

# Amplifiers

## Model 20S6G18C

**Features:**

- 20 W CW, 6 - 18 GHz
- Class A design
- 100% mismatch tolerant
- Built-in fault monitoring and protection
- Remote control: Ethernet, USB, GPIB, fiber-optic serial, RS-232
- Modular design for easy maintenance and service
- Low acoustical noise

**Applications:**

- EMC (military, aviation, automotive, commercial)
- Radiated and conducted EMC testing
- General purpose, antenna, and component testing
- 4G LTE, 5G NR (FR1/FR2), OFDM, PSK/QAM, Wi-Fi etc.

**To view our full amplifier portfolio visit: www.ar.ametek-cts.com**

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ISO 9001: 2015 Certified
ISO 17025 :2017 Accredited

The Model 20S6G18C is a self-contained, air-cooled, solid-state Class A broadband power amplifier designed for applications demanding wide bandwidth coverage, high gain, and linear performance. It delivers a minimum of 20 W over a frequency range of 6.0 to 18 GHz. The unit includes safeguards against input overdrive beyond 0 dBm, as well as various fault conditions such as excessive temperature and power supply issues.



A scalable, module-based design combined with advanced forced-air cooling ensures reliable operation and long-term performance in demanding test environments. A clear front-panel display provides immediate visibility of operating status and fault conditions, enabling fast setup and confident operation. For maximum flexibility, all control and monitoring functions can be accessed either locally via the front panel or remotely through a wide range of standard interfaces, including GPIB/IEEE-488, RS-232, fiber-optic serial, USB, and Ethernet.

This Class A amplifier is engineered for EMC immunity, communications, and aerospace & defense testing, delivering exceptional stability and linearity under demanding load conditions, including high VSWR, open, or short circuits. Low spurious emissions, high spectral purity, and wideband performance make it ideal for modern wireless and 5G applications.

Export classification for this device is 3A001. These goods, technologies, or software are regulated under U.S. Export Administration Regulations, and unauthorized diversion is prohibited by U.S. law.

**Model 20S6G18C**

- **20 W**
- **6.0 – 18.0 GHz**

## Electrical Specifications

| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| **Rated Power Output (6 - 18 GHz)** | PSAT | 20 | 30 | >60 | W |
| **Input for Rated Output** | Pin | | | 1.0 | mW |
| | | | | 0 | dBm |
| **Power Output @ 1 dB Compression** | P1dB | 15 | 22 | >45 | W |
| **Power Output @ 3 dB Compression** | P3dB | 18 | 25 | >55 | W |
| **Operating Frequency** | BW | 6.0 | | 18.0 | GHz |
| **Gain (Small Signal)** | | 45 | 47 | 49 | dB |
| **Gain Reduction Adjustment** (when below compression) | | 10 | | | dB |
| **Flatness** | ΔG | | ±2.0 | ±2.5 | dB |
| **Input Impedance** | Z in | | 50 | | Ohm |
| | | | 2.0:1 | 2.5:1 | VSWR |
| **Output Impedance** | Z out | | 50 | | Ohm |
| **3rd Order Intercept** | IP3 | | +49 | | dBm |
| **Noise Figure** | NF | | 10 | | dB |
| **Harmonic Distortion @ 20 W** | H2, H3 | | -25 | -20 | dBc |
| **Spurious** | | | -75 | | dBc |
| **Power Consumption** | PD | | | 600 | W |

## Absolute Maximum Rating

**Exceeding any of the limits listed here may result in permanent damage to the device.**

| Parameter | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|
| **RF Drive** | | 0 | +13 | dBm |
| **RF Load** | | 1:1 | ∞ | VSWR |
| **RF Load Reflected**<br>Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. | | | 100 | % |
| **AC Power (single phase)** | 100 | | 240 | VAC |
| | 47 | | 63 | Hz |
| **Ambient Temperature** | +5 | +25 | +40 | °C |
| **Storage Temperature** | -20 | | +50 | °C |
| **Altitude** | | | 2000 | m |
| **Shock/Vibration** | Normal Truck Transport | | | |

