

DVB S2 EXT



RADITEK Telecom

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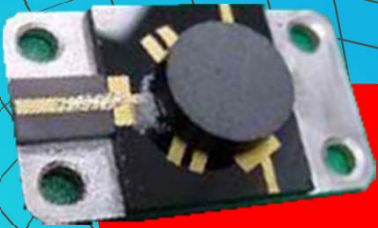
A California USA corporation



RADITEK TELECOM



Component and System Products



Founded in 1993

By Malcolm Lee & Peter Corbett

**RF/Microwave Components
manufacturer...**

**Stripline, Coax, Microstrip,
waveguide isolators and circulators**

Phase locked DRO, Synthesizer

Filters, couplers, Splitters, combiners

Telecommunications SYSTEMS:-

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Component and System NEW Products including:



- ❑ **WIDE band Microstrip Isolators**

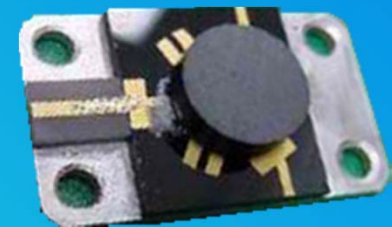
- ❑ e.g. 6-18GHz Microstrip isolator

- ❑ **Cryogenic circulators,**

- ❑ e.g. 4-8GHz @ 0.1°K For Quantum computer...

- ❑ **Power Amplifiers to over 18GHz/10KW**

- ❑ **VHF/UHF Point to Point radio**



Power Amplifier Products

Modules
Amplifiers/assemblies
19" Rack Amplifiers
RF Systems
Custom Products

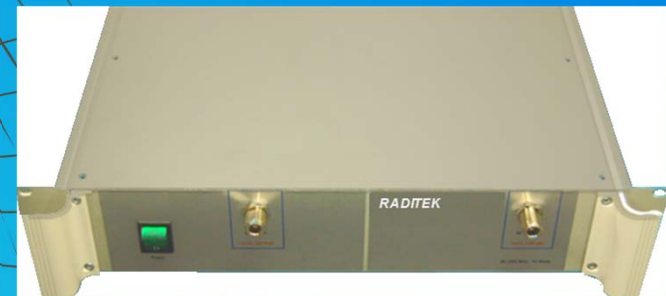
Amplifier Product Line:
1 MHz to 86GHz
1 Watt to 10K Watts
GaN, GaAs & LDMOS
based

Custom designs
within 60 days

From Module:



To complete 19 inch Rack:



Standard 5-Year
Product Warranty

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Power Amplifier Products

- ❑ **Lab Amplifiers (<1GHz):**

Broad band to several Kwatts (linear or pulsed)

- ❑ **Satcom Linear Power amplifiers and BUCs (Block Upconverters) to 1.2KW (C,X, Ku band) and 700W Ka band. Outdoor 2:1 protected.**

- ❑ **Module and 19 inch Rack, air and water cooled..**

- ❑ **Power Amplifiers (>1GHz) Pulsed and CW, narrow band and broadband/multi-octave, Class A, AB, C etc to mmwave.**

Please call with your amplifier requirements, whatever it may be...

Terrestrial Products including:

- ❑ **DVBT/T2/LITE /PAL TV transmitters to >2KW**
- ❑ **Module and 19 inch rack available.**
- ❑ **FM radio stations to 5KW with antenna options**
- ❑ **All outdoor, IP Point to Point radio (lic. band)**
 - ❑ **N x E1/T1 and STM (155M) IDU option to 38GHz**
- ❑ **RADLINK 2000 Advanced 6x6 MIMO WIFI NLOS**
 - ❑ **Uses Unlicensed 2.4G/5.8G (4-9-5.9G) bands**
 - ❑ **MIMO:Many in/out.. NLOS (None line of sight)**
- ❑ **LTE UHF base station and VLS MMIC coming soon**

Long range UHF transceiver



300 MHz to 2.5 GHz (Licensed ETSI Bands)

RADLINK-P2P-300M-2500M (split bands)

Features:

300 MHz, 400 MHz, 600 MHz.... to 2.5GHz (licensed bands)

Supports voice, data and IP applications

Range (over land and water) of up to 150+ km (100+ miles)

