



Internet on the Move Solution



Ku-Band, (20W or 40W SSPA)

Comprised with the following

- RIOTM-Ku-Band-M1, 2, 3 (20W or 40W)-Antenna
- RMOD-DREAM-2IP4 Modem- SCPC (DAMA optional)



RMOD-DREAM-2IP4 DAMA or SCPC IP Router Modem (below) Mounts inside vehicle- 19 inch rack mount
High-speed satellite tracking technology supports IP communication at speed and can be configured for use with virtually any Ku band satellite to enable IP connectivity on any moving vehicle for real-time (receive only) video, 2 way: Voice and Data applications.



Applications include:

- SNG (Satellite News Gathering), Voice-Video-Data
- First responders: in-pursuit, en-route, and on-scene
- ANY mobile Internet "On The Move" application.
- Disaster Recovery, ICE, FEMA, DHS mobile field ops etc

Each Outdoor unit includes:

- Transmit and receive antenna Positioner
- GPS based controller
- Gyro-assisted mechanical tracking system used for a fast and fully automatic satellite acquisition
- Integral LNB
- Power supply
- All in a compact, robust sealed unit

The Raditek RIOTM-KU-system is the leading edge, best and unique solution (triple play: voice, video, data) "Internet On The Move": solution. Continuous access at highway speeds.

The sleek, super low profile, Antenna pod easily mounts on the roof of any vehicle, boat or plane.

RMOD-DREAM-2IP4 Modem

- Minimum set up, just connect to our low profile BUC and (L band) modem unit, which uses the world's most efficient, 2-way SCPC OR Optional DAMA (Single Channel Per Carrier/Demand Assigned Multiple Access) system.
- The system can be used for either:
 1. SCPC for simple point to point applications.
 2. DAMA with the associated 95% satellite efficiency potential for uses Raditek's advanced satellite modem using SCPC/DAMA with uplink power control and Automatic Bandwidth On Demand (ABOD).
- The modem supports data rates from 16Kbps up to 20Mbps, data rate with LDPC coding and to 12 Mbps with TPC coding.
- The MODEM has its own IP address, same as if it was connected to a permanent land line.
- Actual IOTM data rate is based on link budget, and will typically be below 1 Mbps Transmit, typically around 128-512Kbps. Using our modem, no special frequency spreading is usually required (as needed with others).

Internet on the Move, Ku-Band, (20 or 40)W RIOTM-Ku-Band-(20 or 40)W-v13

We offer 3 Antenna model options :

Specifications	Units	Model 1 20W (38.5dBW)	Model 2 40W (42.3dBW)	Model 3 40W (45dBW)
Frequency Band:				
Receive: High band	GHz	11.7 - 12.75	11.7 - 12.75	11.7 - 12.75
Receive: Low band	GHz	10.95 - 11.7	10.95 - 11.7	10.95 - 11.7
Other specials bands possible.		(Custom option)	(Custom option)	(Custom option)
Transmit:	GHz	14.0 - 14.5	14.0 - 14.5	14.0 - 14.5
Polarization: (auto polarization control)		Linear	Linear	Linear
Gain:				
Receive:	dBi	29.5	30	29.5
Transmit:	dBi	27	26	29
Antenna G/T:				
at 30° elevation	db/°K	8	7.3	6.6
at 45° elevation	db/°K	9	8.1	7.6
Uplink EIRP:	dBW	38.5	42.3	45
Cross Polarization:	dB	> 30	> 25	> 25
IF Input (Tx):	MHz	950-2150	950 - 1450	950 - 1450
IF Output (Rx):	MHz	950-2150	950 - 2150	950 - 2150
Power Supply:				
Antenna	VDC	10-30	10-30	10-30
BUC	VDC	48	48	48
Continuous Power Consumption:				
Antenna	W	55	55	55
BUC	W	180	300	300
IDU	W		8	8
Antenna Performance				
Elevation Look Angle Range (Automatically adjusted)		20 - 80 °	20 - 70 °	25 - 70 °
Azimuth Angle Range: (Automatically adjusted)		360 ° continuous	360 ° continuous	360 ° continuous
Tracking Rate:	°/sec	60	60	60 (w/o notice)
Polarization Angle Range: (Automatically adjusted)		-180 ° to +180 °	-180 ° to +180 °	180 ° to +180 °
Initial Satellite Acquisition & Lock: (fully automated with integrated GPS)	s.	< 60	< 60	< 60
Satellite Re-Acquisition:	s.	<1 modem dependent	< 10 (when LoS blockage is <2 minutes)	< 10 (when LoS blockage is <2 minutes)
Azimuth tracking accuracy (@ 60°/s, 360°/s2)			0.5 °	0.5 °
Elevation tracking accuracy (@ 45°/s, 180°/s2)			1.0 °	1.0 °