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| Mechanical Specifications | | |
|---|---|---|
| **Parameters** | **Typical** | **Unit** |
| **Dimensions (With Cabinet) (W x H x D)** | 50.2 x 20.6 x 63.8 | cm |
| | 19.8 x 8.1 x 25.1 | in |
| **Dimensions (No Cabinet) – 4U for 19" Rack** | 48.3 x 18.8 x 63.8 | cm |
| | 19.0 x 7.0 x 25.1 | in |
| **Weight (With Cabinet)** | 29.5 | kg |
| | 65 | lb |
| **Weight (No Cabinet)** | 20.4 | kg |
| | 45 | lb |
| **Cooling** | Forced air (self-contained fans) | |
| **Acoustic Noise Measured @ 1 Meter** | 60 | dBA |

| Connector Interfaces | |
|---|---|
| **Function** | **Type** |
| **RF Input** | N, female, rear (50 Ω) (option front) |
| **RF Output** | N, female, rear (50 Ω) (option front) |
| **IEEE-488** | 24-pin |
| **RS-232** | 9 pin subminiature D |
| **Ethernet** | RJ-45 |
| **RS-232 (fiber optic)** | ST |
| **USB 2.0** | Type B |
| **Interlock** | 15-pin subminiature D |

| Regulatory Compliance | |
|---|---|
| **Type** | **Standard** |
| **EMC** | EN 61326-1 |
| **Safety** | UL 61010-1 |
| | CAN/CSA C22.2 #61010-1 |
| | CENELEC EN 61010-1 |
| **RoHS** | Directive 2011/65/EU |
| **Export** | 3A001 |

## Ordering Options

| **20S6G18C** | - | | - | **N** | - | | - | **N** | - | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | | **RF IN Conn Location, Type** | | | | **RF OUT Conn Location, Type** | | | | **Enclosure No Enclosure** |

| Connector | |
|---|---|
| Front | F |
| Rear | R |

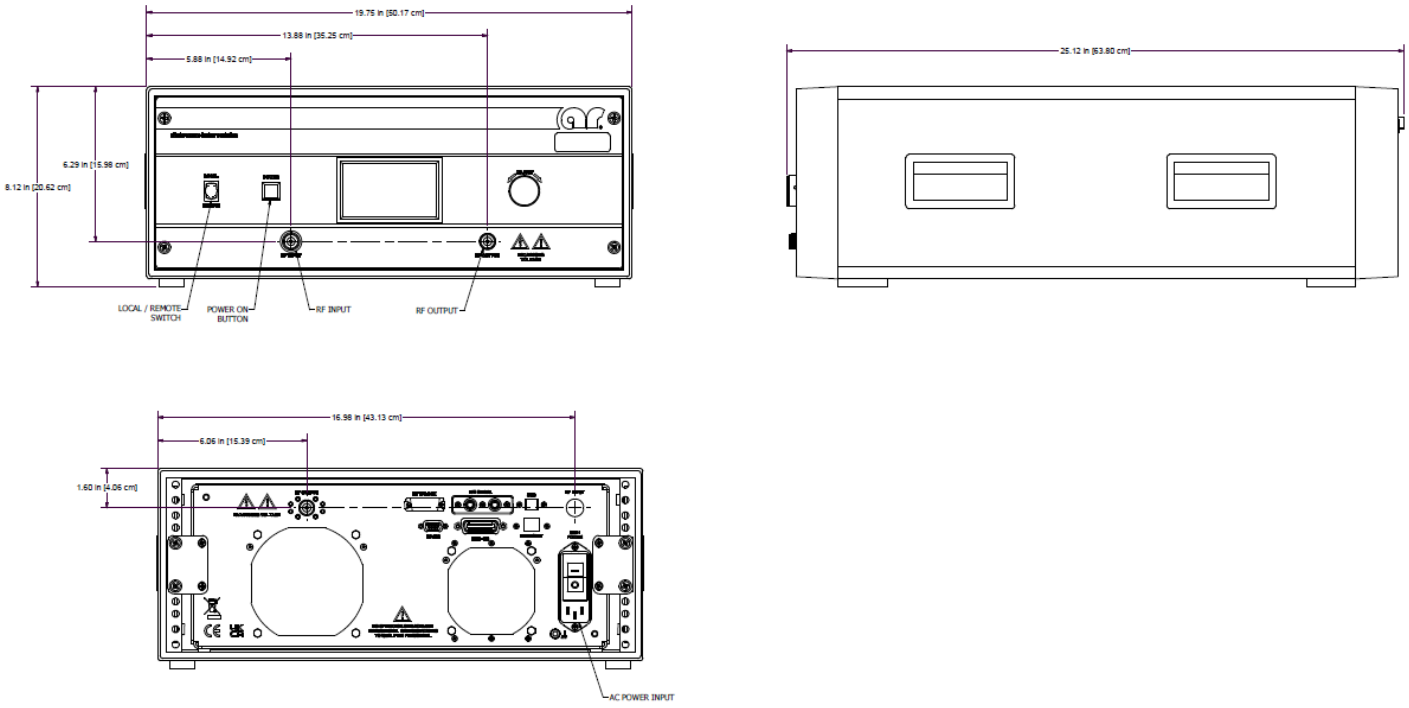
| Enclosure | |
|---|---|
| Enclosure | E |
| No Enclosure | NE |

