1) DOUBLE SHIELDED RACK CONSTRUCTION
Internal heat is water-cooled and discharged outside by self-contained heat exchanger.
Double-layer housing provides high RF/EMI shielding performance.

2) WILKINSON RADIAL COMBINER
Single-stage power combining of output transistors protected by each respective ferrite circulator provides high reliability in long-term operation.

3) BROADCAST-TRANSMITTER-LEVEL REDUNDANCY
High redundancy design of power supplies provides fault-tolerant and sustainable system operation.

4) PASSIVE ANALOG PRE-DISTORTION
Very ideal AB-class linear power amplifier is realized by passive analog predistortion circuit despite poor linearity of LD-MOS transistor.

5) MULTIPLE CPU CONTROLLER AND SENSORS
Multiple CPUs monitor a total of 78 points and save the status data to an internal SD memory card by use of Modbus protocol and through Ethernet.

6) ADVANCED ANALOG RF POWER TECHNOLOGY
Short-term (1sec) phase stability in free-running operation is within 0.1deg and RF voltage level stability is 0.1%.

SPECIFICATIONS @ +25°C

- Frequency Range: 1300MHz±0.5MHz
- Small Signal Gain: +56.8dB (min.)
- Output Power: 3.8kW (min.) @ 1dB Comp.
- Amplitude Flatness: 5% (max.) @ 1300MHz±100kHz
- Phase Linearity: 5deg (max.) @ 1300MHz±100kHz
- Delay: 300ns (max.)
- Phase Variation: 10deg (max.) @ Po=200W~3.8kW
- Harmonics: -30.0dBc (max.) @ Po=3.8kW
- Spurious: -70.0dBc (max.) @ Po=3.8kW
- Noise Figure: 10dB (max.)
- Efficiency: 40% (min.) @ Po=3.8kW

Impedance: 50Ω

- Maximum RF Input Power: +13.0dBm
- AC Supply Input: AC480V±5%/3φ, 60Hz
  AC120V±5%/1φ, 60Hz

Consumption Power: 9.5kVA (max.)

Connectors:
- RF - IN: N - FEMALE
- RF - OUT: WR650

Size: (W)762mm×(D)1270mm×(H)1688.5mm (Excluding Projection)
Weight: 635kg (typ.)
Cooling: Forced Air Cooling and Water Cooling
Water Input Pressure: 40-75psi (nominal), 150psi (max.)
Water Temperature: +30℃±0.5℃
Water Flow Rate: 4gpm (min.)
Protection Circuits: Over Temperature Protection
Power Supply Voltage Protection
Output Over Power Protection
Other Function: With Output Circulator (each final device)

FEATURES

1) DOUBLE SHIELDED RACK CONSTRUCTION
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R&K reserves the right to make changes in the specifications of or discontinue products at any time without notice. R&K products shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as aerospace uses or medical life support equipment. Further, the export of R&K products from Japan may be subject to an export license by the government of Japan, based on Japan’s “Foreign Exchange and Foreign Trade Law.”
TYPICAL PERFORMANCE (Temp @+25℃)

Short-Term Amplitude Stability per each Packet during 1 sec.

Short-Term Phase Stability per each Packet during 1 sec.

RF Stability Amplitude vs Time

Amplitude (V)

Time (hour)

f = 1300MHz, Po = 3.8kW

RF Stability Phase vs Time

Phase (deg.)

Time (hour)

f = 1300MHz, Po = 3.8kW

RF Stability Output Power vs Time

Output Power (kW)

Time (hour)

f = 1300MHz

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RF POWER AMPLIFIER

TYPICAL PERFORMANCE (Temp @+25°C)

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R&K-CA1300BW1-5766R-SL

AM-AM / AM-PM Performance @Drain Voltage Control

Output Power Linearity & Efficiency

![Graph showing output power linearity and efficiency for various drain voltages.]

Frequency: 1300MHz

Output Power (dBm)

Input Power (dBm)

Efficiency @Rated Drain Voltage

<table>
<thead>
<tr>
<th>RF Output</th>
<th>Drain Voltage</th>
<th>AC to RF Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>3800W</td>
<td>+45V</td>
<td>40.37%</td>
</tr>
<tr>
<td>3230W</td>
<td>+45V</td>
<td>≃ 37.5%</td>
</tr>
<tr>
<td>2850W</td>
<td>+45V</td>
<td>≃ 35.0%</td>
</tr>
<tr>
<td>1900W</td>
<td>+45V</td>
<td>≃ 29.0%</td>
</tr>
<tr>
<td>1140W</td>
<td>+45V</td>
<td>≃ 22.5%</td>
</tr>
<tr>
<td>760W</td>
<td>+45V</td>
<td>≃ 17.5%</td>
</tr>
<tr>
<td>380W</td>
<td>+45V</td>
<td>≃ 11.5%</td>
</tr>
</tbody>
</table>

Efficiency @Drain Voltage Control

<table>
<thead>
<tr>
<th>RF Output</th>
<th>Drain Voltage</th>
<th>AC to RF Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>3800W</td>
<td>+42V</td>
<td>41.46%</td>
</tr>
<tr>
<td>3230W</td>
<td>+39V</td>
<td>40.71%</td>
</tr>
<tr>
<td>2850W</td>
<td>+37V</td>
<td>39.78%</td>
</tr>
<tr>
<td>1900W</td>
<td>+32V</td>
<td>35.95%</td>
</tr>
<tr>
<td>1140W</td>
<td>+27V</td>
<td>29.93%</td>
</tr>
<tr>
<td>760W</td>
<td>+24V</td>
<td>24.74%</td>
</tr>
<tr>
<td>380W</td>
<td>+21V</td>
<td>17.13%</td>
</tr>
</tbody>
</table>

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TYPICAL PERFORMANCE (Temp @+25°C)

R&K-CA1300BW1-5766R-SL

AM-AM / AM-PM Performance @Drain Voltage Control, Cont’d
Gain & Phase Flatness

Gain (dB)  Gain (dB)
Phase (deg.) Phase (deg.)

Drain Voltage: +45VDC
Frequency: 1300MHz
Output Power: 1500W to 3800W

Drain Voltage: +32VDC
Frequency: 1300MHz
Output Power: 190W to 1900W

Drain Voltage: +42VDC
Frequency: 1300MHz
Output Power: 380W to 3800W

Drain Voltage: +27VDC
Frequency: 1300MHz
Output Power: 114W to 1140W

Drain Voltage: +39VDC
Frequency: 1300MHz
Output Power: 323W to 3230W

Drain Voltage: +24VDC
Frequency: 1300MHz
Output Power: 76W to 760W

Drain Voltage: +21VDC
Frequency: 1300MHz
Output Power: 38W to 380W

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