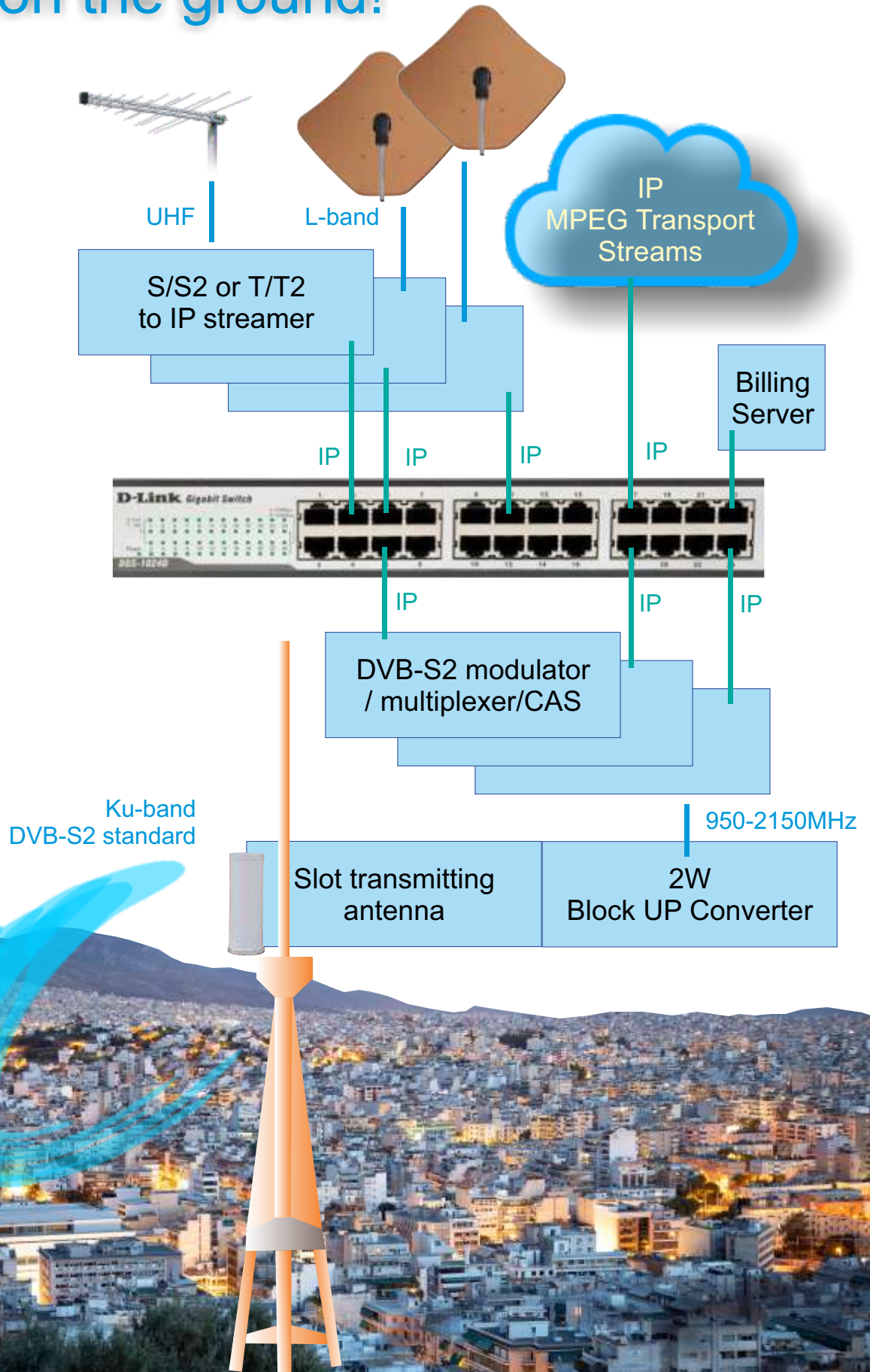


# MVDS-TROPHY. Satellite on the ground!



SD, HD and Ultra HD terrestrial DVB-S2 broadcasting

# MVDS-TROPHY.

## Satellite on the ground!

The advantages of MVDS-TROPHY DVB-S2 terrestrial broadcasting:

### 1. Extremely low transmitter power (2-4W) to cover a radius up to 30km.

Due to what is achieved such energy efficiency?