**Model 20S6G18C**

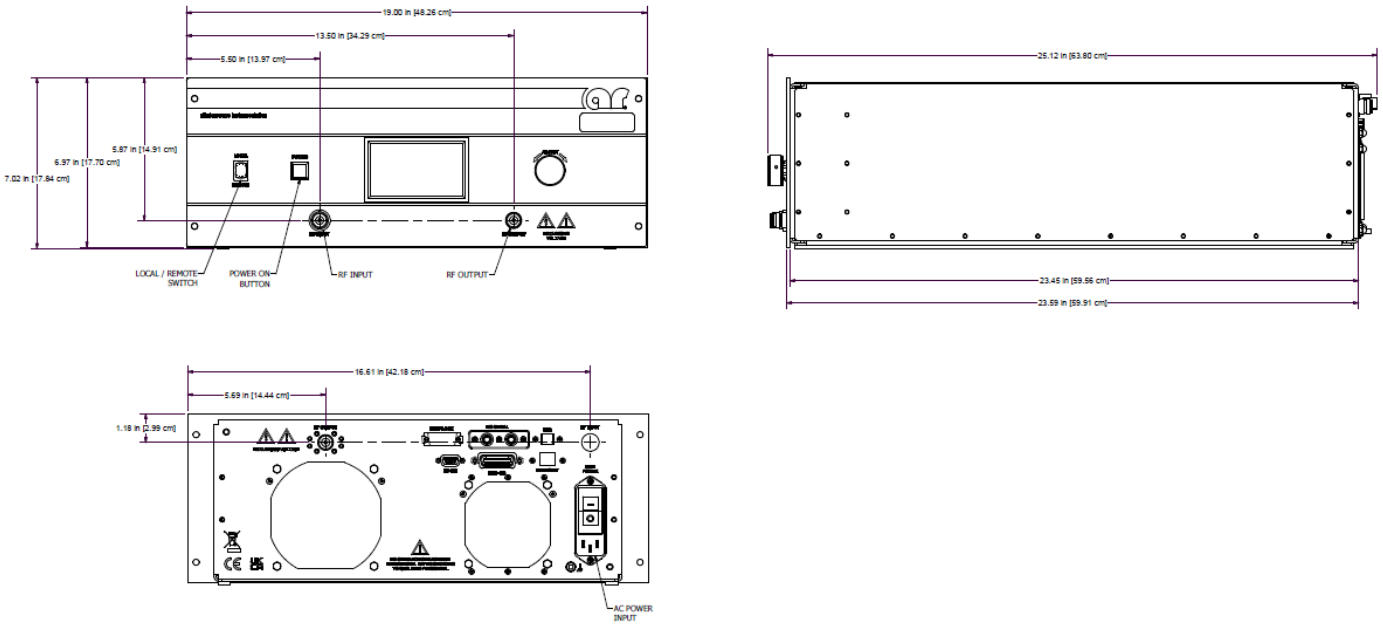
- **20 W**
- **6.0 – 18.0 GHz**

## Envelope Drawing

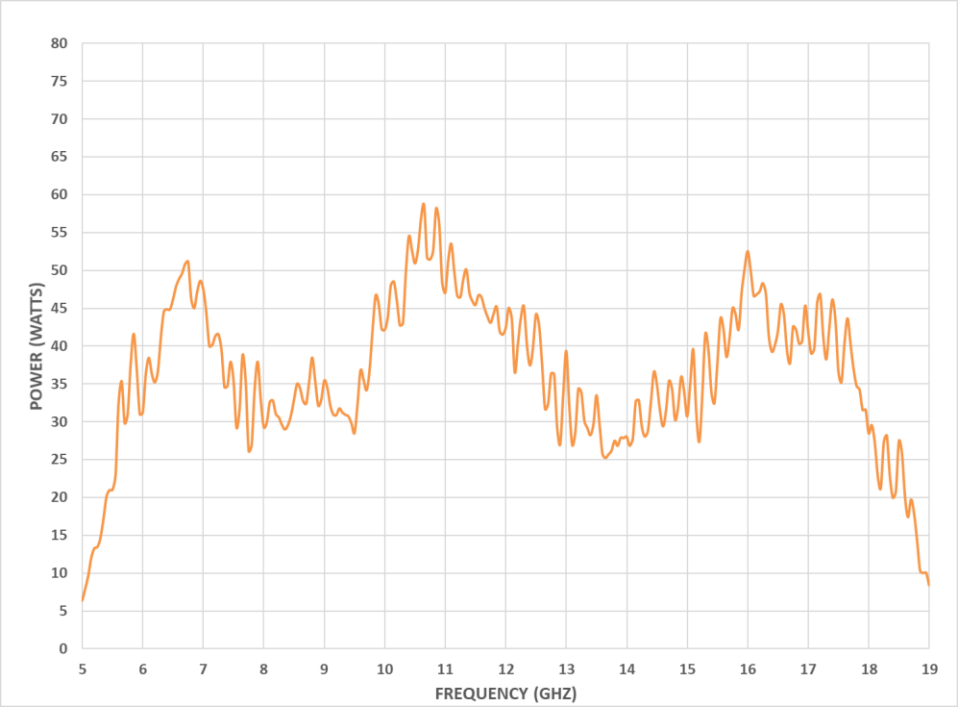
