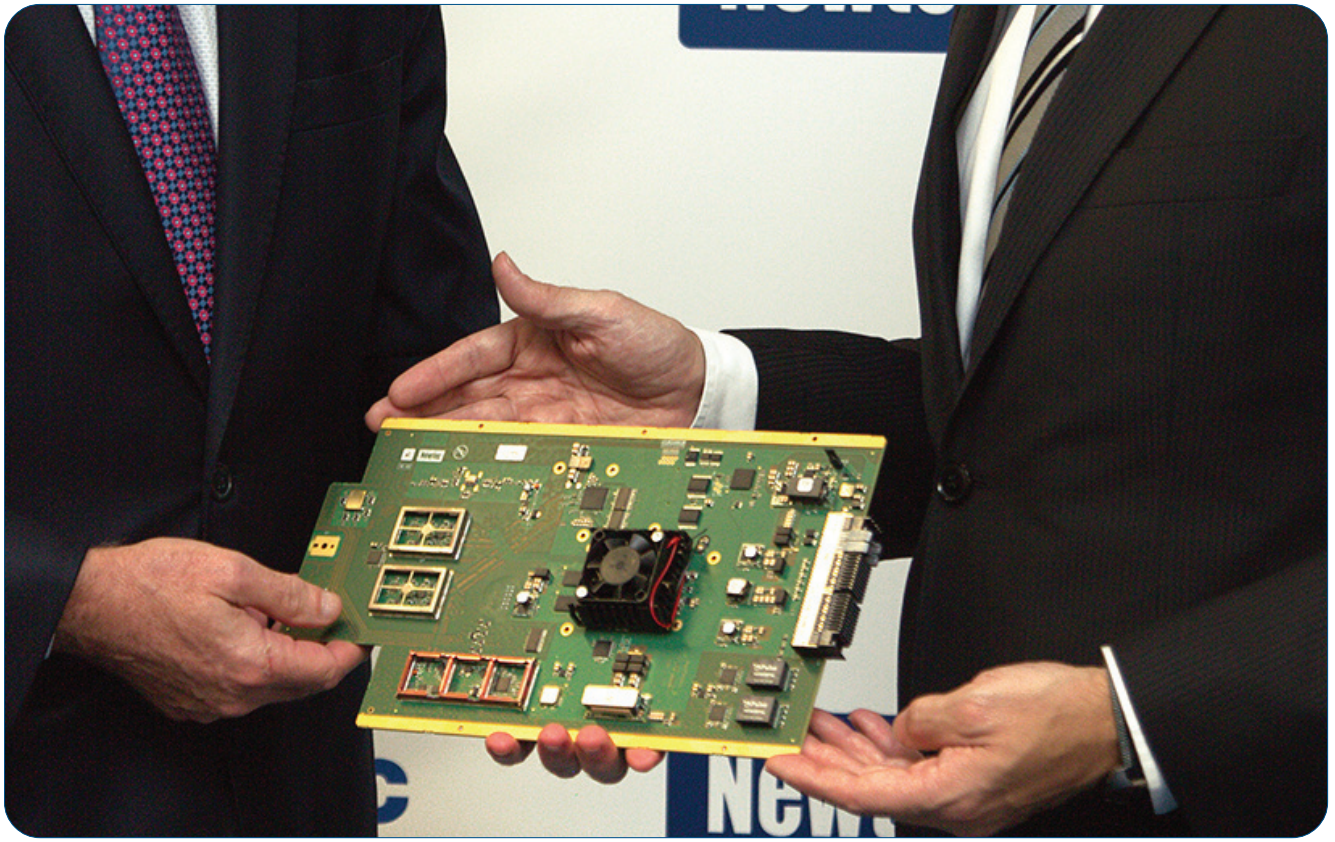


Panasonic selects Newtec as technology partner

Modems for the future

It seems like almost once a week I read about the latest development in the satellite modem field, and it's hardly surprising. With the recent surge in technological advancements such as high throughput satellites (HTS) and the ever-increasing bandwidth they provide, as well as the new services that are becoming increasingly in-reach for an expanding number of companies and organisations, modem technology has got to keep pace. The major players in the modem sector know that they've got to stay at the head of the pack to save themselves from becoming irrelevant in today's hyper-competitive environment.

Advantech Wireless is one of the world-leaders when it comes to satellite technology, consistently pushing above and beyond with the latest innovations in terminals, amplifiers, antennas, block up convertors and hubs, not forgetting its sizeable range of modems.

