



**The RouterAmp is an industrial grade cellular amplifier for ships that works with all mobile operators in the EMEA and Americas. It ensures that the cellular router is connected to mobile signal as far out as 30km from the coastline. It has up to 16 ports that can connect to 4 radio cards in 4X4 DL MIMO configuration. It is compatible with the latest 5G routers.**

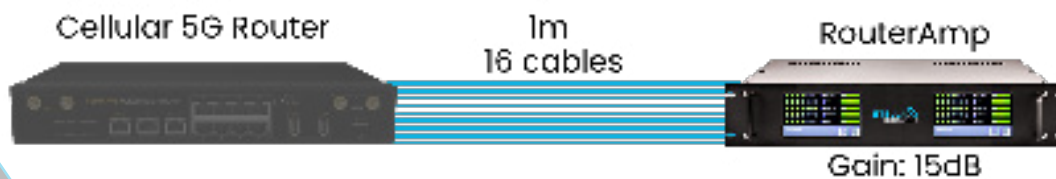
For routers with 4 radios, the RouterAmp reduces the number of cables to the outdoor antennas by a factor of 4.

When connected to StellaControl, it can be remotely managed, monitored and adjusted, as well as receive real-time measurements of signal power and gain for each band.

In ByPass mode, the amplifier can be bypassed when in urban areas. This allows the router to receive more bands including 5G at 3.6Ghz.

- 15dB Gain- compensates for cables to outdoor antenna.
- High Uplink power to ensure stable mobile connection far from base stations.
- Boosts up to 4X 5G radio cards at the same time.
- 4X4 DL MIMO, RX Diversity.
- Boosts all operators - Works with all routers.
- 5G/4G/3G/2G.
- Remote monitoring and management via StellaControl platform.
- Large LCD Touch Display for enhanced user experience.
- ByPass mode - avail of 3.5GHz 5G when near base stations.

Ship mast



**4X DL MIMO Configuration**

<b>Pepwave</b>	<b>Huawei</b>	<b>Siemens</b>	<b>Teltonika</b>
<b>Cisco</b>	<b>TP-Link</b>	<b>Asus</b>	<b>Airbridge</b>

Models (SKU)	MIMO	Region	Rack	Mounting	Bands	Weight
RA-2X-EU-W/R	2X	EU	1U/2U	Wall/Rack	B28/B20/B8/B3/B1/B7	2.5kg
RA-4X-EU-R	4X	EU	2U	Rack	B28/B20/B8/B3/B1/B7	5kg
RA-2X-US-W	2X	US	1U	Wall	B28/B5/B4/B25/B7	2.5kg
RA-2X-WW-R	2X	WW	2U	Rack	B28/B20/B8/B3/B1/B7/B5/B4/B25	5kg
RA-4X-WW-R	4X	WW	4U	Rack	B28/B20/B8/B3/B1/B7/B5/B4/B25	10kg

**Regions:**

**EU:** Europe, Middle East, Africa.

**US:** Caribbean, USA, Mexico, South America.

**WW:** EU+US.

**SKU explained:**

RA-2X-EU-W

RouterAmp-2X MIMO-Region-Wall Mounting



Bands	B28	B20	B8	B3	B1	B7	B5	B4	B25
Downlink (MHz)	758-788	791-821	925-960	1805-1880	2110-2170	2620-2690	869-894	2110-2155	1930-1990
Uplink (MHz)	703-733	832-862	880-915	1710-1785	1920-1980	2500-2570	824-849	1700-1755	1850-1915
Region	EU/US	EU	EU	EU	EU	EU	US	US	US