### 20S6G18C with Cabinet



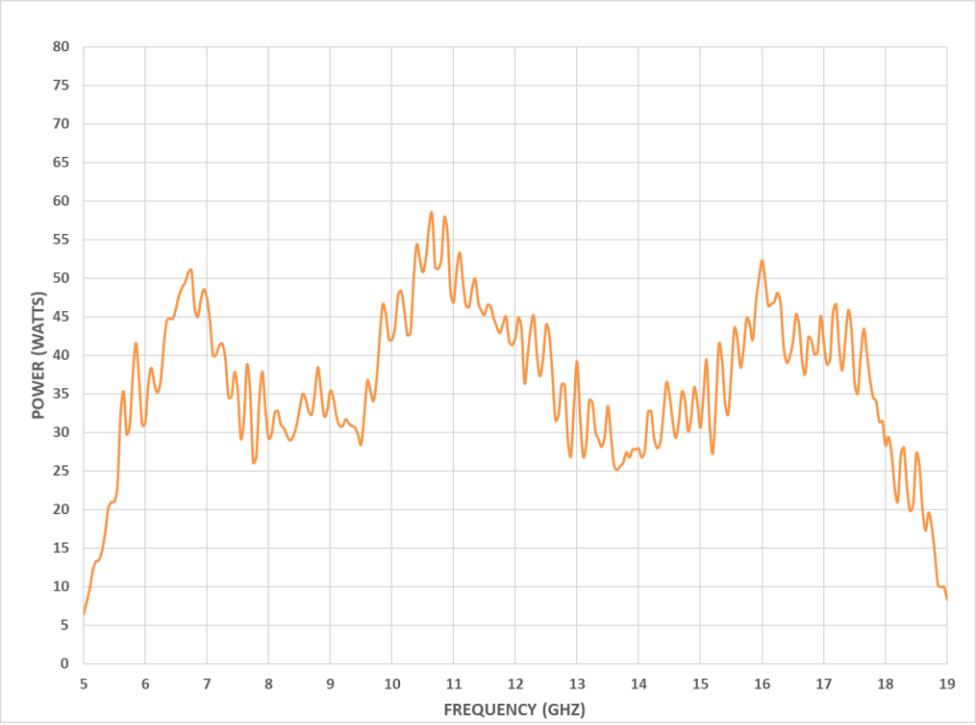

### 20S6G18C without Cabinet



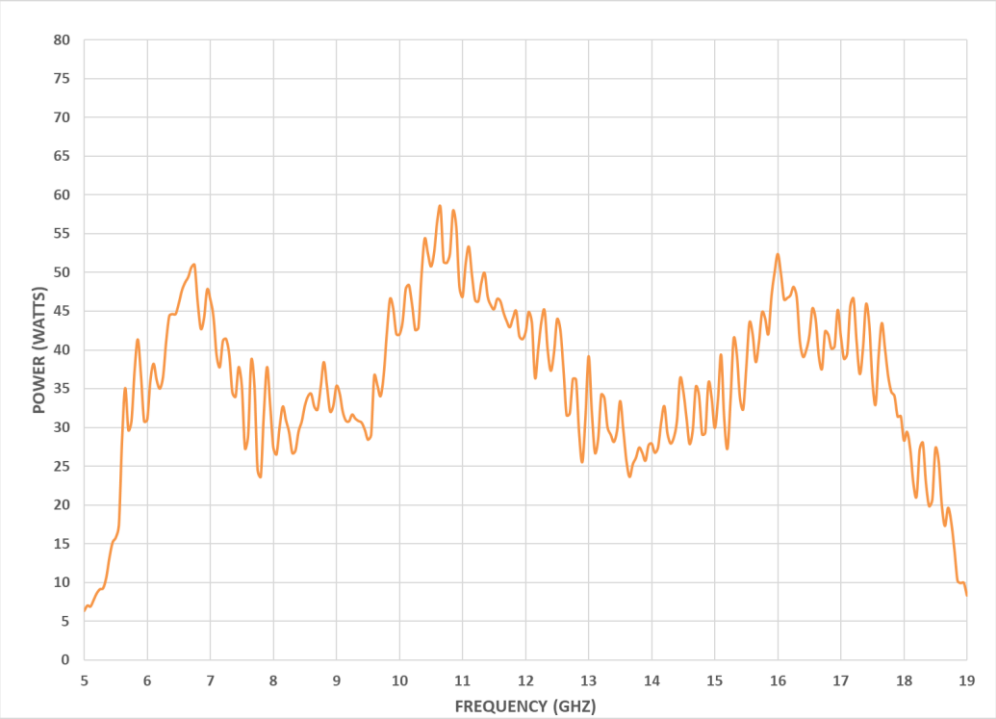