April 2016 saw Advantech Wireless launch a new family of AMT-50/50X SCPC modems, complete with bi-directional throughputs of 10Kbps to 850Mbps, in addition to carrier echo cancellation technology. The modems provide improvements of spectral efficiency of up to 60 percent with the latest DVB-S2X modulation and coding from BPSK up to 256APSK. The new AMT-50 supports bandwidths as high as 36Mbps as suitable for a 36MHz transponder, and includes the DVB-S2X time slice number concept. Meanwhile, the AMT-50X can reach 80Mbps for a 72MHz transponder, or up to an 80MHz DVB-S2X time slice. Both models support multiple waveforms like DVB-S/S2/S2X, carrier echo cancellation and other features such as ASI inputs/outputs to support video, L2/L3 switch/router with a built-in QoS/PEP and CID as mandated by the FCC.

Meanwhile, in June 2016, Advantech Wireless released the military-grade AMT-83L modem, a follow-on from its AMT-73L line, which was the first to be certified by DISA with MIL-STD-188-165A. These modems were designed to fulfil two-way satellite gateway communication requirements in Defence Satellite Communications Systems (DSCS). The AMT-83L modem includes several additional features compared to the AMT-73L, including DVB-S2 with LDPC coding and adaptive coding and modulation (ACM), IP data interface, GSE encapsulation, direct sequence spread spectrum (DSSS) and AES 128/256 encryption. The AMT-83L has proved popular since its launch, with sizeable orders being reported from NATO country members and other key customers.

Advantech Wireless launched its most recent modem in September 2016. The Ka-8200, an interactive VSAT

Transceiver-Router for A-SAT-II multi-waveform and multi-access SATCOM systems, is an ultra-compact, all-outdoor unit with SDR, direct modulation, and transceiver-router capabilities. Potential applications include M2M, IoT, and SCADA/telemetry low data rate random access applications over Ka-band HTS. The Ku-8200, the Ku-band version, was also launched for the VoD, interactive TV, programme rating and other broadcast-related applications.

"Our new Ka-8200 and Ku-8200 ultra-compact all-outdoor VSAT transceiver-router represents a breakthrough enabling M2M, SCADA and IoT over satellite for areas where other short-haul wireless communication means are unavailable. Recent market reports forecast that the IoT will overtake mobile phones by 2018, reaching 16 billion connected devices by the end of 2021, and we expect a large growth in satellite connectivity for such applications, complimenting 4G/LTE and 5G with IoT, M2M and SCADA deployments," said Oscar Glottman, CMO Satellite Business Unit at Advantech Wireless.

Enhancing the functionality of SKYWAN 5G with virtual channel group upgrades

ND Satcom is another key player in the satellite modem and router industry. Its latest addition, SKYWAN 5G, is an all-in-one compact unit incorporating a DVB-S2 receiver with an MD-TDMA modem. SKYWAN 5G was designed for star, multi-star, hybrid or full mesh topologies, supports switching to another topology over time, and provides cost savings with dynamic bandwidth allocations.

"We consider mesh networks over HTS a task to pass on the HTS benefits to its customers," said ND SatCom. "The hybrid architecture of SKYWAN 5G with integrated DVB-S2 and MF-TDMA is our base for such adaptations in the near future: the scalable terminal architecture of 5G increasingly addresses HTS multi-spot beam designs by handling much more channels concurrently; with its hubless design and use of secure access protocols and upcoming open link encryption feature, it will fit the security concerns of enterprises and governments and even military users in the near future."

In the area of enterprise and government applications, secure satcom networks adhering to the GVF recommendations or Common Criteria are attracting increasingly more attention. Chief Technology Officers are requesting rooftop-to-rooftop connectivity more and more instead of teleport-based solutions in the fight against cyber-threats, making solutions that support a wide range of topologies a popular choice.

SKYWAN 5G's virtual routing and forwarding function (VRF) was enhanced with the virtual channel group (VCGr) upgrade in June 2016, enabling customers to increase bandwidth efficiency while maintaining service guarantees. Bandwidth management is a challenging issue as the growth in traffic from new services and the rising number of applications and users with higher bandwidth and/or lowest jitter requirements like HD/UHD video or 3G/LTE mobile traffic are stretching network capabilities. All data packets on the multi-service network use the same resource pool, and when congestion occurs, any packet can be dropped or delayed.