The fact is that, for example, in the range of 10.7-12.5 GHz, the gain of a subscriber offset antenna of 0.6 m is equal to 36 dB or 4000 times in signal power.

For example, the T2 UHF antenna gain is, on average, 12 dB or 16 times in power.

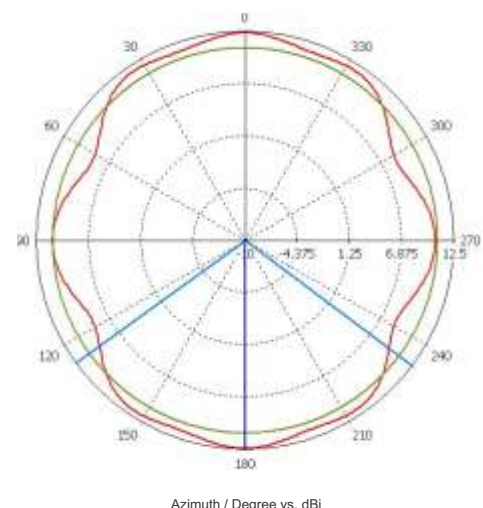
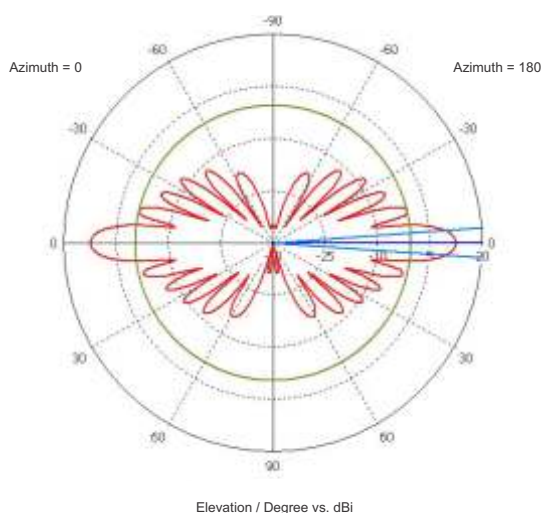
That is, the transmitter power in the range of 10.7-12.5GHz may be less than the transmitter power in the UHF range by 300 times!

Secondly, for the receiver to work correctly in the DVB-S2 standard, you need to maintain a threshold signal-to-noise ratio above 4dB. To work in DVB-T2, it is necessary to achieve a signal-to-noise ratio above 11dB. That is, the received signal in the DVB-S2 standard can be lower by 7 dB or 5 times, compared to DVB-T2.

Thus, the theoretical energy efficiency of DVB-S2 broadcasting is higher by  $36 + 7 = 43$  dB or 20 thousand times! That is, the transmitter power in the range of 10.7-12.5GHz may be less than the transmitter power in the UHF band 20000 times!

Of course, the losses in the atmosphere in the range of 10.7-12.5 GHz are much higher than the losses in the UHF range. Practical broadcasting showed, however, the energy efficiency of MVDS broadcasting at least 1000 times.

Therefore, MVDS transmitter with a power of 2W serves a territory with a radius of up to 30 km.



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### 2. The use of standard LNB's and standard satellite receiving antennas of 0.4m-0.6m.