Built-in cross-connect and multiplexer

Up to 65.4 Mbit/s capacity

25 kHz, 50 kHz, 75 kHz...to 14MHz channel sizes

QPSK to 128 QAM modulation

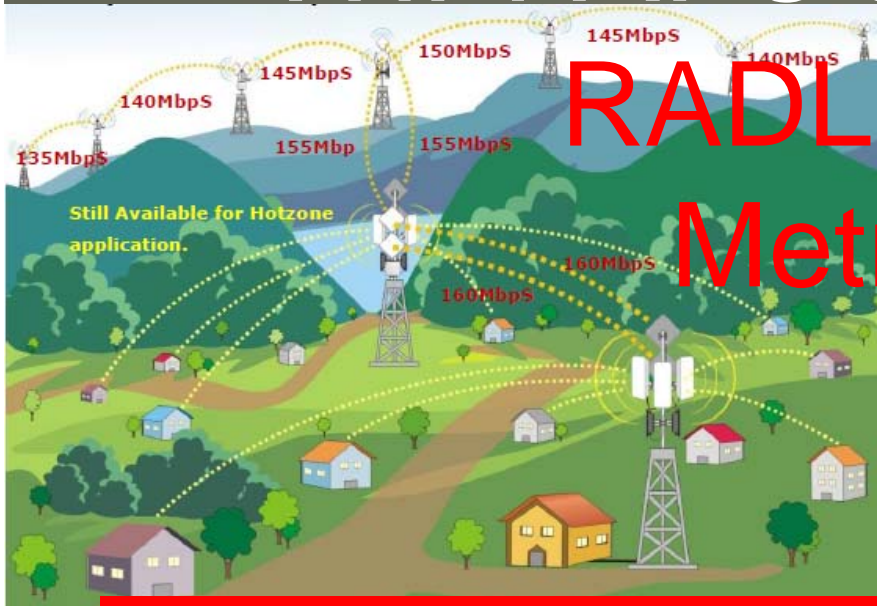
Web server and SNMP management

MHSB (Hot stand by) and HSD (Space diversity) protection options

To 5 x "9s" availability and over 90 years MTBF!

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WiFi APs and backhaul



RADLINK-2000 Metro-WIFI



802.11 a/b/g/n MIMO NLOS/OFDM Radio

Integrated Multi-Radios (to 3 per node)

Fast Data Switching Technology

Real Aggregate TCP rate ≥ 320 Mbps for 4x4 & 6x6 MIMO Base Station

High Efficiency in Multi-hops Repeating

- Low Throughput data drop, eg 100 Mbps @ 10 hops
- Multi-hop latency increased, eg ≤ 15 ms with 10 hops

Operate in 2.4GHz / 5GHz ISM Band

Create the best, fastest, lowest latency WIFI village/town/city.

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Transmission Products

Licensed band Point to Point.

RADITEK

Point 2 Point To 600Mbps

**Point to Point licensed
band, all outdoor, Link
RP2P-IPODU-“FREQ”*-a9**

Feature and Benefits

- Licensed Frequency Bands
- 300/600Mbps Ethernet (IP only)
- Very Low Latency
- Adaptive Modulation for optimal availability
- Jumbo Frame support to 9720 Bytes
- Built-in Link Monitor
- Power over Ethernet (PoE)
- Low Power Consumption
- Wide Operating Temperature Range
- SNMP Network Management
- Up to 100 meter between PoE and ODU
- Smallest profile



**RoHS
COMPLIANT**

**Total outdoor
radio with
Common antenna
waveguide port**

**PoE with
Cover
removed**

**6-38
GHz**

**300+
Mbps**

LOS

FD

PoE

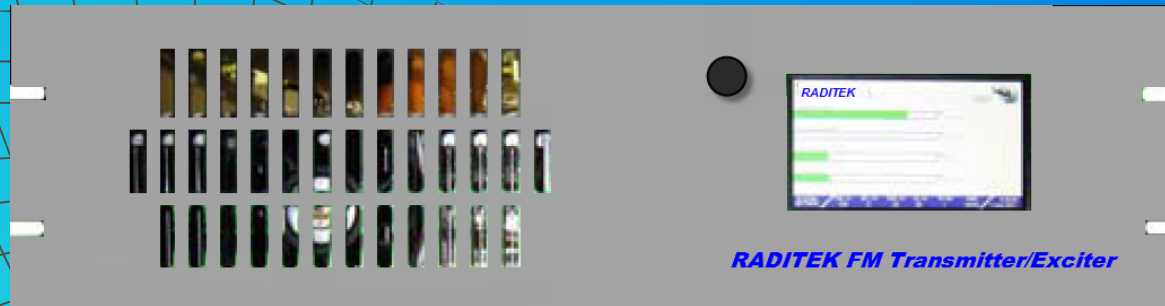
PTP



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Broadcast Products

FM Exciter/1KW Power Amp.



