

# MTT-S Panel Sessions

## PSMA: Which MMIC Technology Will Win the PCN Race?

*Date:* June 14, 1993  
*Time:* 12:00 PM–1:20 PM  
*Location:* Room 313  
*Moderator:* Sanjay Moghe, Northrop ESD

### **Abstract:**

Personal Communications Networks are expected to represent a huge market for RF components in coming years. A number of MMIC components in silicon, GaAs MESFET and GaAs HBT technologies are now becoming available for PCN application. Silicon bipolar and MOS based technologies are generally regarded as low risk and low cost for frequency applications below 1 GHz, and have shown a lot of promise with digital and microwave parts integrated on the same chip. GaAs-based circuits, however, have shown some of the highest levels of integration for PCN transceiver applications with amplifiers, oscillators, mixers, power amplifiers, and synthesizers all on a single chip. Industry experts will discuss in depth the tradeoffs among the competing technologies in performance, cost, reliability and time-to-market.

## PSTA: Direct Broadcast Satellite (DBS) Market: Technology and Trends

*Date:* June 15, 1993  
*Time:* 12:00 PM–1:30 PM  
*Location:* Rooms 306/307, GWCC  
*Sponsor:* MTT-16 Microwave Systems Technical Committee  
*Organizer:* Ramesh K. Gupta, Comsat Laboratories

### **Abstract:**

The satellite-to-home direct broadcast satellite (DBS) market in the US is gaining momentum and is likely to take off in 1994 with the launch of two high-power Ku-band DBS satellites. Although previous efforts in launching DBS service within the US and Europe were not successful, major investments are being made in the US and Japan on construction of DBS satellites, development of low cost antennas, low noise block (LNB) down converters and satellite receivers. These efforts have resulted in the development of several dish/flat-plate antenna and LNB products. In this panel session, invited speakers from the US, Europe and Japan will address market potential and technology trends, and present the lessons learned from their experiences in addressing the DBS market. Key product design and manufacturing issues and related business issues will be addressed.

# Panel Sessions

## PSTB: MMICs in Commercial Markets: More Than a Viewgraph Projection

*Date:* June 15, 1993  
*Time:* 12:00 PM–1:30 PM  
*Location:* Rooms 304/305, GWCC  
*Sponsor:* MTT-6 Microwave and mm-Wave Integrated Circuits  
*Organizers:* Fazal Ali, Westinghouse-ATL  
Mike Golio, Motorola  
Doug Maki, Raytheon  
*Speakers:* Rob Gilmore, Qualcomm  
Robert Denaro, Trimble Navigation  
Bruce Thompson, Motorola  
Greg Hopkins, Thomas-CSF, France  
Sanjiv Shah, Continental Microwave, UK  
H. Dambkes, Daimler Benz, Germany  
TBD, Japan

### Abstract:

Past panels have dealt thoroughly with circuitry under development for commercial applications. In each case, circuit performance plots have been accompanied by corresponding projections of the required volume in production. The microwave community has seen more glowingly optimistic viewgraph projections than they care to remember. Phrases such as “GaAs MMICs for high volume application” and “MMICs in thousands for system insertion” are quickly becoming hackneyed expressions as the microwave community comes to terms with reality.

In this panel discussion, representatives from the user community of MMICs for commercial applications are brought together. This group tends to be largely unimpressed by the novelty of the circuitry and the complexity of the technology. Cost is by far the biggest driver in the choice of which technology to use. Secondary drivers include electrical performance, ease of use of the finished product and reliability. Each of these issues is more important to the commercial system designer than the actual contents (ie Si ICs, GaAs ICs or CMOS chips) of the package. Panel members will discuss these issues, provide a clear picture of what the current commercial benchmark technologies are and describe what MMIC technology must achieve before widespread use is realized.

Commercial products to be discussed include cellular, wireless PCNs, local area networks, global positioning satellites (GPS), direct broadcast satellites (DBS), very small aperture terminals (VSAT) and automotive sensors.

# Panel Sessions

## PSWA: Multifunction MMIC Design: Issues and Tradeoffs

*Date:* June 16, 1993  
*Time:* 12:00 PM–1:30 PM  
*Location:* Rooms 304/305, GWCC  
*Sponsor:* MTT-6 Microwave and mm-Wave Integrated Circuits  
*Organizers* Fazal Ali, Westinghouse-ATL  
Yalcin Ayasli, Hittite Microwave  
Raymond Pengelly, Compact Software  
*Moderator:* Fazal Ali, Westinghouse-ATL  
*Speakers:* Christian Kermarrec, M/A-COM  
Don Estreich, Hewlett-Packard  
Phil Wallace, Anadigics  
Peter Katzin, Hittite Microwave  
Ray Pengelly, Compact Software  
Jim Degenford, Westinghouse-ATL  
Masayoshi Aikawa, NTT

### **Abstract:**

Recent advances in GaAs MMIC technology developments have resulted in a shift from the design of single function GaAs ICs to more complex multifunction MMICs offering higher levels of integration. From GaAs IC design perspective, tradeoffs between bandwidth, performance, frequency, noise figure, output power, gain/insertion loss and port isolation of several functional blocks are critical. Insertion of these MMICs in practical systems presents major design challenges in overall system architecture definition, component selection and MMIC packaging. This panel session will discuss the design, process and test tradeoff issues, and limitations relevant to the implementation of multiple functions in a single chip for commercial and military applications.