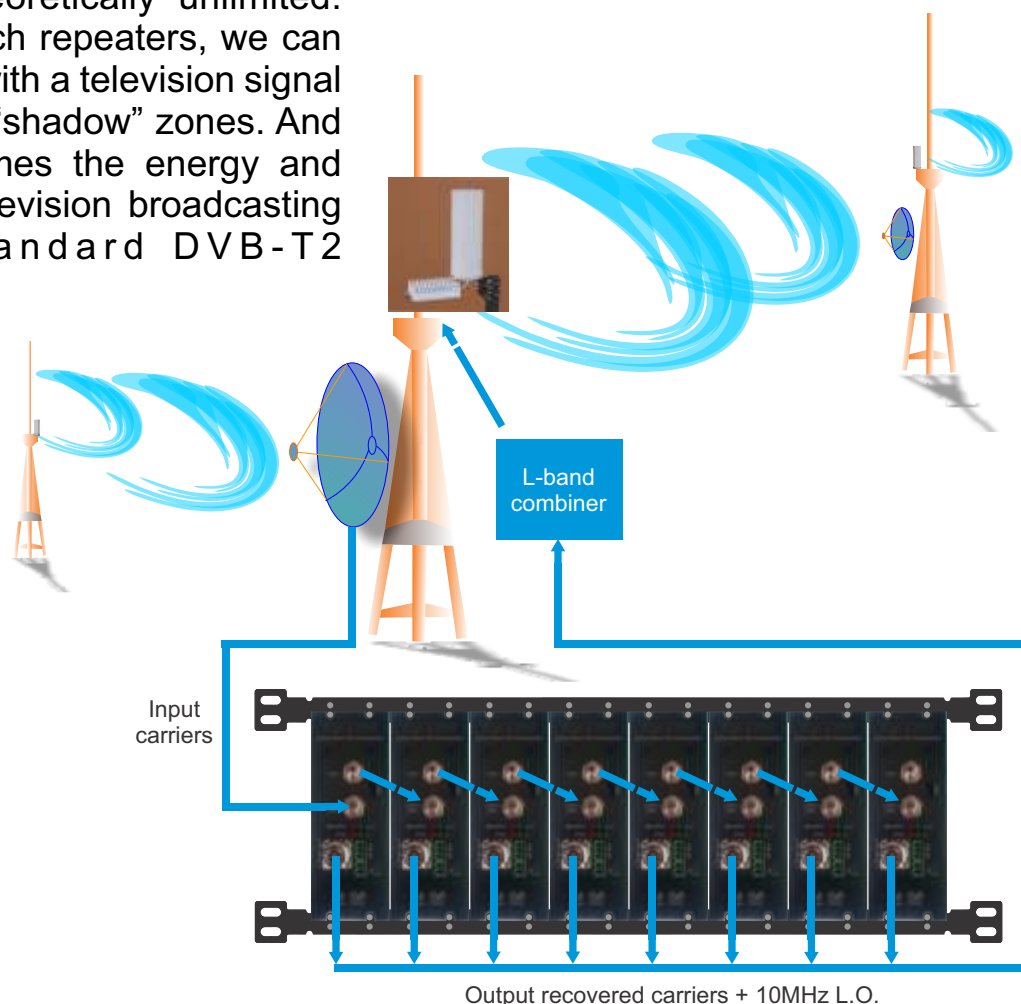
In MVDS, we use two types of signal modulation: QPSK and 8PSK, that is phase modulations. To receive a signal, it is sufficient to use inexpensive down-converters with low linear mixer requirements.

For example, in MMDS broadcasting, amplitude modulation methods of the 16QAM and 64QAM signal are used, which implies the use of ultra-linear modes in receiving equipment. And this, in turn, leads to higher prices for down-converters.

The most significant reduction in the cost of creating a subscriber network is achieved in the 10.7-12.7 GHz band. Here can be used domestic LNB worth \$1-2. In other ranges, non-standard converters have to be used, which increases the cost of down-converters and prices become comparable with MMDS converters.

### 3. Extremely simple and inexpensive way to retransmit the signal.

TROPHY ELECTRONICS transmodulators and, again, 2W transmitting converters and slot antennas are used to retransmit the signal with full carrier recovery. The number of such retransmissions are theoretically unlimited. Using the network of such repeaters, we can provide a huge territory with a television signal and give a signal to the "shadow" zones. And again, there is 1000 times the energy and financial efficiency of television broadcasting compared with standard DVB-T2 broadcasting.





