

MACROLINK: OUTDOOR MACRO RRU

MA 5310

Remote Radio Head, 2x2 MIMO and up to 2x40 Watt Tx power for LTE and 5G networks

OVERVIEW

MA 5310 is a 2x2 MIMO carrier 2x 40W transmit-power Remote Radio Head (RRH) which can be deployed in CPRI-compliant base station networks. The IP-67 chassis' convection-only cooling is made possible by 200W typical power consumption.

MA 5310 features in-house developed dynamic digital power amplifier linearization technology efficiently processing LTE transmissions, enabling:

- High PA efficiency, resulting in low power consumption (200 W)
- Low EVM waveform support. Adjustable from <4% to >12%
- Full support for LTE carriers with 5MHz, 10MHz, or 20MHz Bandwidth. 1.4MHz, 3MHz, and 15MHz bandwidths optionally supported.
- 20MHz Multimode support: up to 3 WCDMA carriers
- + 5MHz LTE; up to 2 WCDMA carriers + 10MHz LTE
- Offers single box solution for LTE -M and NB-IOT to support 3GPP release 14 standards,
- Efficient unbalanced power transmissions
- Natural convection cooling
- High MTBF (175,000 hours) thanks to low power consumption.

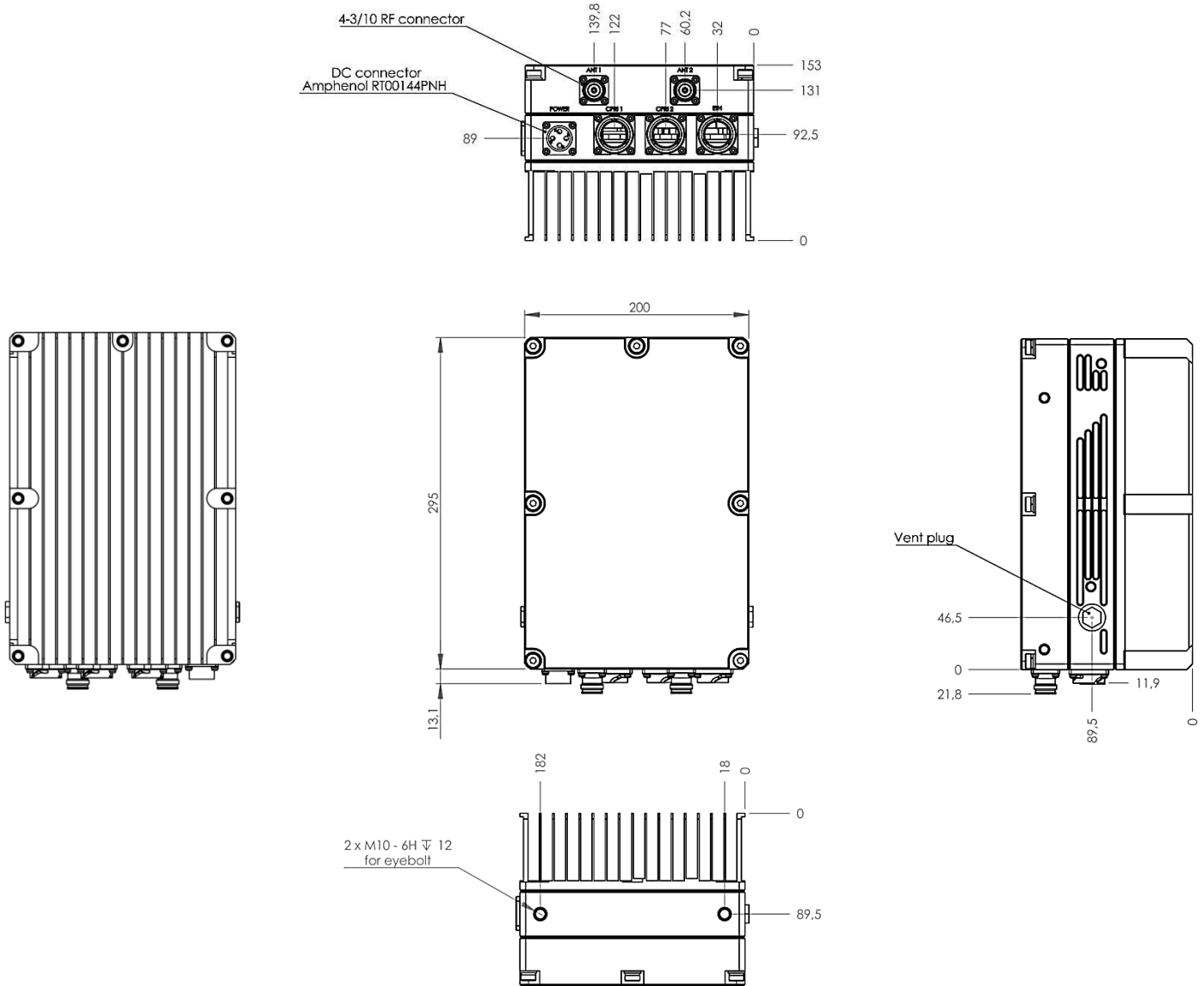


Additional features:

- Low receiver noise figure (1.8dB), enables the base station OEM to reach excellent receiver sensitivity. Two Rx chains support receive diversity, increasing uplink performance even further.
- UTRAN sharing over 20MHz with one RRH or over full 60MHz with 2 RRHs.
- Externally pluggable SFP sockets enabling field selectable optical interface including 1310nm, 1550nm, and 850nm options
- RRH daisy chaining
- RRH software supports Ethernet over CPRI and allows easy implementation of customer specific requirements.
- Extensive Operations and Maintenance functionality supported through flexible O&M SW. Self-diagnosis and alarms continuously monitoring:
 - Transmitter performance
 - Receiver performance
 - I/O connectivity
 - Power supply status
- IP-67 compliant chassis designed for outdoor use.



Dimension



Platform Specification

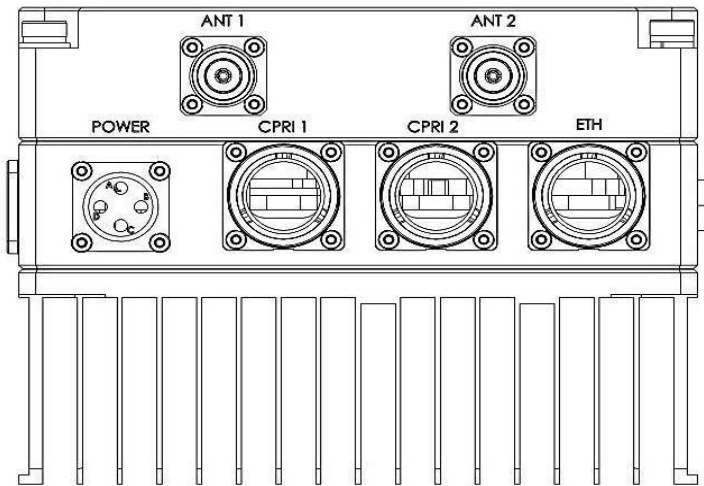
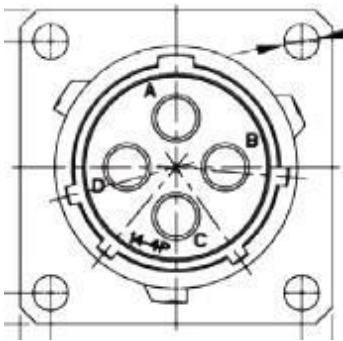
Parameters	Value	Units
Tx/Rx Ports	2	
Max. Nb Carriers per TX/RX	2 (3, 5, 10, 15, 20MHz)	
Tx Frequency range	758 to 803	MHz
Rx Frequency range	703 to 748	MHz
Tx Max Pout	20	W Avg.
Power Supply	Isolated DC 36 to 58	V
Power Consumption	200	W typ.
Weight	<12	Kg typ.
Dimensions	295x200x153	mm
I/Q connectivity	2 CPRI V6.0	
Local Management & debugging	1 Gigabit Eth.	