The *RTXE-87.5-108M-500W-T15* RADITEK Transmitter with built in FM exciter in a 3U high, 19 inch rack mount:

Digital and analog standard interfaces

LCD (full color, touch screen) and optional OLED display

RBDS and RDS

2 yr standard warranty

Internal filtering (low pass)

Weights only 35Lbs

RF monitor (-35dBc) BNC

Power level adjustable 10-100%

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Broadcast Products

DVB-T1/T2/LITE/PAL TV Transmitter



Frequency Range VHF 50 – 230 MHz, UHF 470 - 860 MHz

Input Power 0 dBm into power amplifier from modulator

Nominal Output Power (8VSB) VHF (25W, 100W, 250W, 500W, 1kW)

UHF (30W, 40W, 50W, 100W, 250W, 500W, 700W, 1kW)

Power Level Adjustable 10 – 100%

Input Impedance 50 into amplifier, BNC female

Output Impedance 50 , N or 7-16 DIN female (dependent on power level)

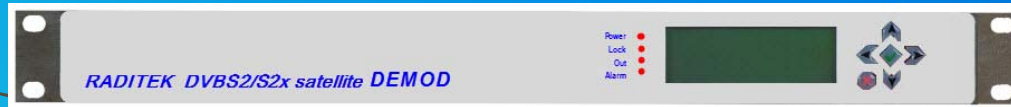
Modulation 8VSB, QAM, DVBT/H, etc (output power will change between standards)

Modulator input: 2 x ASI

MER >36 dB typical BER >38 dB typical

SN >40 dB typical Phase Jitter >104 dB

Shoulders >-50 dB typical, ATSC mode compliant to ATSC A53/B

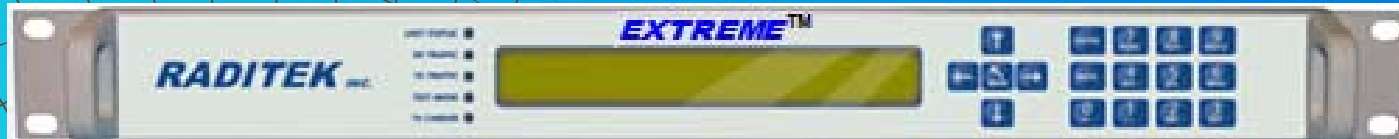


Satcom modems including:

- ❑ **EXTREME™** : To 256QAM, 200Mbps, 4 x E1/IP
 - ❑ Carrier under carrier detect
 - ❑ SIMU-Carrier™ (2 x SCPC carriers use same frequency)
 - ❑ Pt to Multi point (multiple demod option)
 - ❑ Combining modems for HTS, eg 1Gbps
- ❑ **DREAM™ (MF-TDMA-2G) to 98% efficient with carrier and bandwidth on demand, uses TDM/PSMA and Slotted Aloha.**
 - ❑ To 22Mbps, low latency LDPC/ TPC @ 16QAM MODCOD
- ❑ **HTS (High Throughput Satellite) to 1Gbps and beyond**

Satellite Products

EXTREME MODEM



SCPC and Point to multipoint **Includes:**
Multi IF band support: (70M/140MHz and L-band)
Data rates 18Kbps to 200Mbps and to 256QAM
DVB-S2-/ACM, to 16APSK. LDPC/BCH, TPC FEC options
Terrestrial interface options including Ethernet:
EIA-530, G.703 (balanced & unbalanced), OC-3, STM-1,
Serial LVDS, ASI, HSSI, Quad E1,
Modulation up to 64QAM
Simu-Carrier™ option (reusing 2 uplink frequencies)
Standard Uplink Power control (AUPC)
Signal-under-carrier™ real time interferer detection tool
Built-in spectrum and constellation monitors tool
IPv6 compliant
Drop and insert: T1-D4, T1-ESF, E1-G.732
Interoperable with other Raditek SCPC modems

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Satellite Products

Dream and Super Dream (Advanced Routing Modem)

MF-TDMA (**MF-TDMA-2G** Carrier and BW on Demand)

To 22Mbps, 16QAM with low latency LDPC or TPC



ALL IP based ROUTER SCPC modem, which is always SINGLE HOP. Can be used as either:

- 1.A Stand alone SCPC, Point to Point modem or**
- 2.A remote “TDM” based modem function used in a DREAM Super Hub modem network or**
- 3.A super (satellite) efficient MF-TDMA-2G with carrier and Bandwidth on demand)**
 - Supports Multiple STAR or MESH networks**
 - Central network status display at control Hub, with spectrum analyzer display etc**