# MVDS-TROPHY.

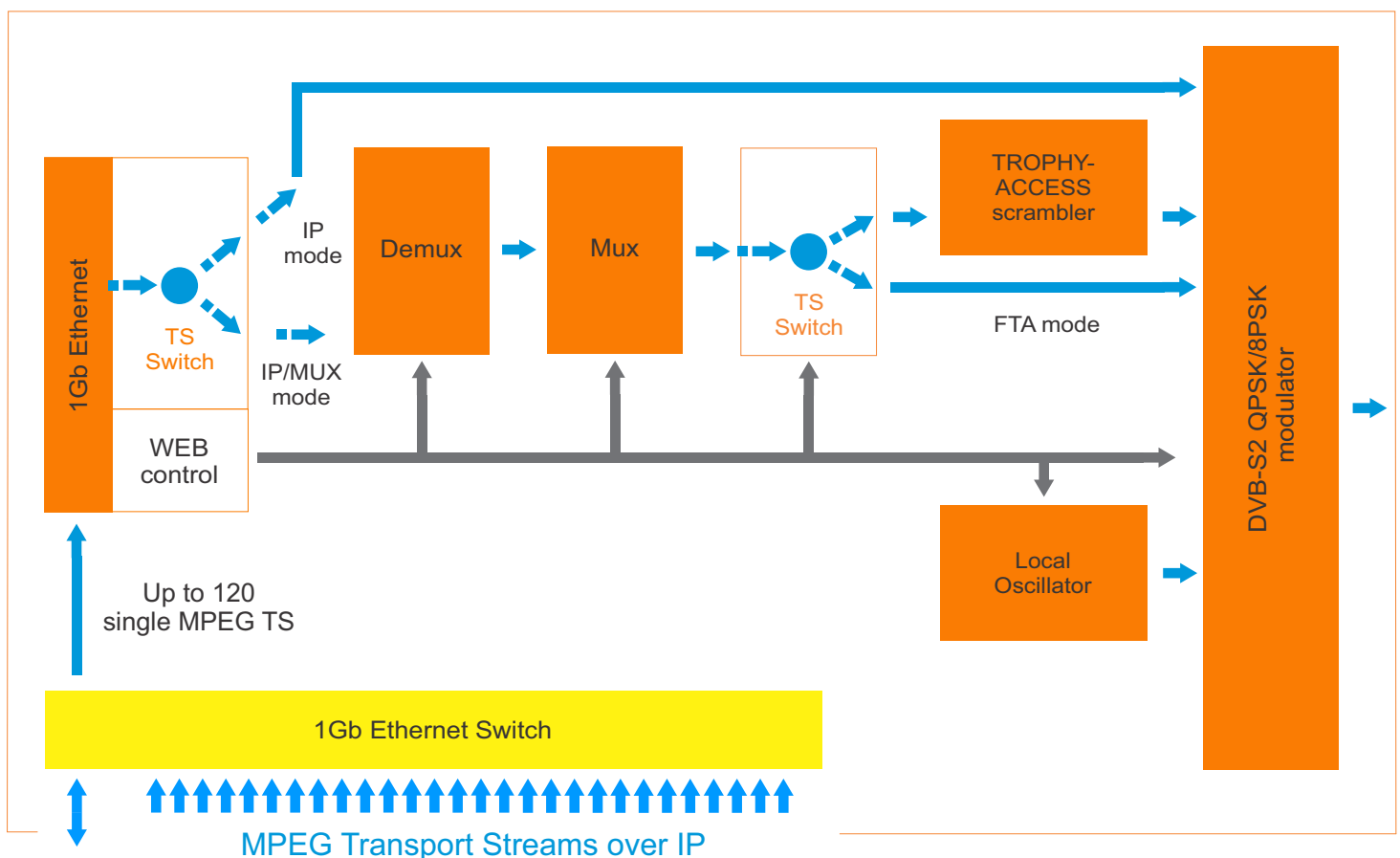
## Satellite on the ground!

