

# ADVANTECH WIRELESS TECHNOLOGIES OVERVIEW



## About Advantech Wireless Technologies

- ◆ Leading wireless broadband telecommunications solution provider for Commercial, Critical Infrastructure & Government and Military clients. Our smarter solutions give our customers the freedom to reach further, to achieve reliable connectivity anywhere in the world, and accomplish critical missions of global significance.
- ◆ With our customized approach, award-winning R&D and innovative engineering, we empower clients to achieve excellence in communication, while reducing CAPEX and OPEX overall.
- ◆ Our bold and innovative thinking has led us to introduce revolutionary solutions including our award-winning Second Generation GaN Solid State Power Amplifier Line.

## Legacy of Innovation

- ◆ For more than 25 years, our innovative solutions have enhanced the communication capabilities of government agencies, military personnel, emergency response teams and business clients in over 150 countries.
- ◆ Significant innovations include:
  - Second Generation GaN Technology: smaller, lighter, more powerful than conventional technology. Increased power efficiency, reduced power dissipation, more linear response.
  - Frequency Converters, Transceivers
  - Antenna Controllers
  - Integrated Satcom terminals

## Global Reach

- ◆ We have deployed equipment for thousands of ground systems in over 150 countries.
- ◆ We understand your challenges, we speak your language and we're able to provide support when and where you need it most.



## INDUSTRIES WE SERVE

We are continuously innovating and designing new solutions to meet the specialized needs of a wide range of industries. We pride ourselves on our product development, technical innovation, adaptation and flexibility.

We design solutions for:

- Commercial
- Critical Infrastructure & Government
- Military



## Recognitions and Awards



Excellence Awards 2015  
Vertical Impact Award - Military



Vertical Impact in  
Broadcast Award



Les Mercuriades 2016  
Innovation and International Market  
Development  
Large Companies Category

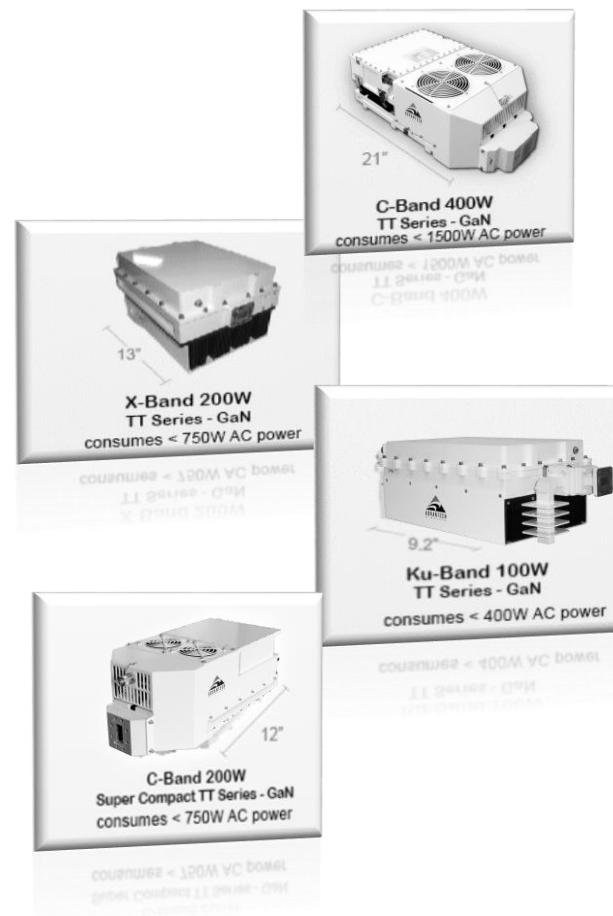
## GaN Technology

- ◆ Advanced Solid State Technology for MW RF
- ◆ Military Grade, highly reliable, designed for all-outdoor, ruggedized, harsh environment
- ◆ Introduced on the market in 2010, after several years of development
- ◆ Instantly adopted by TV Broadcasting, fixed and mobile
- ◆ Very high power, exceeding 6kW
- ◆ Very large bandwidth
- ◆ Huge CAPEX & OPEX savings
- ◆ **Never before achieved performance :**
  - **One single outdoor system can saturate all transponders on a satellite – Equivalent of 50 Klystrons**



