

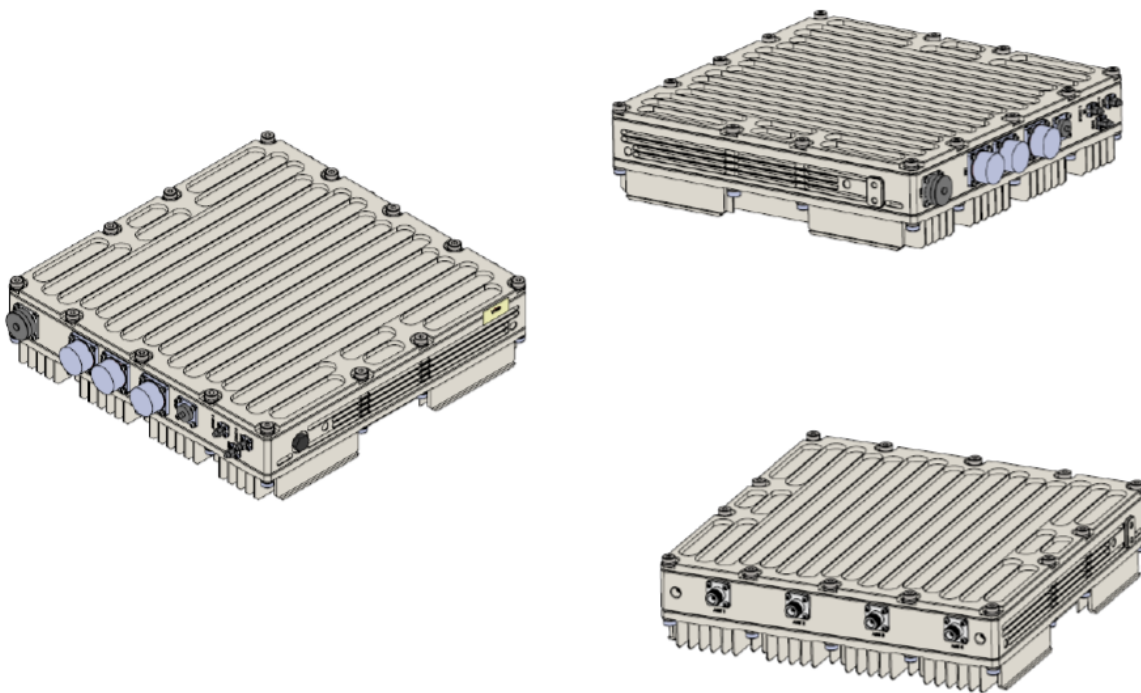


MACROLINK: OUTDOOR MACRO RRU

MA 5340

4X4 MIMO RRH MEDIUM POWER 5G NR & LTE – O-RAN

The power of 5G technology is the next generation telecommunication network with an ultra-high bandwidth and flexibility. Nybsys offers a complete 5G platform solution which can co-exist with 4G (LTE , NB-IOT , LTE-M). Its unparalleled solution offers a complete solution for public safety and enterprise wireless requirements.



4x4 MIMO RRH offers power of 5G NR and LTE combined and two models are available for this RRH.

PRODUCT SPECIFICATIONS

1. Platform

Parameters	Value	Units
Tx/Rx Ports	4	
Max. Nb Carriers per TX/RX	2 LTE (5,10,15,20MHz) 1 5G-NR (5 to 100MHz)	Or 1 LTE and 1 NR



Tx Max Pout	20	W Avg.
Power Supply	Isolated DC -40 to -58	V
Power Consumption	250	W typ.
Weight	<15	Kg Max.
Dimensions	370 x 369.2x91.3	mm
I/Q Connectivity	2 CPRI up to rate 8	
Local Management & debugging	1 Gigabit Eth.	