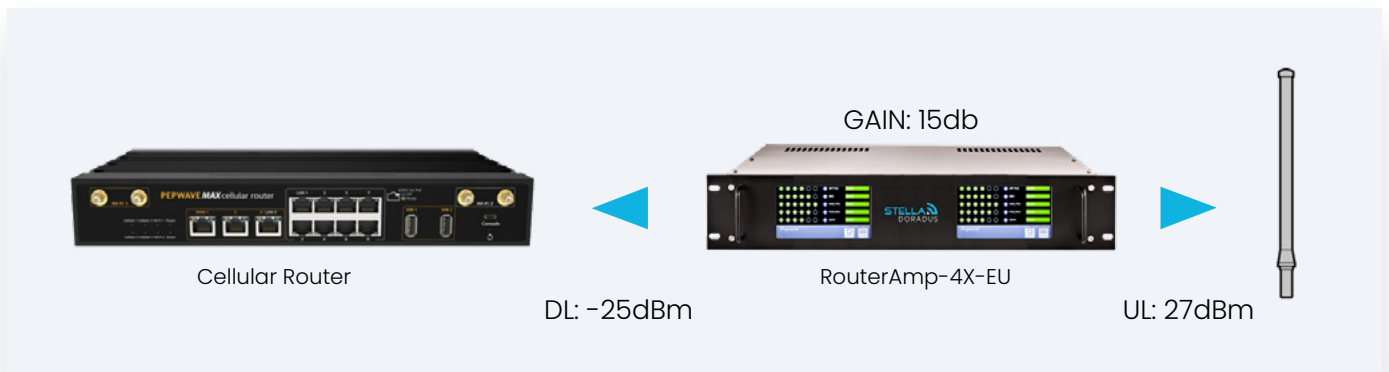
**Amplifier Specification**

Gain	Up-link Gp: 15dB    Down-link Gp> 15dB
Pass band ripple	<4dB
I/O impedance	50 ohm/SMA female connector
Max up/down signal strength	27dBm / -25dBm
Ambient Temperature	-30°C to +70°C
Power supply input	110 - 240V AC
Oscillation Control	Automatic
AGC Level Control	Automatic <sup>1</sup>
Uplink Switch On	Yes <sup>2</sup>
AGC Range	30dB
Surge protection	SMA connectors DC grounded, 12V DC port MOV protected
Ports (SMA)	8X ports or 16X ports (2X or 4X MIMO)
ByPass mode	Yes
Power supplies	12V,7A

<sup>1</sup>Automatically adjusts during installation. Thereafter, automatically adjusts for seasonal variation in path loss between the base station and the outdoor antenna.

<sup>2</sup>The uplink amplifiers switch off when the repeater is not in use. This reduces the uplink noise to almost zero. When the repeater is in use (phone call or data session), the uplink amplifiers switch on for the duration of the call/ data session only.

Note: Specifications subject to change without notice.



### Power control:

The RouterAmp amplifies both the uplink signals from the cellular router, and the downlink signals from the base stations. The RouterAmp amplifies the gain of these signals by 15dB.

On the UL, the signals from the router are amplified up to a maximum power of 27dBm. This is a high sustained power required to maintain a robust uplink connection on the cell edge.

On the downlink, the signals from the operator’s masts are amplified by 15dB, to a maximum power of -25dBm (minus 25dBm). This low power (in comparison to the high maximum UL power) is because the radio cards in the router are very sensitive, and cannot sustain exposure to high RF (radio frequency) power.

### MIMO

2X2 DL MIMO means 2 data channels on the downlink. Example: RA-2X-EU.

4X4 DL MIMO means 4 channels on the downlink. Example: RA-4X-EU.

These extra MIMO channels mean a doubling or quadrupling of the bandwidth respectively, or channel hardening, depending on available signal.

### ByPass mode:

The RouterAmp amplifies frequencies up to 2.6GHz. Increasingly 5G is appearing on these low band frequencies. However, for the 3.4-3.8GHz bands, the RouterAmp can be bypassed when in port or close to base stations. In this case the outdoor antennnas will be connected directly to the router allowing all frequencies to reach it, including 3.5GHz.

These higher 5G frequencies have a short range so they can only be accessed in port anyway. Far from base stations only the lower frequencies will be available.

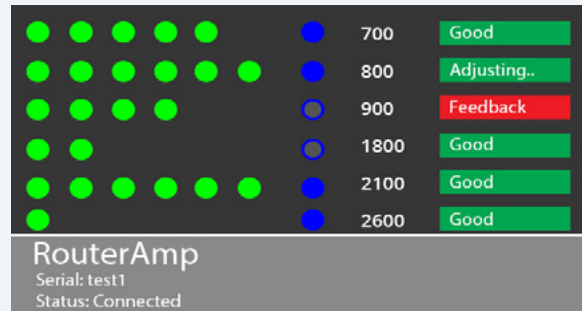
### Remote Monitoring – Stellacontrol

The RouterAmp can be monitored and managed remotely on the Stella online platform - Stellacontrol. Remote monitoring allows remote setup, optimization and control of the system at all times.

### Main screen:

**Green:** Down-link signal power.

**Blue:** The band is switched on. This happens when a data session is initiated. Once the data session is over, the band switches off and the blue dot also switches off.



Good	Indicates no problems.
Adjusting	Band is optimizing itself.
Feedback	Oscillation detected. Action: Isolate the outdoor antenna from the indoor antennas.

### Decibel (dB) page:

The dB page shows actual raw data (dB) from the amplifier.

Frequency (MHz)	700	800	900	1800	2100	2600
UL Power (dBm)	-15	-15	-15	-15	-15	-15
DL Power (dBm)	-30	-30	-30	12	-30	-30
UL Fast AGC (dB)	0	1	3	5	4	5
AGC (dB)	0	0	0	0	0	0
DL Total Loss (dB)	0	0	0	0	0	0

UL Power	Uplink power received by the amplifier. (Power emitted by the router)
DL Power	Downlink power from the operator's mast, received by the amplifier.
UL Fast AGC	Uplink AGC
AGC	Downlink AGC. This controls the downlink gain when the downlink signal from the operator's mast is too strong.

### Other LCD features

PIN Access	A secret PIN can lock out access to the LCD display. The PIN is set on the clients account on the platform.
Band On/Off	Turn any band on or off.
Internal location	Enter note about the amplifier. This note is sent and displayed on the stellacontrol inventory page. E.g. Internal location of the amplifier.



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