## What is GaN?

- ◆ Gallium Nitride High Electron Mobility Transistors (HEMT)
- ◆ Sapphire Substrates
- ◆ A very hard material that has a Wurtzite crystal structure for compound
- ◆ Exceeds by several orders of magnitude the performance of previous generation of SSPAs based on LDMOS or GaAs technology





## GaN Performance

- ◆ Higher PAE (Power Added Efficiency)
  - Up to 48% versus 25% for GaAs
- ◆ Translates into huge energy consumption savings over lifetime
- ◆ High breakdown voltage (around 200V) and high operating temperature (MTBF=1,000,000@350°C)
- ◆ Translates into higher reliability
- ◆ Extended life
- ◆ Low OPEX cost



## GaN Performance

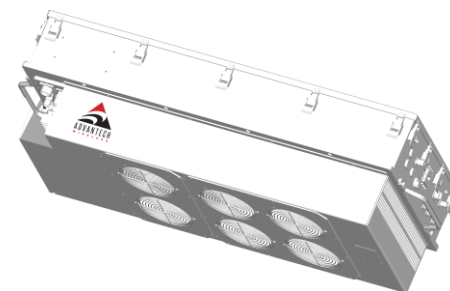
- ◆ Extremely high linearity
  - Translates into highest usable RF power
  - Higher Data rates
  - Higher modulation schemes
  - Perfect for multi-carrier, multi-transponder application like DTH
  - Less energy consumption
  - Smaller, lighter and more powerful than conventional technologies
- ◆ Provide increased power efficiency, reduced power dissipation and a more linear amplitude response.
  - Double the RF power within the same footprint, when needed
  - Ideal for DTH and other applications that require high power amplifiers

**Save up to 30% on bandwidth and  
70% on energy consumption**



## GaN Second Generation SapphireBlu™ Series

- ◆ Second Generation SapphireBlu™ Series  
UltraLinear™ GaN based HPAs are able to offer the maximum use of satellite bandwidth and power.
  - Low energy consumption
  - High efficiency, power and reliability
  - Designed for Multi-Carriers Operations
  - Able to simultaneously cover all transponders of a specific satellite, regular or extended bands
  - Unmatched performance



**1250W Ku-Band GaN Based -  
SapphireBlu™ Series**

## Summit GaN Based Modular Systems

- ◆ Save millions of dollars in energy, bandwidth and CAPEX
- ◆ GaN based modular systems deliver higher linear power, while maximizing bandwidth and power efficiency
- ◆ Completely modular, with field replaceable RF or power supplies, solid-state power amplifier systems



