

why?

would I want a Block Downconverter?

System Engineer: I want one LNB that gives me all the satellites in Europe, and I know that's from 10.7~12.75 GHz, I want a low noise figure and I want good stability and I don't want to pay much.

Orbital: Which receiver are you using?

System Engineer: Any standard industrial receiver or modem.

Orbital: Okay, what's the receiver or modem input frequency?

System Engineer: Well, obviously it's 950~2000 MHz standard.

Orbital: Right, and that is how much bandwidth?

System Engineer: Well that's easy 2000-950 is 1050MHz.

Orbital: And what's the bandwidth you want to cover?

System Engineer: Oh yeah, $12.75-10.7=2050\text{MHz}$ *bandwidth*, NOT frequency!

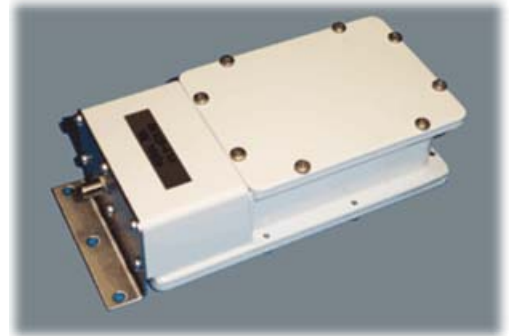
Orbital: The rule is: what goes in, must come out, or more precisely, bandwidth in must equal bandwidth out. You wanted 10.75 ~12.75 GHz input (2050 MHz bandwidth in), which would mean an output of 950-3000 MHz (2050 MHz bandwidth out). No receiver or modem can handle 3 GHz input frequency, not to mention the problem of the cable loss and tilt at 3 GHz between the LNB and the receiver

The most your receiver can demodulate is 1050 MHz of bandwidth, from 950 to 2000, so that means you have to split the European satellite band in half – we choose 10.7~11.7 GHz (950-1950 out) and 11.7~12.75 GHz (950-2000 out) – now the receiver will demodulate all channels if you switch between the LNBs. But now you need two LNB's – and how do you hook them up to one feed?

System Engineer: Answer – a waveguide splitter. Oh, I can't do that, I want a good, low-noise figure and splitting will add more than 3 dB to that noise figure. And if I use a waveguide switch, I can only look at one LNB, or half the satellite at one time!

Orbital: Right! The solution is a good wide band LNA 10.7~12.75, which gets the good noise figure and amplifies the signal to a point where we can split it with very minimal noise impact, and feed the split signal to two block converters - one high-band and one low-band. Each Block Downconverter then has an output of 950~1950 for low band, 950~2000 for high-band, and can feed two standard receivers - giving you simultaneous reception of all the channels - if you want only one signal at a time, use a simple L band switch.

Now the problem is solved, you have high quality signal on all channels.



Orbital Ku band Block Downconverter