### 4. The presence of a wide frequency spectrum, compared with the UHF range.

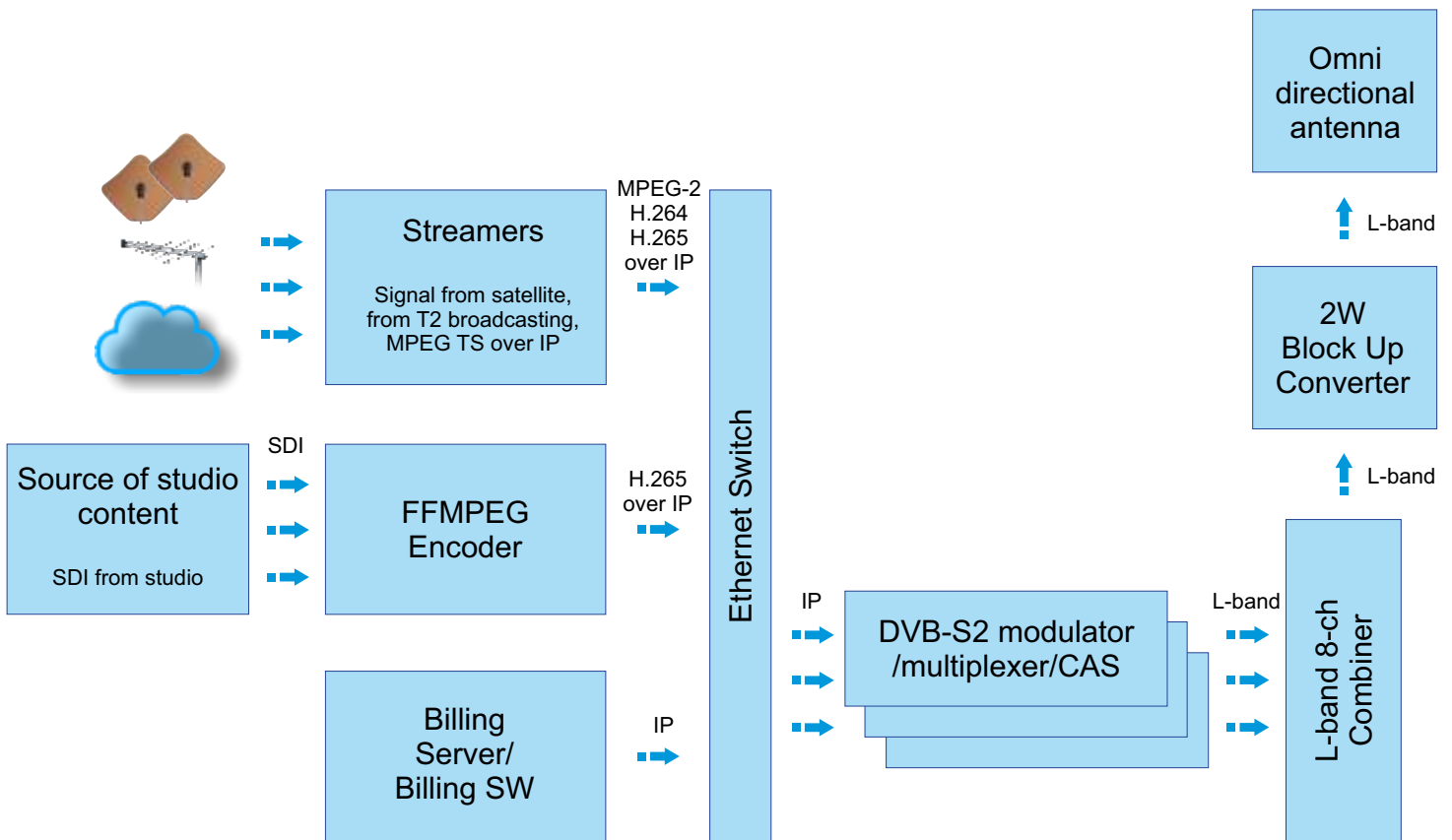
Practically, one transmitting converter provides a signal bandwidth up to 800 MHz. With such a band, it is possible to broadcast up to 1700 Mbit of useful data. For example, using multi-pass transcoding technology, it is possible to form a packet of 100SD channels (1 Mbit each) + 300HD channels (2 Mbit each) + 40UltraHD channels (25 Mbit each). Using a smaller band reduces the number of channels accordingly.