The VCGr upgrade enhances the capability of SKYWAN 5G to provide easy methods to manage network resources and link characteristics, giving precedence to selected traffic, thus delivering a better service for an end-to-end business solution. Each SKYWAN 5G router can be set up with several VRF instances, each utilizing independent IP address plans, networking stacks, network interfaces, routing protocols and individual QoS forwarding rules. VRFs segment the SKYWAN 5G satellite network into virtual private networks for various user or application groups using the same platform. The new VCGr ensures that a committed bandwidth threshold is never violated by other user groups' traffic, while operator-defined traffic profiles are enforced with the committed threshold. Whether a user group network can access shared bandwidth is easily controlled by configuration. With the VCGr upgrade, service providers can offer their customers virtual SCPC links in one SKYWAN network.

"The benefit for both user and application groups is that individual service guarantees (CIR) given per group are complemented by excess speed from the commonly shared bandwidth resource. Each group in its VRF experiences its own MF-TDMA network, but will benefit from sharing some satellite bandwidth as an extra bonus," said Helmut Jäckle, SKYWAN Product Manager. "Another VCGr advantage is that it further increases the SKYWAN 5G VSAT platform efficiency in bandwidth utilization at reduced OPEX and setup times for the operator."

Newtec expands on strong history to provide industry-leading technology

When it comes to considering the latest developments in modem technology, Newtec cannot be ignored. The company consistently releases first-of-their-kind products for a variety of applications within the communications technology sphere, and modems are at the heart of that.

Newtec launched the world's first satellite modem to support wideband DVB-S2X, the latest standard on the market, in February 2016. The MDM5000 modem receives forwarding carriers of up to 140MHz and processes more than 200Mbps. On the return channel, its supports SCPC, TDMA and Newtec's own Mx-DMA up to 75Mbps. The high

efficiency afforded by Newtec's Mx-DMA provides gains of more than 50 percent, making the modem perfect for mid to high-end applications like oil rigs, cruise ships, super yachts and cellular backhaul. The MDM5000 has forward symbol rates from 1-133Mbaud and coding up to 256APSK, and can handle a variety of IP services including Internet and Intranet access, VoIP, mobile backhaul and trunking, and video contribution and multicasting. It incorporates Layer-3 routing, advanced QoS, TCP acceleration, pre-fetching, compression and encryption, as well as the new Layer-2 protocols like MPLS and BGP. The MDM5000 also comes with dual demodulators for seamless beam switching on the HTS networks.

At the end of the first quarter of 2016, Newtec launched the MDM9000 satellite modem, which was designed for a variety of government and defence applications including intelligence gathering, fixed and mobile milsatcom deployments on WGS and commercial installations. The MDM9000 is typically installed at both ends of a point-to-point satellite link, or at the remote sites of a star network, integrating seamlessly with terrestrial networks. It provides high data rate, beyond line-of-sight (BLOS) airborne communications between the airborne platform and the DND ground network. Compliant with DO-160 and MIL-STD 810E standards, the MDM9000 is equipped with DVB-S2X and S2 waveforms and Newtec's end-to-end FlexACM technology to provide fast link acquisition and top performance.

Most recently, November 2016 saw Newtec and Panasonic Avionics team up to unveil a new, high bandwidth satellite modem, which 'offers Panasonic customers 20 times the bandwidth of Panasonic's current solution.' Different versions of the new AMC5001 modem will be available throughout Panasonic's mobility markets, including maritime, cruise ships, mega yachts, air transport and business aviation, among others. The AMC5001 can exceed 400Mbps, and will scale to meet the changing needs of airlines and passengers in the wake of the increasing bandwidth made available with the new HTS and extreme throughput satellites (XTS) planned or coming online, which will be layered over Panasonic's existing network. This is expected to increase network capacity from 2,300MHz to more than 15,000MHz by 2017.

The AMC5001 modem is part of the Newtec Dialog multiservice platform, which supports a range of vertical applications, including aviation and maritime. With its three modulators, seamless beam switching and simultaneous data and video reception will be enabled. The modem features the dynamic bandwidth allocation capabilities of Mx-DMA, which combines the efficiency of SCPC with the dynamic bandwidth allocation capabilities of TDMA to provide as much as 300 percent more data than traditional TDMA systems. In addition, the AMC5001 is optimised for HTS and small VSAT applications by supporting very low signal to noise ratio modulation and coding (VL-SNR MODCODS) and DVB-S2X.