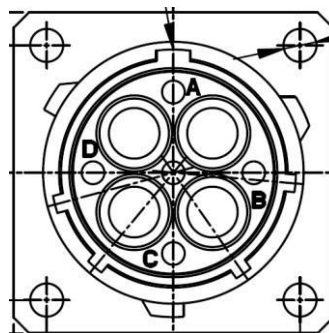
2. General

Requirement	Parameter
GEN-000	Platform can be easily shifted in frequency
GEN-001	Support 4 Tx and 4 Rx in the products to avoid using two products to do MIMO 4x4
GEN-002	Keep dimension as low as possible
GEN-003	Outdoor product IP66 when installed and all ports connected.
GEN-004	Status needs to give a clear understanding of the state of the unit, in particular if the unit is transmitting.

3. Connectivity

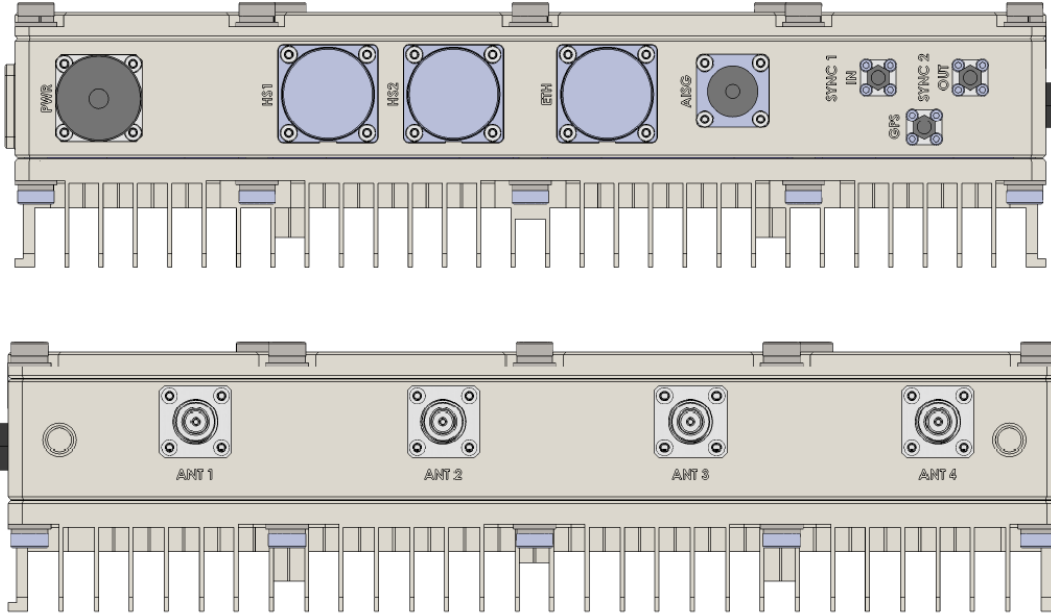
Requirement	Parameter
CON-000	2 CPRI Links up to line rate 8 Ref. 20
CON-001	LTE user plane following E-UTRA mapping ORI Ref.21 or AW2S broadband Mapping
CON-002	LTE user plane can as well support MIMO interleaving
CON-003	Local C&M and Debug using Serial port and Gigabit Ethernet
CON-004	Power supply connector Amphenol reference RT00164PNH
CON-005	Fiber cable connection is done through SFP+ cages with R2CT connector for ingress protection
COM-006	Gigabit Ethernet connection is RJ45 connector with R2CT connector for ingress protection

A	GROUND
B	UNCONNECTED
C	0V
D	-48V





Amphenol reference RT06164SNH can be used as a plug depending on the gauge used. Cable grip reference used is the RT0L-16CG-S1 or -S2.