### 5. Own DVB-S2 modulators/multiplexers and original TROPHY-ACCESS CAS (Conditional Access System).

This factor allows you to install an extremely inexpensive Head-End with the highest functionality and quality.



## The functional diagram of MVDS Head-end



The number of Streamers and Modulators depends on the number and parameters of received signals. For example, the Streamer can receive all channels of a satellite transponder or terrestrial transponder. But, if some of these channels are closed by a Conditional Access System, then you need to know the capabilities of the corresponding CAM module.

The capacity of one transponder is 70-80 Mbit for real broadcasting. Therefore, the number of Modulators depends on the total bitrate of the broadcasted television channels.

The final cost of the Head-end can be calculated after receiving complete information about the received and broadcasted channels.

## The cost of the Head-end

The final cost of the Head-end can be calculated after receiving complete information about the received and broadcasted channels.

However, the cost of the main Head-end components and the cost of subscriber receiver will be indicated below to understand the price level.

<b>Cost of the MVDS HEAD-END components</b>				
No.	Name	Quantity	Price	Amount
1	AMD-53-S2 modulator/MUX <a href="https://dvb4all.com/?product=dvb-s2-modulator-multiplexer">https://dvb4all.com/?product=dvb-s2-modulator-multiplexer</a>	1	\$690.00	\$690.00
2	Software license to enable TROPHY-ACCESS scrambler solution (for each modulator)	1	\$950.00	\$950.00
3	410C series Common Interface DVB to IP streamer <a href="https://dvb4all.com/?product=410c-series-common-interface-dvb-to-ip-streamers">https://dvb4all.com/?product=410c-series-common-interface-dvb-to-ip-streamers</a>	1	\$368.00	\$368.00
4	1Gb Ethernet 48-ports switch	1	\$320.00	\$320.00
5	Billing Server	1	\$4,200.00	\$4,200.00
6	Billing Software	1	\$5,000.00	\$5,000.00
7	L-band 8-channel combiner & 10MHz ref <a href="https://dvb4all.com/?product=l-band-8-channel-combiner-10mhz-ref">https://dvb4all.com/?product=l-band-8-channel-combiner-10mhz-ref</a>	1	\$280.00	\$280.00
8	2W Ku-band Block Up Converter, 11.7...12.5GHz <a href="https://dvb4all.com/?product=ku-band-up-converters">https://dvb4all.com/?product=ku-band-up-converters</a>	1	\$960.00	\$960.00
9	Omnidirectional Slot Antenna <a href="https://dvb4all.com/?product=omnidirectional-slot-antenna">https://dvb4all.com/?product=omnidirectional-slot-antenna</a>	1	\$790.00	\$790.00
<b>Cost of the TROPHY-ACCESS Set-Top-Box</b>				
No.	Name	Quantity	Price	Amount
1	<b>TROPHY TA1005HD receiver</b> <i>H.264/H.265 DVB-S2/T2</i> <i>TROPHY-ACCESS 2.0 embedded decoder</i>	1	\$23.00	\$23.00
2	<b>TROPHY-ACCESS decoder license</b> <a href="https://dvb4all.com/?product=trophy-access-decoder-image">https://dvb4all.com/?product=trophy-access-decoder-image</a>	1	\$5.00	\$5.00