**TYPICAL PSAT POWER @ 0 dBm INPUT**



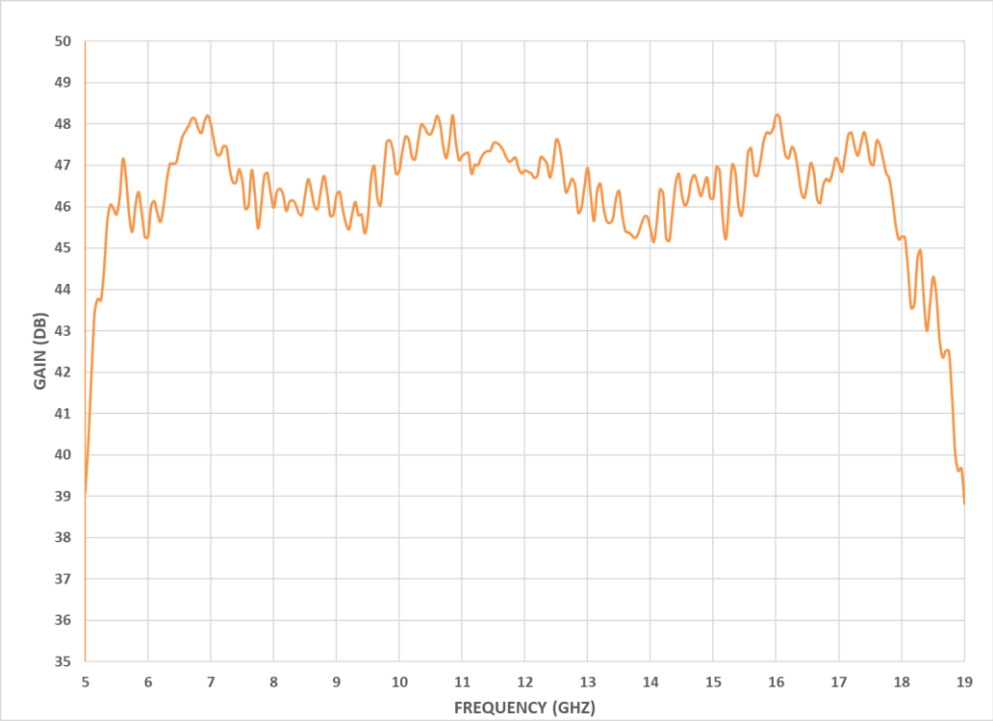

**TYPICAL POWER @ P3 dB COMPRESSION**



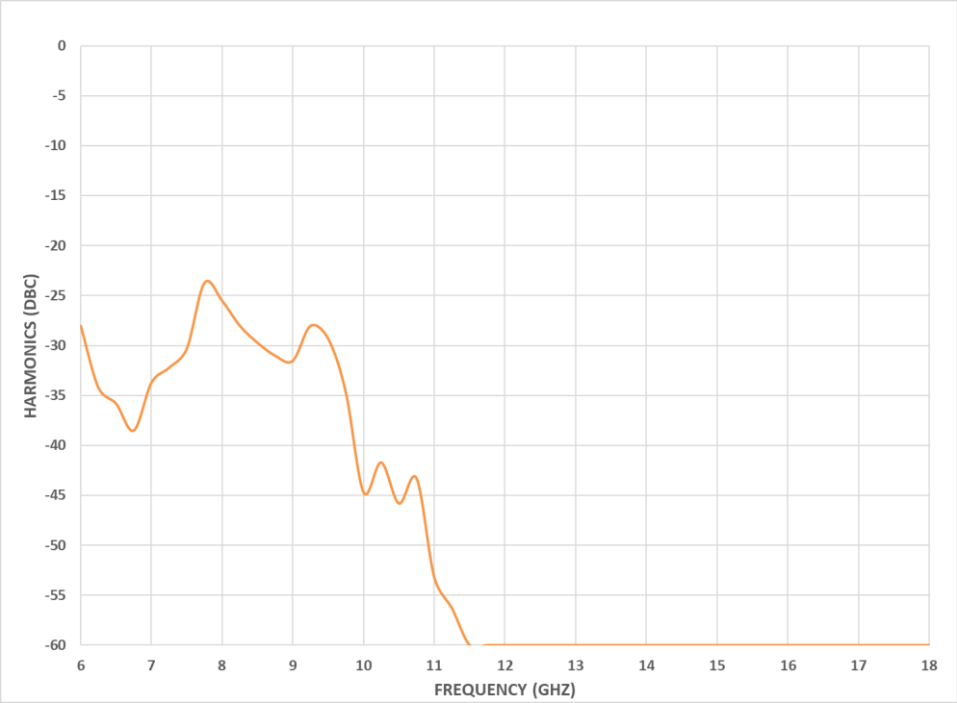
**TYPICAL POWER @ P1 dB COMPRESSION**




**TYPICAL SMALL SIGNAL GAIN @ -20 dBm INPUT**



**TYPICAL 2nd HARMONIC @ 20 W OUTPUT**




**TYPICAL 3rd HARMONIC @ 20 W OUTPUT**