ANT 1	Antenna port 1	N Female
ANT 2	Antenna port 2	N Female
ANT 3	Antenna port 3	N Female
ANT 4	Antenna port 4	N Female
PSU	Power supply	RT06164PNH
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
GPS	GPS port	SMA female
Sync1	Sync In port	SMA female
Sync2	Sync out port	SMA female

4. Power Supply

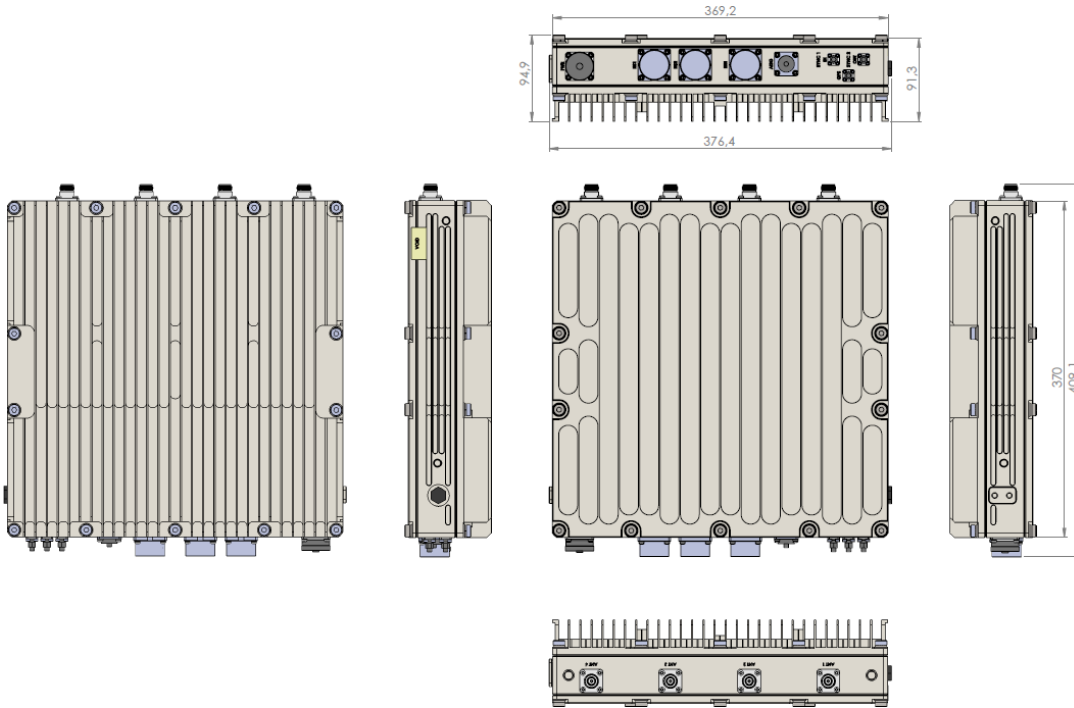
Requirement	Parameter	Value	Unit	Comments
PSU-000	Operating Voltage Min.	-40	V	
PSU-001	Operating Voltage Max.	-58	V	
PSU-002	Typical consumption	130	W	At Pout 2W RMS for each Tx
PSU-003	Max Isolation	1500	V	

5. Mechanical

Requirement	Parameter	Value	Unit	Comments
MEC-000	The product shall fit in a IP66 outdoor passive cooling package			



MEC-001	Height	91.3	mm	
MEC-002	Depth	369.2	mm	
MEC-003	Length	370	mm	
MEC-004	Weight	<15	kg	



Transmitter

Requirement	Parameter	Value	Unit	Comments
TX-GEN-000	Number of Carriers	2x LTE or 1x NR		
TX-GEN-001	Max. Output power	46	dBm	
TX-GEN-002	Min. Output power	Max - 15dB	dBm	
TX-GEN-003	Power Precision	+/-0.5	dBm	10-40°C
TX-GEN-004	Power Precision	+/-0.75	dBm	Other Temperature
TX-GEN-005	Power Step	1+/-0.2	dB	

LTE

Requirement	Parameter	Value	Unit	Comments
TX-LTE-000	Number of Carriers	2		
TX-LTE-001	Channel Bandwidth	5/10/15/20	MHz	
TX-LTE-002	Channel Offset	200	kHz	
TX-LTE-003	TxOFF residual noise	<-145	dBm/Hz	
TX-LTE-004	LTE EVM 256QAM	<3.5	%	
TX-LTE-005	LTE EVM 64QAM	<6	%	
TX-LTE-006	LTE EVM 16QAM	<10.5	%	
TX-LTE-007	LTE EVM QPSK	<14.5	%	
TX-LTE-008	Spurious (9KHz-150KHz)	<-36	dBm	1 KHz Bandwidth