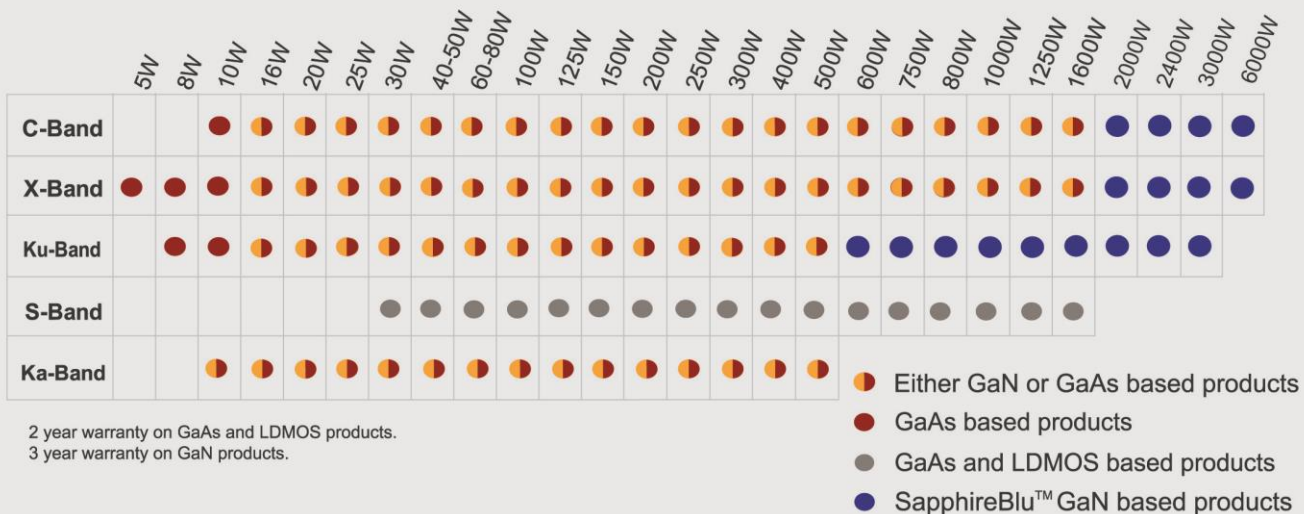
**Modular design with built-in  
redundancy 3kW Ku-Band  
System GaN Based -  
SapphireBlu™ Series**



**6.6W C-Band or X-Band  
Rackmount SSPA  
GaN Based -  
SapphireBlu™ Series**

## Complete Portfolio

### All Your Power Needs – Any Band – Solid State



## DTH Solution

- ◆ Satellite has long been an effective means of distributing television content to homes. Satellite's ubiquitous coverage, broad reach and quick deployment make them ideal for providing Direct-to-Home (DTH) internet and television services.
- ◆ With our advanced solutions, you will experience:
  - Lower roll-out CAPEX
  - Lower power requirements
  - Smaller antennas
  - Lower OPEX





## Frequency Converters

- ◆ A complete line of frequency converters
- ◆ Covers L, S, C, X, Ku, and Ka-Bands
- ◆ 70MHz or 140MHz, 125KHz step size
- ◆ The line is extended to cover Satellite Loop Translators, with a unique product: Tx to L-band direct conversion.
- ◆ Key Features
  - Single, dual, quad, or 1:1 redundant in the same 1RU Chassis.
  - Multiple frequency bands, in the same 1RU chassis.
  - Hot swapping, plug in, built in redundancy. No traffic interruption in order to replace a failed converter .



## Transceivers

- ◆ Ultimate in performance and user friendly operation at a very competitive price.
- ◆ The family of hub-mount transceivers are designed for continuous operation in the harshest outdoor environment.
- ◆ The transceivers may be configured to operate in 1:1 redundancy mode with no extra controller required for redundancy operation.



## Mobile and Fly Away Antennas



**1.2m Motorized  
FlyAway  
Antenna**



**1.5m Vehicle  
Mount VSAT  
Antenna**



**1.5m Vehicle  
Mount SNG  
Antenna**



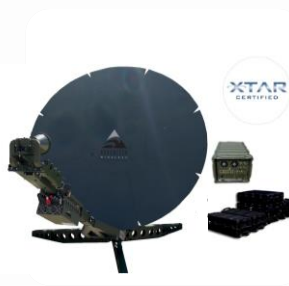
**1.8m Vehicle  
Mount SNG  
Antenna**



**Enterprise  
Antenna**



**Polaris Class  
Antenna**



**2.4m Flyaway  
Antenna System**

## IPOINT



The IPOINT auto-acquisition system is at the heart of every antenna

- Developed from 25 years of antenna control experience
- Sophisticated algorithms accurately locate and identify satellites
- Simple one button operation
- Requires no satellite communication expertise
- On satellite in <3 mins