"As we continue to optimise our second-generation global communications network, we are constantly looking for new pieces of critical technology that will enable our customers to take full advantage of HTS and XTS technology," said Paul Margis, Chief Executive Officer of Panasonic Avionics Corporation. "Newtec's broadband modem, which is based on the innovative DVB-S2X standard and customised to our requirements, allows us to access much larger blocks of frequency and better support high bandwidth platforms across all of our vertical markets."

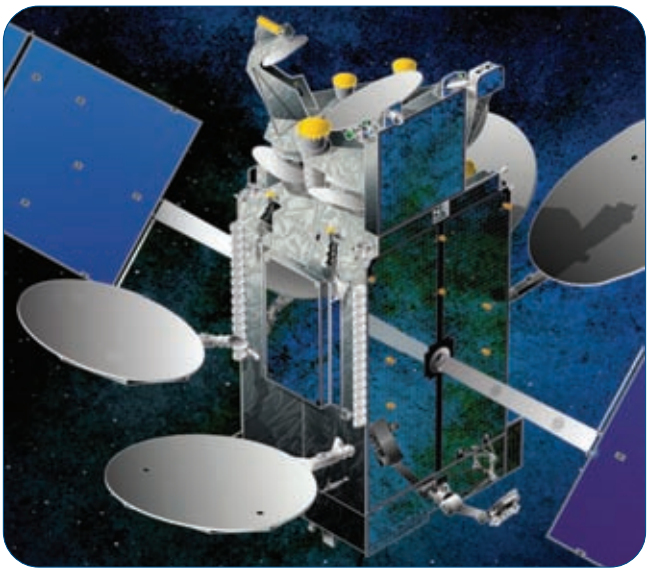
NASA explores integrated photonics modems

Established in 1958, NASA has explored all things space for more than 50 years; spacecraft developments, missions to distant planets and new satellite applications have all played their part in the association's history. Breakthroughs in new materials have held a key role in NASA's ability to push beyond what is possible today on Earth.

NASA was tasked with producing a new type of communications modem from revolutionary technology that might one day transform telecommunications, medical imaging, advanced manufacturing and national defence in January 2016. Indeed, the first-ever integrated photonics modem is expected to be tested on the International Space Station in 2020 as part of NASA's multi-year Laser Communications Relay Demonstration (LCRD). The ground-breaking modem will incorporate optics-based functions like lasers, witches and wires, into a microchip. The LCRD low Earth orbit (LEO) User Modem and Amplifier (ILLUMA) will act as a LEO terminal for NASA's LCRD, demonstrating additional applications for high-speed, laser-based communications. While the ILLUMA is expected to use some optic fibre, it will be the first step towards demonstrating an integrated photonics circuit. The project will flight-qualify the technology for future advancements and applications, including enabling satellite communications with ground station, and satellite-to-satellite communications.

NASA believes that the need for LCRD has become ever more critical with missions requiring higher data rates than ever before. It hopes that lasers will be able to encode and transmit data at rates as much as 10-100 times faster than today, vastly reducing the power and mass of communications equipment. LCRD operations are expected to start in 2019 and will involve a hosted payload and two specially-equipped Earth stations.

"We've pushed this for a long time," said Mike Krainak, team leader of the modem's development at NASA's Goddard Space Flight Centre in Maryland. "The technology will simplify optical system design. It will reduce the size and power consumption of optical devices, and improve reliability, all while enabling new functions from a lower-cost system. It is clear that our strategy to leverage integrated photonic circuitry will lead to a revolution in Earth and planetary-space communications as well as in science instruments." ■



NASA was tasked with producing a new type of communications modem

MEET NEWTEC DIALOG THE PLATFORM THAT EMBRACES CHANGE

FLEXIBILITY • SCALABILITY • EFFICIENCY

NEW RELEASE 2.1
HUB PORTFOLIO FOR
SMALL TO MULTI-SERVICE
HTS & GLOBAL NETWORKS

NEW COMPLETE
DVB-S2X WIDEBAND
MODEM PORTFOLIO

VISIT US AT

SATELLITE 2017
MARCH 6 - 9
BOOTH 2001
WASHINGTON

#NewtecDialog
www.newtec.eu
Follow Newtec Satcom on

Newtec Dialog®