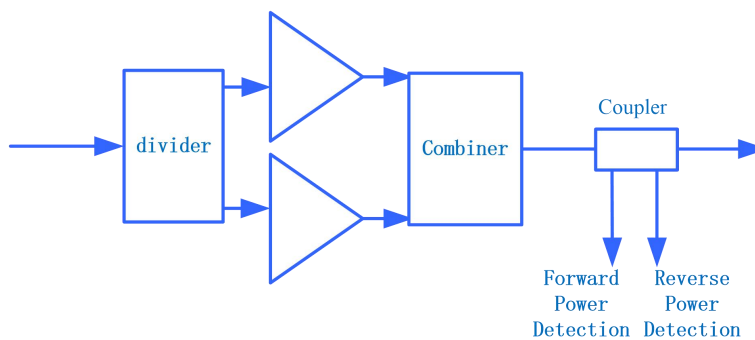
Phone: +86(28)61892455
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Product Side View:



Description:

1. ALC and MGC functions are controlled by serial communication protocol (**RS-232**), and the communication protocol will be provided to the user before delivery;
2. ALC control input range is typical -15~5dBm. The ALC Output power range is 30dBm~50dBm (typical value);
3. ALC and MGC functions can function well suited for CW signal;
4. LCD display is only used for monitoring the status of the device, without touch function;
5. Typical diagram is as follows:



Part Number	Version	Release Date	Modification	Status
AVBR60180U51	1.0	2021.7.10	-	Production
AVBR60180U51	2.0	2021.11.10	Added: ALC, MGC	Production