## INTRAC Antenna Controller Unit

- ◆ INTRAC™ orbit modelling algorithm offers higher tracking Integrity
- ◆ Accurately tracks satellites with orbital inclinations up to and beyond 10°
- ◆ Compatible with INTELSAT and EUTELSAT SCPC tracking specifications
- ◆ Tolerates signal fluctuations that defeat step track and memory track controllers



High performance, flexibility and high reliability  
for antennas up to 35 meters in diameter

## Microwave Innovations

### General

- Telco and Broadcast market models
- Frequency Bands from 6 GHz to 38 GHz
- Native video, native IP and native TDM traffic

### IP

- 7xGigE, built-in Gigabit L3 Router & L2 switch
- Adaptive Coding and Modulation ACM
- Flat throughput and sub-milliseconds latency

### Video

- 8xASI + IP, full duplex
- High quality HD broadcast and contribution video
- 10 MHz clock, 1pps and GPS

### TDM

- SDH/SONET/PDH radio
- 2xSTM-1/OC-3 +16 E1/T1 per RF channel
- 3 x DS-3/E#, up to 84 E1



Transcend™ 1000



Transcend™ 800



Transcend™ 900



Indoor microwave RF unit



Common outdoor unit (ODU)  
for microwave radios



## CRITICAL INFRASTRUCTURE & GOVERNMENT SOLUTIONS

Public safety requires effective information sharing. Advantech Wireless Technologies enable government leaders and emergency crews to respond more rapidly and accurately. From assisting police departments and emergency response personnel to enabling government agencies to better serve and engage their citizens, Advantech's solutions provide rugged, reliable connectivity that you can count on when it matters most.

Our public sector reach includes:

- Transportation
- Power & Energy
- Emergency Services
- Banking & Finance
- Federal & Municipal Services
- Law Enforcement Agencies
- Public Safety & Works
- Agriculture & Food

## Military Solutions



- ◆ On the battlefield, reliable and secure communication is essential for mission success. Advantech Wireless Technologies designs proven, battle-ready solutions that make the modern warfighter even stronger.
- ◆ **High to Low Power, Transceivers, BUCs, SSPAs**
- ◆ **Multi-band, C, X, Ku, Ka-Bands**
- ◆ **Point-to-Point Radio, high-speed, high-throughput**
- ◆ **Integrated Satcom Terminals**

## Government & Military Products



**Integrated Satcom  
Terminals**



**Solid State  
Pulse Amplifiers**  
For modern GaN based  
Radars



**GaN based  
High Power  
Satcom Amplifiers**



**Frequency  
Converters**



## Engage Class Satcom Terminal

- ◆ High Performance 1.2m and 2.4m Flyaway SATCOM Terminal Solution
- ◆ Ruggedized tri-band ready antenna which can cover X-Band, Ku-Band or Ka-Band by replacing the feed only.
- ◆ Fully integrated system for easy deployment and use
- ◆ Advanced Multi Access Technology capability modem with triple access mode
- ◆ Fully integrated with UPS, GPS, Anti-Jamming GPS, Satellite Finding Controller, NMS, Handheld Spectrum Analyser and Location finding toolset





# CONNECTION

**USA**  
[info.usa@advantechwireless.com](mailto:info.usa@advantechwireless.com)

**Canada**  
[Info.canada@advantechwireless.com](mailto:Info.canada@advantechwireless.com)

**Latin America**  
[info.latam@advantechwireless.com](mailto:info.latam@advantechwireless.com)

**Brazil**  
[info.brazil@advantechwireless.com](mailto:info.brazil@advantechwireless.com)

**Europe - United Kingdom**  
[info.uk@advantechwireless.com](mailto:info.uk@advantechwireless.com)

**Russia & CIS**  
[info.russia@advantechwireless.com](mailto:info.russia@advantechwireless.com)

**Asia**  
[info.asia@advantechwireless.com](mailto:info.asia@advantechwireless.com)

**India**  
[info.india@advantechwireless.com](mailto:info.india@advantechwireless.com)