Connectivity

- 2 CPRI Links up to line rate 6 Ref. 20
- LTE user plane following E-UTRA mapping ORI Ref.21 or broadband Mapping
- LTE user plane can as well support MIMO interleaving
- Local C&M and Debug using Serial port and Gigabit Ethernet
- Power supply connector Amphenol reference RT0014-4PNH

A	GROUND
B	0V
C	UNCONNECTED
D	-48V



ANT 1	Antenna port 1	4.3/10 Female
ANT 2	Antenna port 2	4.3/10 Female
Power	Power supply	RT00144PNH
CPRI 1	CPRI port 1	SFP+ cage with R2CT socket
CPRI 2	CPRI port 2	SFP+ cage with R2CT socket
ETH	GBEthernet Debug port	RJ45 with R2CT socket



Mechanical

Parameter	Value	Unit	Comments
The product shall fit in a IP67 outdoor passive cooling package			
Height	153	mm	
Depth	200	mm	
Length	295	mm	
Weight	<12	kg	

Bands

LTE Band	NR Band	Frequency	Mode	Availability
1	N1	2100	FDD	Available
3	N3	1800	FDD	Available
5	N5	850	FDD	Available
7	N7	2600	FDD	Available
8	N8	900	FDD	Available
20	N20	800	FDD	Available
28	N28	700	FDD	Available
30	N31	2300	TDD	Available
31	-	450	FDD	Available
38	N38	2500	TDD	Available
39	N39	1900	TDD	Available



40	N40	2300	TDD	Available
41	N41	2500	TDD	Available
42	N78	3400-3600	TDD	Available
43	N78	3600-3800	TDD	Available

Transmitter

Parameter	Value	Unit	Comments
Number of Carriers	1		
Max. Output power	43	dBm	
Min. Output power	Max - 25dB	dBm	
Power Precision	+/-0.5	dBm	10-40°C
Power Precision	+/-0.75	dBm	Other Temperature
Power Step	1+/-0.2	dB	
Channel Bandwidth	3/5/ 10/15/20	MHz	
Channel Offset	200	kHz	
TxOFF residual noise	<-145	dBm/Hz	
EVM 64QAM	<8	%	
EVM 16QAM	<12.5	%	
EVM QPSK	<17.5	%	
Spurious (9KHz-150KHz)	<-36	dBm	1KHz Bandwidth
Spurious (150KHz-30MHz)	<-36	dBm	10KHz Bandwidth
Spurious (30MHz-1GHZ)	<-36	dBm	100KHz Bandwidth
Spurious (1GHZ-12.5GHZ)	<-30	dBm	1MHz Bandwidth
Spectrum Emission mask			Category B (Option 1)
ACLR	>50	dBc	No need to be better than - 18dBm/1MHz



Receiver

Parameter	Value	Unit	Comments
Number of Carriers	1		
Channel Bandwidth	3/5/ 10/15/20	MHz	
Channel Offset	200	kHz	
Max. Input power	>-35dBm	dBm	Composite Power
Reference Sensitivity 5MHz	<-101.5	dBm	
Reference Sensitivity 10MHz	<-101.5	dBm	
Reference Sensitivity 20MHz	<-101.5	dBm	
Dynamic Sensitivity 5MHz	<-70.2	dBm	Interferer -82.5dBm
Dynamic Sensitivity 10MHz	<-70.2	dBm	Interferer -79.5dBm
Dynamic Sensitivity 20MHz	<-70.2	dBm	Interferer -79.5dBm
E-UTRA Narrow band Adj. Channel Selectivity 5MHz	Pref + 6dB	dBm	Interferer -49dBm
E-UTRA Narrow band Adj. Channel Selectivity 10MHz	Pref + 6dB	dBm	Interferer -49dBm
E-UTRA Narrow band Adj. Channel Selectivity 20MHz	Pref + 6dB	dBm	Interferer -49dBm
E-UTRA Adj. Channel Selectivity 5MHz	Pref + 6dB	dBm	Interferer -52dBm
E-UTRA Adj. Channel Selectivity 10MHz	Pref + 6dB	dBm	Interferer -52dBm
E-UTRA Adj. Channel Selectivity 20MHz	Pref + 6dB	dBm	Interferer -52dBm

Environmental

Parameter	Value	Unit	Comments
Operating Temp. Range Min.	-40	°C	Ref. 4 Class 4.1
Operating Temp. Range Max.	+55 (*)	°C	Ref. 4 Class 4.1 (with sun cover)
Storage Temp. Range Min.	-40	°C	Ref. 2 Class 1.2
Storage Temp. Range Max.	+70	°C	Ref. 2 Class 1.2
Transportation Temp. Range Min.	-40	°C	Ref. 3 Class 2.3
Transportation Temp. Range Max.	+70	°C	Ref. 3 Class 2.3

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