MF-TDMA 2G DREAM Modem Control HUB

Incoming RX channels for all the network are monitored and controlled here

Broadcasts the TDM control Channel to the whole network

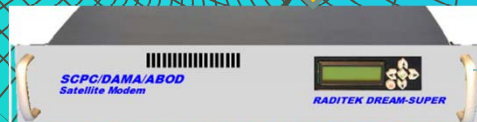
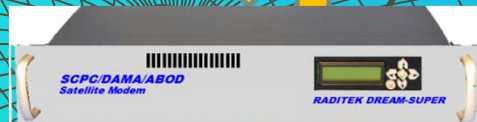
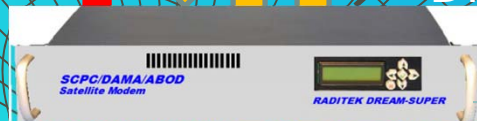
Tx From STSR Card



BUC LNB

SPLITTER

IF UNIT



Zero loss active splitter

To 8RO cards
To 4 per Dream Super

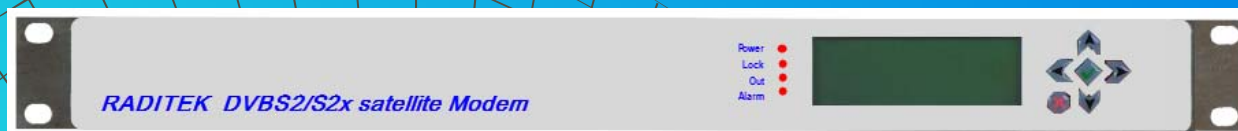
NMS Server



CAT 5 IP cables

Satellite Products

DVB-S2/S2x Modulator



DVB S2_{EXT}

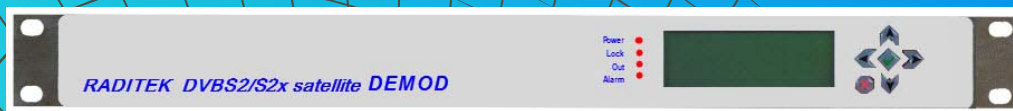
Features:

- L-Band and IF (70/140M) Band standard
- Symbol rate from 0.1 to 68 Msps (with 1 SPS step) per carrier
- Low channel roll-off (5% to 35%, 1% step)
- 16 APSK & 32 APSK modulations included
- Carrier ID compliant (ETSI 103 129) DVB-CID
- ASI and IP inputs
- BISS 0/1/E encryption
- Multi-stream according to EN 302 307 standard
- Block Up Converter (BUC) Driver options
- Up to 64 embedded profiles
- Physical Layer Scrambling according to EN 302 307
- 1+1 redundancy management
- Low power consumption

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Satellite Products

DVB-S2/S2x DeModulator



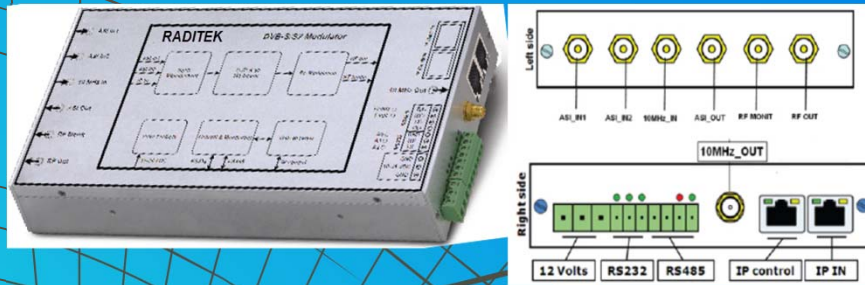
Features:

- Dual L-Band (950-2150M) ports
- Symbol rate from 0.2 to 65 Msps to 240MBPS
- Low channel roll-off: 5% to 35%, (5% step) support
- 16 APSK & 32 APSK demodulation included
- Very low implementation loss (with demod. option)
- Quick boot time
- Low power consumption (9W fan-less)
- RS232 and 12C control and monitor
- Physical layer scrambling to EN 302307 standard
- Multi-stream support
- CCM, VCM, ACM support
- Seamless switching of MODCOD with ACM

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Modulator module



Features:

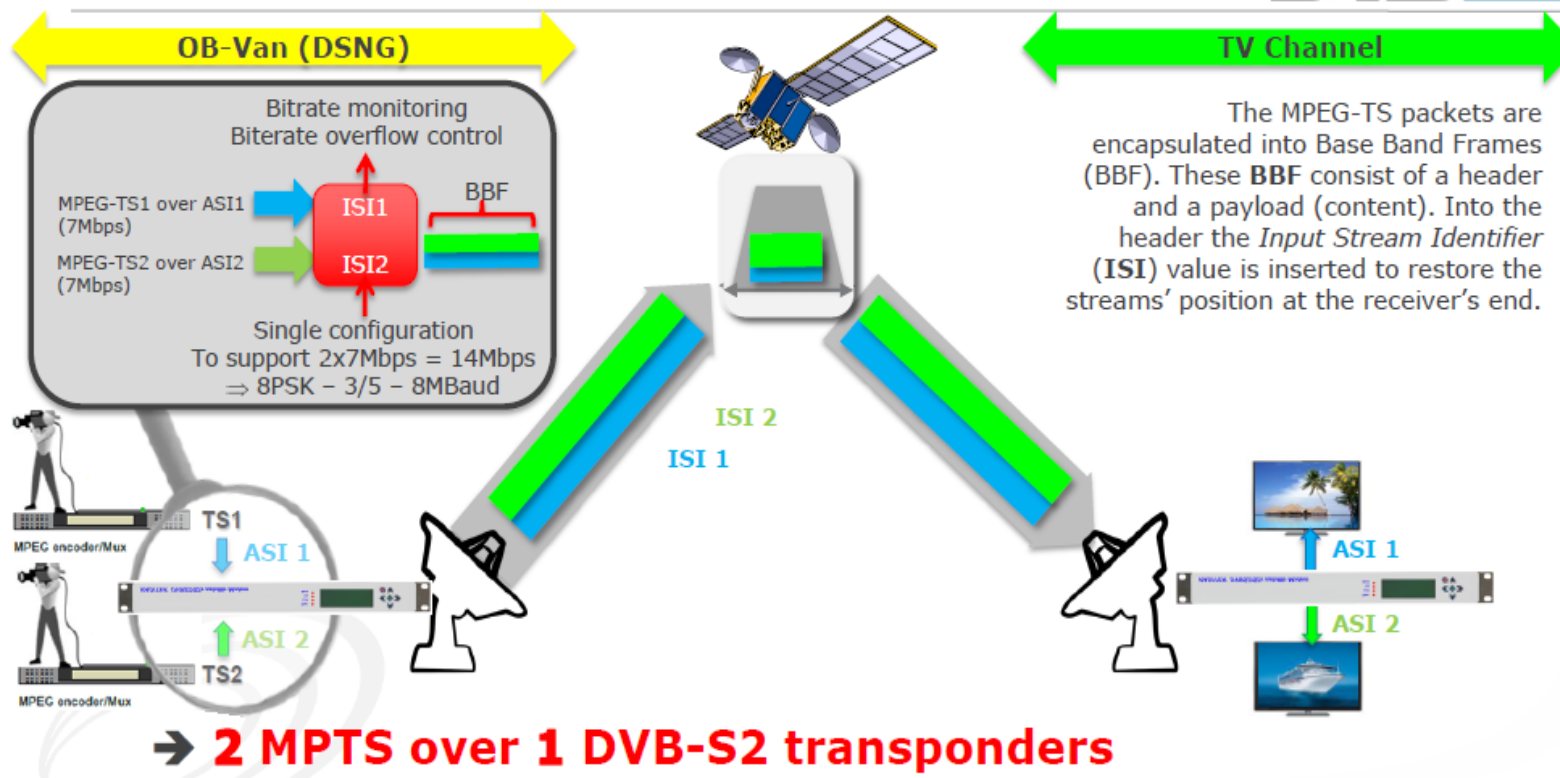
- • Either ASI inputs or MPEG over IP input (SMPTE-2022) up to 200 Mbps
- BISS 0/1/E encryption
- Better bandwidth efficiency with low roll off
- Variable symbol rate from 0.1 to 68 Mbauds with 1 baud increment
- Low roll-off (5/10/15%) to increase the useful bitrate
- High performances
- Internal PRBS generator for test
- Physical Layer Scrambling according to EN 302 307 standard
- Embedded Web Browser
- SNMP control & monitoring
- Boot time < 14s
- Power consumption < 25W

Satellite Products

DVB-S2/S2x MODEM

Additional services: Multistream

DVB-S2_{EXT}



Satellite Products

DVB-S2/S2x Modulator

Low Roll Off Benefits

Fill in the gap with additional bitrate without interfering your neighbors
Or
Reduce your spectrum occupancy and pay less

