

Series - Satellite Commentary -

TREND TO BROADBAND COMMUNICATIONS AND ITS EFFECTS ON SATELLITE COMMUNICATIONS (2)

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In the last issue, I discussed the impacts of broadband communications on the utilization of satellite communications. In this issue, I would like to discuss how inexpensive satellite communications be realized to be suited to the broadband communications era.

First of all, it is important to develop communications satellites inexpensively. More than twenty years ago, satellite manufacturers started to lower a satellite bus cost by using the same bus for different satellite projects. However, they were obliged to make to order specific communications payloads based on the requirements made by operators. This led to rather expensive communications satellites. From those days, satellite manufacturers in the Europe and America formed an alliance, or sometimes merged together with a surprising speed. They tried to omit duplicated developments and to lower the satellite development cost, and as a consequence, to keep internationally strong competitive power. This trend recently reached Japan. Satellite divisions of two major Japanese communications manufacturers merged, and a new satellite manufacture was just born.

For a long time, it was a common sense that the major parts of satellite payloads are assembled by microwave components. Nowadays, satellites with tens or hundreds of small spot beams, with a diameter of less than several hundred kilometers, are realized to support satellite communications services using ultra small terminals. In these satellites, beam forming, filtering, beam-to-beam routing, modulation and demodulation, and, forward error coding and decoding are done with digital signal processing technologies using ASIC's (Application Specific Integrated Circuits). These ASIC technologies are well suited to produce the same types of modules inexpensively, which will devote to future inexpensive satellites.

As discussed above, the satellite cost will further be lowered by an alliance or merged manufacturers by utilizing cost-effective technologies, such as ASIC's. We now look at satellite launch. Nowadays, each country is competing in the field of

satellite launching technologies. It would seem that many countries do not collaborate in the field of satellite launching technologies. For further cost-effective satellite launch, I hope that much more countries will work closely together to realize internationally supported inexpensive and reliable communications satellite launching.

With regard to inexpensive satellite terminals, around ten years ago, there was an opinion that the satellite communications be standardized, so that all the satellite components including terminals would become cheap and mutual connectivity be assured among terminals made by different makers, thus leading to most cost effective satellite communications. However, this idea was not realized. Just recently, there was officious information that a computer manufacture will develop a PC with a satellite interface, so that everybody can enjoy satellite internet or broadcasting just by pushing a satellite antenna cable. However, such PC's are not yet appear on the market. Main reason for this would be that the justification for existence of such satellite communications is not clear in the broadband age. Further, satellite antenna systems should be handy enough to be accepted by everybody as one of computer peripherals, for which new ideas and technologies seem mandatory.

Looking back the history of satellite communications, we are now entering a big turning point. It is still difficult to see the other side, but the satellite communications will surely find their positions in the broadband era and used by many users conveniently and sometimes unconsciously.