

Software Defined Radio RF Heads

Protium Technologies, Inc. provides a line of RF Heads for the Vanu ANYWAVE® Radio Access Network (RAN). These flexible, integrated units have been developed to support GSM/GPRS, CDMA, IDEN, and SMR standards in the 800-1900 MHz bands. The fully software-configurable Tx/Rx platform digitizes up to 16 cellular carriers and provides a GbE interface to the server.

Technical features and performance specifications are tailored to the critical requirements of the Vanu ANYWAVE® RAN and applicable regulatory agency standards. The baseline architecture of the RF Head permits ready adaptation to the different bands in use around the world. Firmware changes and upgrades are handled remotely via a service port. Modular construction allows for commonality of parts and quick service.



Front View

Function

Serving as a low-noise receiver, the RF Head downconverts and digitizes a wideband cellular spectrum (entire cellular band) and digitally filters and streams up to 16 channels of I/Q data to the server via a GbE interface.

As a transmitter, the RF Head supports up to 16 channels and provides an adjustable power output level with minimal added phase noise and low spurious content.



Rear View

Various models are available with 4, 8, 12, and 16-channel capacity and are supplied in both AC and DC-powered versions.

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850 MHz Model Characteristics

Main and Diversity Receiver

Frequency range	824 – 849 MHz
Carriers supported	1-16
Noise figure	< 4 dB
Dynamic range	>75 dB
Added phase noise	< 1° rms SSB
External frequency ref.	10 MHz

Transmitter

Frequency range	869-894 MHz
Output level	-10 dBm
Output adj. range	>25 dB
Added phase noise	< 1° rms SSB
Output flatness	< +/- 1.5 dB

Interfaces

Main antenna	Type N female
Diversity antenna	Type N female
Tx output to PA	SMA
PA input	Type N female
Server	1000BT; 2 RJ-45 per four carriers
Control channel	RS-232
GPS	BNC

Power Requirements

AC model	115/230 VAC, 60 Watts
DC model	48 VDC, 42-60 Watts, depending on capacity

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900 MHz Model Characteristics

Main and Diversity Receiver

Frequency range	880 – 915 MHz
Carriers supported	1-16
Noise figure	< 4 dB
Dynamic range	>75 dB
Added phase noise	< 1° rms SSB
External frequency ref.	10 MHz

Transmitter

Frequency range	925 – 960 MHz
Output level	-10 dBm
Output adj. range	>25 dB
Added phase noise	< 1° rms SSB
Output flatness	< +/- 1.5 dB

Interfaces

Main antenna	Type N female
Diversity antenna	Type N female
Tx output to PA	SMA
PA input	Type N female
Server	1000BT; 2 RJ-45 per four carriers
Control channel	RS-232
GPS	BNC

Power Requirements

AC model	115/230 VAC, 60 Watts
DC model	48 VDC, 42-60 Watts, depending on capacity



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1800 MHz Model Characteristics

Main and Diversity Receiver

Frequency range	1710 – 1785 MHz
Carriers supported	1-16
Noise figure	< 4 dB
Dynamic range	>75 dB
Added phase noise	< 1° rms SSB
External frequency ref.	10 MHz

Transmitter

Frequency range	1805 – 1880 MHz
Output level	-10 dBm
Output adj. range	>25 dB
Added phase noise	< 1° rms SSB
Output flatness	< +/- 1.5 dB

Interfaces

Main antenna	DIN 7/16-F
Diversity antenna	SMA female
Tx output to PA	SMA
PA input	Type N female
Server	1000BT; 2 RJ-45 per four carriers
Control channel	RS-232
GPS	BNC

Power Requirements

AC model	115/230 VAC, 60 Watts
DC model	48 VDC, 42-60 Watts, depending on capacity

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1900 MHz Model Characteristics

Main and Diversity Receiver

Frequency range	1850 – 1910 MHz
Carriers supported	1-16
Noise figure	< 4 dB
Dynamic range	>75 dB
Added phase noise	< 1° rms SSB
External frequency ref.	10 MHz

Transmitter

Frequency range	1930-1990 MHz
Output level	-10 dBm
Output adj. range	>25 dB
Added phase noise	< 1° rms SSB
Output flatness	< +/- 1 dB

Interfaces

Main antenna	Type N female
Diversity antenna	Type N female
Tx output to PA	SMA
PA input	Type N female
Server	1000BT; 2 RJ-45 per four carriers
Control channel	RS-232
GPS	BNC

Power Requirements

AC model	115/230 VAC, 60 Watts
DC model	48 VDC, 42-60 Watts, depending on capacity

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