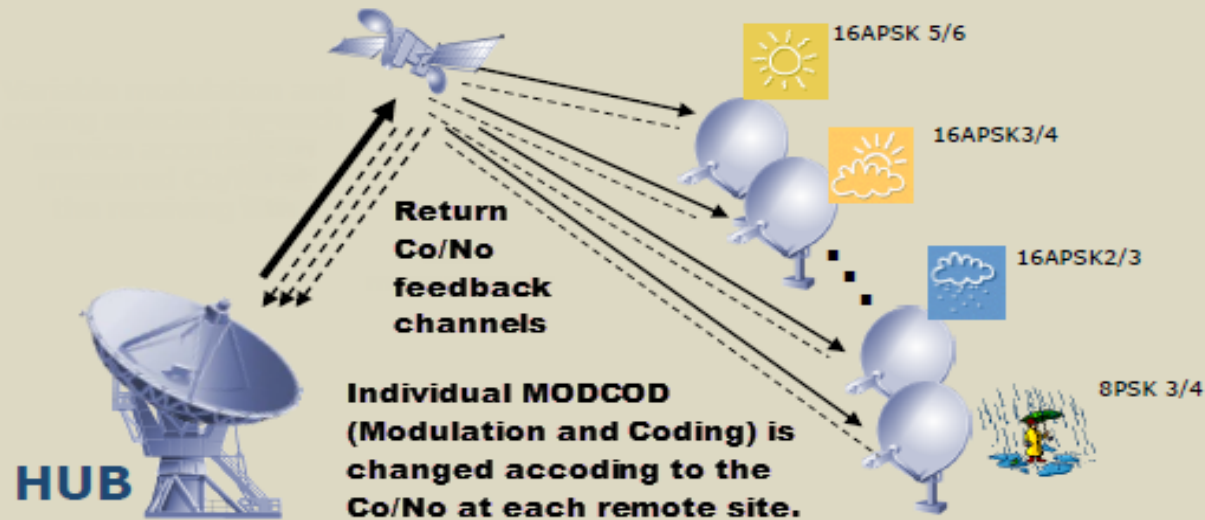


Satellite Products

DVB-S2/S2x Modulator

Example: 30MHz used for Unicast IP trunking to 20 sites with rain margin varying from 2.5 to 5.5 dB depending on location:
ACM

DVB S2_{EXT}



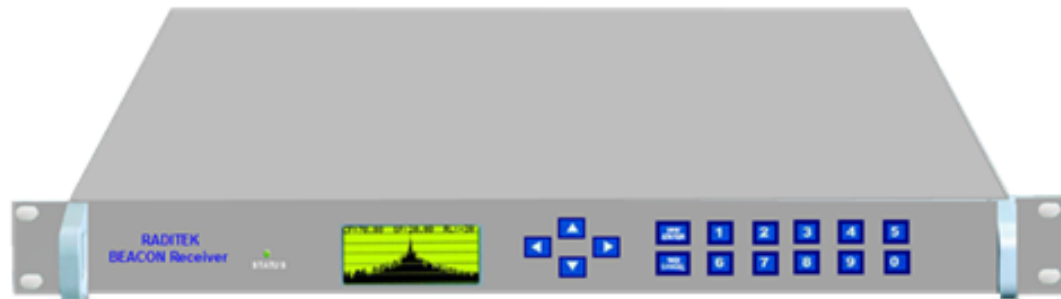
With **DVB-S2 ACM**: between 8PSK 3/4 and 16APSK 5/6
=> between 3.34 and 4.95 Mbits/sec per site
=> total bit rate > **85 Mbps** > +131 %

Satellite Products

Beacon Tracking Receivers



**Beacon Tracking Receiver,
L, C, X, Ku, Ka (optional) band.
Indoor Unit**



Special Features

- Front panel spectrum display of the beacon signal
- Fast signal acquisition and locking (<3s typ. optionally <1s)
- Advanced digital sideband rejection system
- Logarithmic output range, user selectable

The Beacon Tracking Receiver tracks CW beacon signals from commercial satellites.

Frequency Option table:

- L-Band
- C-band,
- X-band,
- Ku-band,
- Ka-band

Satellite LNB Products

Eg: High reliability Ka LNB

C, X, Ku, DBS bands also available



Item	Specification
RF Input Frequency	20.2 to 21.2GHz
IF Output Frequency	1000 to 2000MHz
Local Frequency	19.2GHz
Local Frequency Stability	Phase locked to external 10MHz reference
10MHz Reference	@ Multiplexed on the IF coaxial connector
	[Input level] -5 to +5dBm
	[Phase Noise]
	-135dBc/Hz max. @100Hz
	-148dBc/Hz max. @1KHz
Local Phase Noise	-152dBc/Hz max. @10KHz
	-155dBc/Hz max. @100KHz
	-62dBc/Hz max. @100Hz
	-72dBc/Hz max. @1KHz
	-82dBc/Hz max. @10KHz
Local Leakage	-92dBc/Hz max. @100KHz
	-102dBc/Hz max. @1MHz
	-60dBm max at waveguide flange.
Noise Figure	1.7dB @ +23°C
Gain	60dB ±4dB Over temp. and freq.
Gain Flatness	±2.0dB max. Over band
Gain Stability	±1.0dB max. Over 24hr at +25°C
Input VSWR	1.3:1 max.
Output VSWR	1.8:1 max.
Image Rejection	-45dBc max.
P1dB	+15dBm min.

