ACTIVE ANTENNA ARRAY SOLUTIONS FOR NEXT-GEN RADAR

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APITech designs and develops Active Electronically Scanned Array Solutions including a modular, scalable Active Antenna Array Unit.

Active Antenna Array Unit (AAAU) Solutions

Active Antenna Array Units

Modular Units Featuring Line-Replaceable Quad T/R Module 'Common Building Blocks' for Scalability and Ease of Integration and Repair

Using a Line Replaceable Unit (LRU) approach, APITech has developed a solution set that streamlines system integration, simplifies repair, and reduces the cost of ownership of AESA, E-Scan, and other next-generation radar platforms.

APITech's Active Antenna Array Unit (AAAU) system is comprised of multiple QTRM (Quad Transmit Receive Module) assemblies, packaged in removable planks that form the AAAU sub-array. The QTRMs are Line Replaceable Units (LRU), which allow for ease of assembly and maintenance.

These APITech-designed and manufactured QTRMs are ready to use out of the box. All that is necessary is the upload of system calibration data, which then propagates through the system, speeding set-up time.

Quad T/R Modules

Common Building Blocks for E-Scan & AESA Radar System Solutions. APITech's Quad Transmit Receive Module, or QTRM, solutions for AESA/E-Scan radar applications offer a unique and innovative solution to system integrators and prime contractors seeking a high performance, high level transmit/receive solution for the development of active antenna array systems and sub-systems

This common module approach, which uses APITech's European designed and manufactured elements and COTS components, delivers ease of system integration, first line repair and reduced cost.

QTRM

Each Quad Transmit Receive Module (QTRM) includes full RF, DC, control functionality (logic interface), calibration and BITE status for each TRM, thermal and current overload protection, as well as receive and transmit functions. Each field-replaceable QTRM common module is factory calibrated. The only set-up needed is a one-time laptop upload of antenna offsets.

Plank

The Plank is the quick-remove host for four QTRMs, creating a 16-channel assembly with integrated antenna. The plank incorporates the RF manifold, DC distribution and logic/control distribution and is inserted into the AAAU as a rack-mounted sub-assembly.

Cooling Solutions

APITech has a range of cooling solutions to support different platform applications that can be implemented at QTRM or at plank level.

AAAU

APITech's steerable AAAU easily bolts on to the SPU for use in air, sea, and ground-based AESA radar, data link, and satcom applications. Both the unit's compact size and scalability allow for use across multiple defense and commercial aerospace programs. The AAAU is comprised of multiple, easy-to-replace planks, which form a sub-array.

Featured Active Antenna Array Installations

Ship
Naval AESA multi-function radar, surveillance, tracking, and comms.

UAV
Tactical Data Links

Military Vehicle
Fire finder radar, weapon location radar, and counter fire acquisition.

Aircraft
Upgrade passive array multi-mode fire-control radar to AESA with AAAU.

Ground Station
Provide surveillance tracking and comms for defense and civilian applications such as air traffic control.

Featured Active Antenna Array Applications

AESA is a flexible technology platform that is capable of simultaneous, multi-target tracking. Military organizations have embraced AESA radar for use on defense aviation, ground and maritime platforms, missile defense programs, as well as in support of critical satcom systems.

Radar
APITech's AAAU concept is suitable for multi-function radar systems for naval, air and land defense applications, delivering surveillance, tracking, guidance, and communications. In the civilian aerospace markets, the AAAU concept is ideal for air traffic control radar.

Data Links
The AAAU is equally applicable to data link solutions for tactical command and control, enabling surveillance, tracking, guidance, and communication.

Satcom
AESA enables tactical communication via satellite. APITech's AAAU can deliver electronic steering/tracking of the satellite, and can be configured as a low profile antenna or as a conformal antenna for fixed wing aircraft.

Applications

- Naval Radar / Marine Radar
- Airborne Radar
- Ground-Based Radar
- Vehicle-Mounted Radar
- Air Traffic Control Radar
- Tactical Data Links including SATCOM on the MOVE
- E-Scan & Satcom Applications
- CNI
- C4ISR
- Electronic Warfare

Benefits & Features of APITech's Active Antenna Array Solutions

Field Upgradeable
The solution elements are fully interchangeable, allowing for ease of integration and fast repair. This is in contrast to current Active Electronic Scanned Array (AESA) solutions, which require the entire platform to be sent back for repairs and upgrades.

Simplified Installation
No calibration is required. Factory-Calibrated transmit/receive modules are included with the solution, so only antenna offsets need to be uploaded. This significantly speeds time to deployment.