TX-LTE-009	Spurious (150KHz-30MHz)	<-36	dBm	10 KHz Bandwidth
TX-LTE-010	Spurious (30MHz-1GHz)	<-36	dBm	100 KHz Bandwidth
TX-LTE-011	Spurious (1GHz-12.5GHz)	<-30	dBm	1 MHz Bandwidth
TX-LTE-012	Spectrum Emission mask	>3	dB Margin	Category B (Option 1)
TX-LTE-013	ACLR	>50	dBc	No need to be better than -18dBm/1MHz
TX-LTE-014	Time Alignment	<90	nS	
TX-LTE-015	Output Return Loss	>12	dB	

NR

Requirement	Parameter	Value	Unit	Comments
RX-NR-000	Number of Carriers	1		
RX-NR-001	Channel Bandwidth	10 to 100	MHz	
RX-NR-002	Channel Offset	200	kHz	
RX-NR-003	Reference Sensitivity 5/10/15MHz SBS 15KHz	<-103.7	dBm	In 25 RB -> 4.5MHz
RX-NR-004	Reference Sensitivity 10/15MHz SBS 30KHz	<-103.8	dBm	In 11 RB -> 4MHz
RX-NR-005	Reference Sensitivity 10/15MHz SBS 60 KHz	<-101.9	dBm	In 11 RB -> 7.9MHz
RX-NR-006	Reference Sensitivity 20-50MHz SBS 15KHz	<-98.3	dBm	In 106 RB -> 19.1MHz
RX-NR-007	Reference Sensitivity 20-100MHz SBS 30KHz	<-98.6	dBm	In 51 RB -> 18.4MHz
RX-NR-008	Reference Sensitivity 20-100MHz SBS 60 KHz	<-9.78	dBm	In 24 RB -> 17.3MHz
RX-NR-009	Dynamic Sensitivity 5-100MHz	Ref 2§7.3.2-1		
RX-NR-010	E-UTRA Narrow band Adj. Channel Selectivity 5-100MHz ¹	Pref + 1.5dB	dBm	Interférer -49dBm
RX-NR-011	E-UTRA Adj. Channel Selectivity 5- 100MHz ¹	Pref + 1.5dB	dBm	Interférer -52dBm
RX-NR-013	Generic Blocking 2	-43	dBm	+20/-20MHz
RX-NR-014	Generic Blocking 2	-15	dBm	+CW further
RX-NR-015	Intermodulation 3	-52	dBm	

Control & Management

Requirement	Parameter
CMM-000	Control & Management based on ORI specification Ref. 15,16 & 17.



CMM-001	Supported Object: RE TxSigPath_EUTRA RxSigPath_EUTRA TxSigPath_NR RxSigPath_NR oriLink antPort
CMM-002	Supported Device Management Request: HealthCheck set Time RE Reset
CMM-003	Supported Software Management Request : Version Query Software Update Preparation Software Download Software Activation
CMM-004	Support Fault Management

Environmental

Requirement	Parameter	Value	Unit	Comments
ENV-000	Operating Temp. Range Min.	-40	°C	Ref. 5 Class 4.1
ENV-001	Operating Temp. Range Max.	+55	°C	Ref. 5 Class 4.1 (with sun cover)
ENV-002	Storage Temp. Range Min.	-40	°C	Ref. 3 Class 2.3
ENV-003	Storage Temp. Range Max.	+70	°C	Ref. 3 Class 2.3
ENV-004	Transportation Temp. Range Min.	-40	°C	Ref. 4 Class 1.2
ENV-005	Transportation Temp. Range Max.	+70	°C	Ref. 4 Class 1.2
ENV-006	Shall respect at least IP66 as defined by the document Ref. 9 when in approved operational condition			
ENV-007	Shall not resonate in audibled range (20Hz-20KHz) when in approved operational condition			

For details please contact sales@nybsys.com