Input DC Power	+15 to +24VDC, 400mA Multiplexed on a single coaxial connector with the IF and 10MHz reference signal.
Input Interface	WR-42 waveguide flange with O-ring and threaded screw holes.
Output Interface	50Ω, N-type female coaxial connector.
DC Current	400mA max.

Mechanical Specifications

Item	Specification
Size	(L)153mm x (W)77mm x (H)51mm
Weight	approx. 700g
Color	White, Munsel N9.5, semi gloss

Environmental Specifications

Item	Specification
Operating Temperature	-40 to +60°C
Operating Altitude	10,000 ft ASL
Operating Relative Humidity	100%, condensing
Non-operating Temperature	-50 to +70°C
Non-operating Altitude	50,000 ft. ASL
F Shock	20g, 11ms, half sine
Vibration	MIL-STD-810E, method 514-4

Satellite Products Converters



**UP/DownConverters: Up to 4
independent converters per rack unit
Hot swap, redundant power supplies
L, C, X, Ku and new Ka band**

Satcom Products:

BUCs (Block Up Converters)



C, X, Ku and new Ka band
Example: 50W Ku Band GaN BUC
Lightest and smallest in the industry
1 + 1 and High Powers (indoor and outdoor)

Satcom Power Amplifiers & BUCs



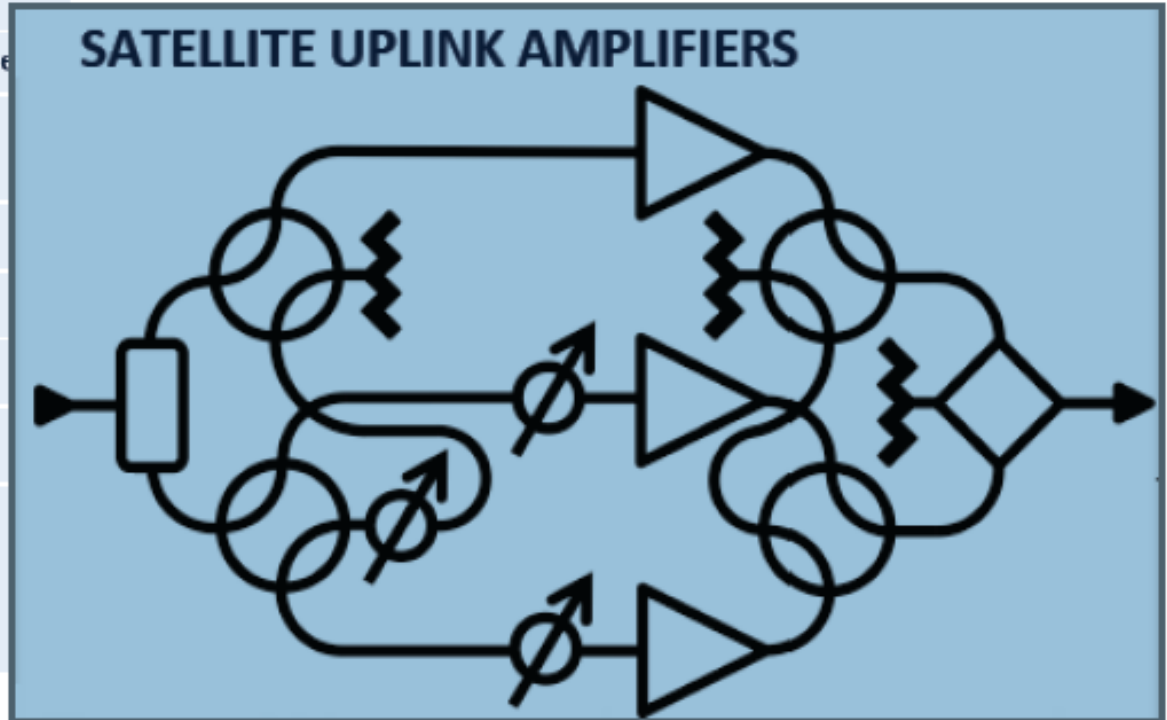
1.2KW
1:2 Ku band
BUC
Same linearity
as combined
GaN but much
smaller,
lighter, more
efficient!