RIOTM-Ku-(20-40)W-v13

Specifications may be subject to change

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Specifications	Units	Model 1 20W (38.5dBW)	Model 2 40W (42.3dBW)	Model 3 40W (45dBW)
Electrical Interfaces				
Tx, BUC Input (L-band)		TNC, 50Ω	N (50Ω)	N 50Ω
Rx Output			TNC, 50Ω	TNC, 50Ω
Physical				
Outdoor Unit Size: (L x W x H)	in. (cm)	45 x 35 x 7 (115 x 90 x 18)	45 x 35 x 7.5 (115 x 90 x 19.1)	45 x 35 x 9.3 (115 x 90 x 23.6)
Outdoor Unit Weight:	lb (kg)	77 (35)	93.6 (42.5)	103 (46.7)
Indoor Unit Size: (L x W x H)	in. (cm)	7 x 9 x 3 (18 x 23 x 7)	7 x 9 x 3 (18 x 23 x 7)	7 x 9 x 3 (18 x 23 x 7)
Indoor Unit Weight:	lb (kg)	2.8 (1.3)	2.8 (1.3)	2.8 (1.3)
Environmental				
Temperature Range	°F (°C)	-13 to + 130 (-25 to + 55)	-40 to + 131 (-40 to +55)	-13 to + 158 (-25 to 70)
Relative Humidity	%	10 to 100% condensing	up to 95	up to 95
Ground Speed	mph (Km/h)	Up to 220 (350)	Up to 220 (350)	Up to 220 (350)
Flammability		UL 94, V0		

The RADITEK RMOD-DREAM-2IP4 modem operates as a complete switching Internet router, and so *any SCPC, Point to Point Internet application can be supported*. In addition: MESH and STAR network configurations are ALSO possible, when used in DAMA (Demand Assigned Multiple Access) mode with our unique, advanced NMS system. Connection is possible with our satellite network solution using our LOW PROFILE, IOTM (Internet On The Move) antenna mounted on vehicles, boats or planes.

Our solution uses *SCPC only* or a unique combination of: SCPC in MESH or STAR configuration, with DAMA with AUPC (Automatic Uplink Power Control), and ABOD (Automatic Bandwidth On Demand), and combined with the most advanced Turbo Product Code, which can give BER (Bit Error Rates) as low as 10E-8 to 10E-10 with only a few tenths of a dB more Eb/No, than the already very low level needed for 10E-6! or even better performance to 20Mbps with LDPC coding.

DVB-S/S2 Satellite TV on the Move

The most advanced DVB-S2 with DAMA based (95% efficient typically) return channel is ideal for running 2 way internet and broadcast video. Because conventional return channels like RCS are typically 50% efficient!

If DVB video is needed, for Receive *Video on the go*, we offer our DVB-S/S2 Demod, combined with our SCPC/DAMA remote modulator.

RADITEK can supply the BUCs, Example, the smallest, lightest and most efficient 40W Ku Band GaN based BUC. and HUB solution too. We have advanced Antenna Control Units (ACS) model RACU-1000 (below), which can be used to steer large antennas to track even Inclined Orbit satellites, thereby extending their useful life.



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Antenna Tracking Details:

- Tracking is autonomous, after it has locked onto a carrier. GPS gives current Antenna/Vehicle coordinates. ACU (Antenna Control Unit) has satellite information to adjust to appropriate elevation and polarity.
- With TX muted, antenna will sweep in Azimuth looking for the satellite signal. Once it has found it, it tracks the satellite with it's 3 axis gyro and inclinometers.
- The filtered received satellite signal can track **any carrier** on the satellite, not necessarily the actual one you need,(ideally a video carrier) 50KHz - 50MHz or a Beacon tracked RSI (non coherent Received Signal Strength).
- Interrogates the modem (via RS232), to detect lock. It can use AGC output either (Analog or Digital), according to a preprogrammed objective.
- Then the antenna tracks, with beam steering in elevation, easily preset using a PC/GUI based app. usually with BPSK.

Antenna Tracking Interface Details:

A.1 Connector

The interface connection is a 9-pin D-Sub male located at the rear panel of the terminal.
The signals are EIA-232.

Table A-1 Antenna Tracking Interface Pin Assignments

Pin #	Description	Direction
2	EIA-232 RX data	In
3	EIA-232 TX data	Out
5	Ground	
1,4,6-9	Not used	

A.2 Serial Protocol

The RS-232 data is sent and received as asynchronous serial characters with a format that is programmable via the terminal's GUI.

Table B-2 Antenna Tracking Serial Protocol Parameters

Parameter	Description
Baud Rate	4800 to 38400 kbps
Parity	None, even, or odd
Data	7 or 8 bits
Stop	1 or 2 bits