Self-Monitoring Options
The solution offers cooling options to support a variety of platform applications. The unit self-monitors temperature and engages automatic shut down if the internal temperature reaches a critical limit.

Product Capabilities

- Active Antenna Array Units
- Phased Array Radar Subsystems
- T/R Module Solutions & QTRMs
- High Power Amplifier Modules & Subsystems
- High Frequency, High Linearity & Low Noise Amplifiers
- Pulsed Power Amplifiers
- Filters, Filtered GPS LNAs & Switched Filter Banks
- Receiver Protectors and Frequency Multipliers
- Delay Lines, Power Dividers, Mixers
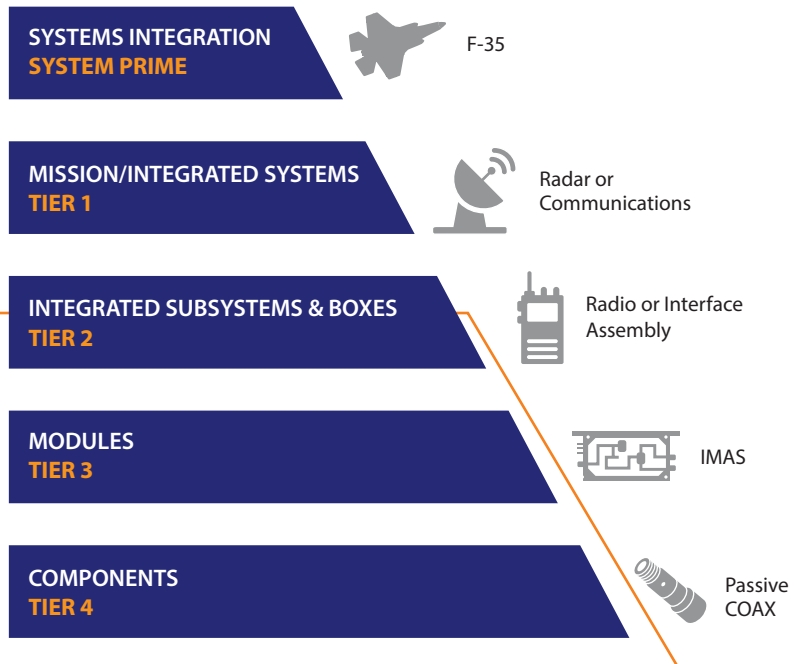- Tactical Power Supplies

Who We Are

Value-added Integration from Components to Subsystem Solutions

APITech provides rugged, reliable, and efficient subsystems, assemblies, and components for use in the most mission critical defense and military applications, supporting government programs throughout the world. With diverse program experience and preferred supplier status with some of the industry's top premier contractors, our precision-engineered MIL-grade products are ideal for applications where uncompromised reliability and uninterrupted performance is required. APITech is the Electromagnetic Spectrum Innovator at Tier 2.5-4 in the supply chain.

SYSTEMS INTEGRATION
SYSTEM PRIME
F-35

MISSION/INTEGRATED SYSTEMS
TIER 1
Radar or Communications

INTEGRATED SUBSYSTEMS & BOXES
TIER 2
Radio or Interface Assembly

MODULES
TIER 3
IMAS

COMPONENTS
TIER 4
Passive COAX

APITech's Solution for Radar

APITech designs and develops Active Electronically Scanned Array Solutions including a modular, scalable Active Antenna Array Unit, as well as a variety of drop-in, ready to integrate, high performance T/R modules including quad and dual TRMs in X, C, and S band configurations. These Active Antenna Array Solutions provide the RF transmit and receive functionality for the front end of transmission systems, and are ideally suited for AESA, E-Scan, naval, airborne, ground-based, vehicle-mounted, air traffic control radar applications, as well as SATCOM on the move, tactical data link applications, and ground, maritime, and other missile defence program requirements.

APITech offers a broad portfolio of high performance phased array solutions, covering S, C, X, and Ku bands. We possess years of design expertise and collaboration with the world's leading primes, and a breadth of systems knowledge to deliver exceptionally reliable products to meet our customers' rigorous requirements.

The Electromagnetic Spectrum Innovator

APITech is an innovative designer and manufacturer of high performance systems, subsystems, assemblies and components for technically demanding RF, microwave, millimeterwave, electromagnetic, power, and security applications. A high reliability technology pioneer with over 70 years of heritage, APITech's products are used by global defense, industrial, and commercial customers in applications spanning radar, electronic warfare, unmanned systems, missile defense, harsh environments, space, communications, medical, test and instrumentation, and more.

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