High power C, X, Ku and new Ka band
Example: To 1.2KW Ku Band linear BUC
To 700W, Ka band BUC
Lightest and smallest in the industry
1:2 redundancy

Satellite Products BUCs

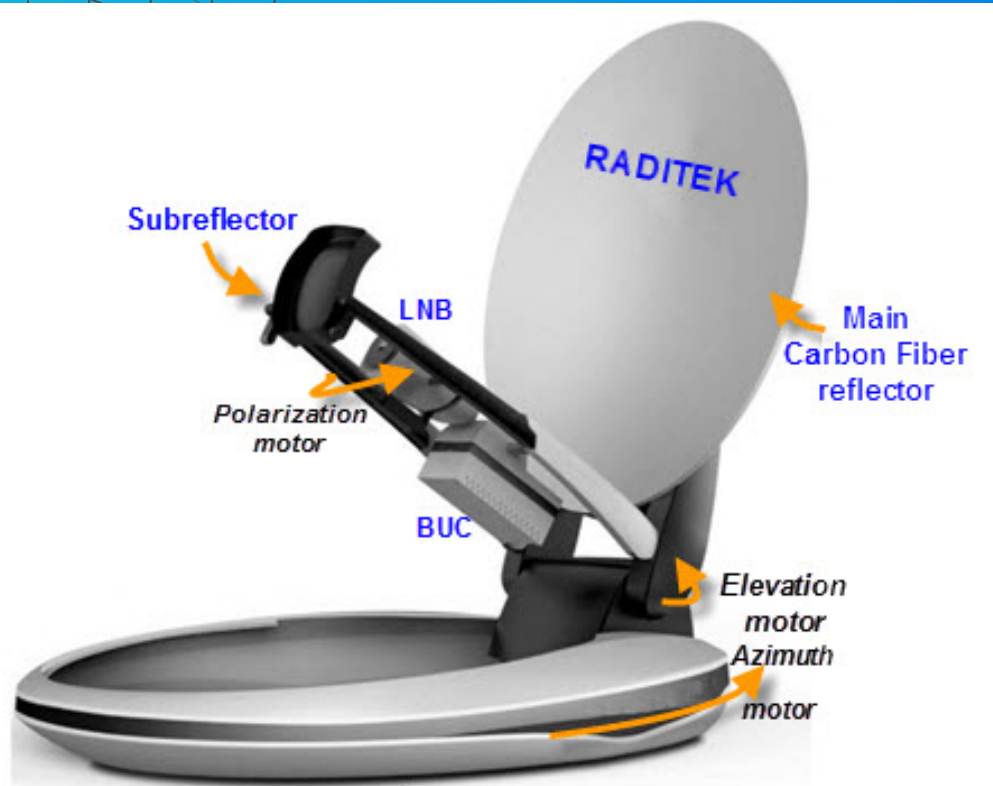
Summary Specifications for RBUC-Ku12.75-14.50G-1.25KW-(1:2)- e21

<u>RBUC-12.75-14.5G-1.25KW-(1:2)</u>	
Model	1:2 Phase Combine
Frequency (GHz)	12.75-14.5
Linear Power	1000 W
Power Consumption	4600 VA
Overall Efficiency ²	22%
Weight	150 pounds
Size: Volume	12,648 in ³
Length	34 in
Width	31 in
Height	12 in



Similar specified, C band also available

Satellite Products Antenna



Antenna Control Unit (ACU) in Base
with GPS compass
Incl. Microprocessor, Servo controllers, Tracking receiver etc

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Satellite Products

Man Pack Antenna system



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Satellite Products

IOTM antenna Ku, Ka



- Linear or circular polarization available
- Compatible with RADITEK DREAM modems, BUCs and LNBs
- Cold start acquisition <3min,
- <100ms re-acquisition after signal loss/block
- Rescan <20s
- High Power, low profile BUC (eg 40W) available

3.7m Antenna **NEW!**



**Transmit-Receive
C and Ku Band versions
3.7Meter Dia.
Non Penetrating Roof mount
Hot dip Zinc galvanized
on steel Structure.**

Operating Frequency,	C-Band		Ku-Band	
	Receive	Transmit	Receive	Transmit
	3.625~4.2 GHz	5.85~6.425 GHz	10.95~12.75 GHz	14.0~14.5 GHz
Gain, Mid-band,	41.94 dBi	45.52 dBi	51.7 dBi	52.63 dBi
Polarization	Linear and Circular		Linear	

Broadcast Products Special Projects.



RADITEK can provide turnkey solutions

Example1 : Rapid response system (using manpacks and vehicles) using Satellite backhaul, with LTE micro-base stations, handsets etc. Also connects to VHF, UHF radio systems and video over Internet. Using video servers and multi large screen displays of 1000s of video feeds.

Example2: Design single and multi-hop satellite links around the world, connecting to multi-redundant, ship borne and ground locations to track a Mars Orbiter launch.

**Contact us for more information,
We want to be your turn-key solutions partner
(408) 266-7404, sales@raditek.com**