



AmpliTech Group

Company Overview
Presentation

September 2023

NASDAQ: AMPG

Safe Harbor Statement



This presentation contains statements that constitute forward-looking statements. These statements include all statements that are not statements of historical fact regarding the intent, belief or current expectations of the Company, its directors or its officers with respect to, among other things: (i) the Company's ability to execute its business plan as anticipated; (ii) trends affecting the Company's financial condition or results of operations; (iii) the Company's growth strategy and operating strategy. The words "may" "would" "will" "expect" "estimate" "anticipate" "believe" "intend" and similar expressions and variations thereof are intended to identify forward-looking statements. Investors are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, many of which are beyond the Company's ability to control, and that actual results may differ materially from those projected in the forward-looking statements because of various factors. Other risks are identified and described in more detail in the "Risk Factors" section of the Company's filings with the SEC, which are available on our website. We undertake no obligation to update, and we do not have a policy of updating or revising these forward-looking statements, except as required by applicable law.

Overview

AmpliTech Group, Inc. designs, develops, manufactures, and distributes state-of-the-art radio frequency (RF) microwave components for global satellite communications, telecom (5G & IoT), space, defense, and quantum computing markets and offers systems and component design consulting services as well.

AmpliTech has a 22+ year track record of developing high performance, custom solutions to meet the unique needs of some of the largest companies in the global industries we serve.

AmpliTech is on the cusp of broadening its product offerings and introducing its new leading edge true 5G products.



COMPANY LEADERSHIP



Fawad Maqbool

Founder, Chairman, CEO&CTO

Over 36 years experience in the RF microwave industry, MSEE degree in Microwave Engineering, BSEE degree in Biomedical Engineering.



Louisa Sanfratello, CPA

CFO and Director

Over 30 years of experience as CPA and Controller for private and public companies.

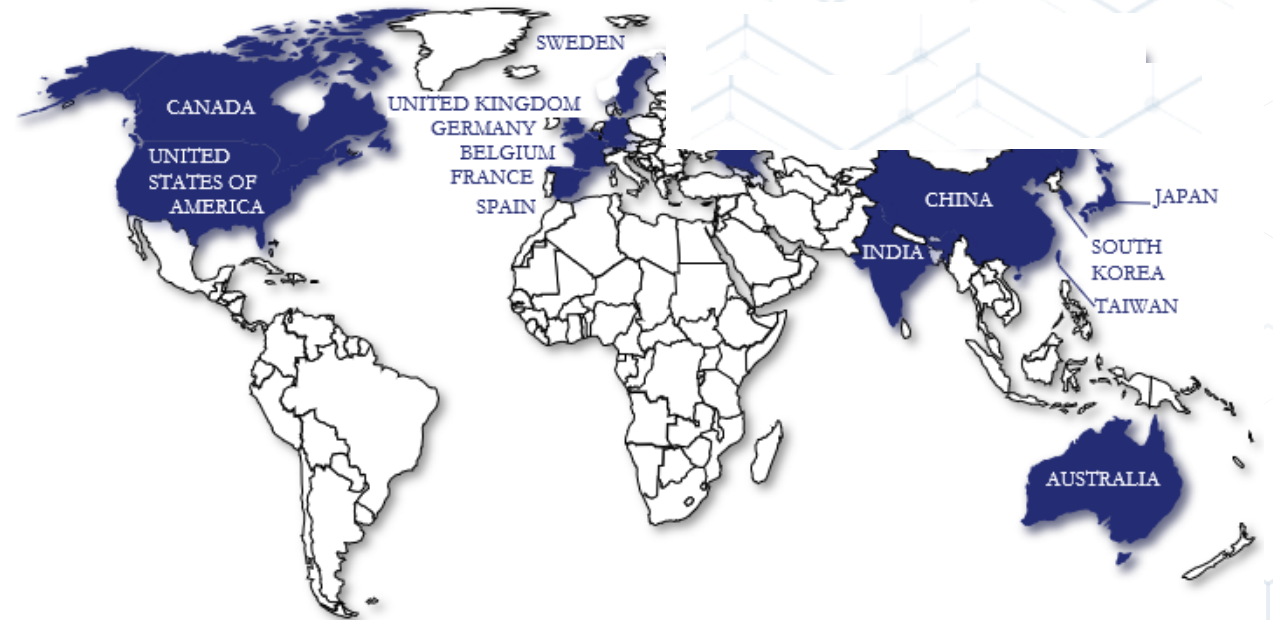


Jorge Flores, MBA

COO

Over 35 years of experience in Operations Management and Program Management.

AmpliTech's Worldwide Customer Coverage



Independent Board of Directors



Fawad Maqbool
Founder, Chairman and CEO



Dan Mazziota is a former Board Member of M/A-COM and interlocking Board of Linkabit, where he shared board duties with founders Dr Irwin Jacobs and Dr. Andrew Viterbi. Mr. Mazziota is currently the Chairman of the Compensation Committee on Amplitech's Board of Directors.



Matthew Kappers has served as a director of the Company since January 2021. Mr. Kappers serves as the chairman of the Nominating and Corporate Governance Committee. In addition to his M&A background, Mr. Kappers has been the COO and CFO of several small - medium-sized privately held companies. Mr. Kappers earned a B.A. degree from Vanderbilt University and a MBA degree from Miami University.



Louisa Sanfratello, CPA
CFO and Director



Andrew Lee has served as a director of the Company since January 2021. Mr. Lee serves as the chairman of the Audit Committee. Mr. Lee is a licensed CPA. He earned an MBA degree from Washington State University and a Bachelor of Business Administration, with concentrations in Finance and Accounting, from Walla Walla University.

Experienced Board of Advisors



Rob Giunta serves on the Board of Advisors and offers a diverse technical and investment banking background. His experience and perspective in science, engineering, IT management and finance is a great asset to AmpliTech. Rob holds a BS in physics from Drexel University, an MSEE from Stanford University, and the CFA charter (retired).



Ruth Sklar is founder and president of RSA Executive Search, a 30 +year boutique search firm specializing in consulting and key executive placement services for public and private entrepreneurial organizations. A graduate of Pratt Institute, former educator and Advertising/Marketing Executive, Ruth has served as a member of YPO, and Board Advisor to Vistage, an international CEO and President leadership organization. Currently she serves as an Advisor to the Board of Amplitech Group.



Nasdaq: AMPG



Amplitech Inc, designs, develops, and manufactures state-of-the-art radio frequency (RF) microwave components for global satellite communications, telecom (5G & IoT), space, defense, and quantum computing markets.



AmpliTech's Group MMIC Design Center, designs, develops and manufactures state-of-the-art signal-processing components for satellite and 5G communications networks, defense, space, and other commercial applications, allowing the Company to market its products to a wider base of customers requiring high technology in smaller packages.



Specialty Microwave designs and manufactures state-of-the-art precision SATCOM microwave components, RF subsystems, and specialized electronic assemblies for the military and commercial markets, flexible and rugged waveguides, waveguide adapters and more.



Spectrum Semiconductor Materials, founded in 1990 and headquartered in San Jose, CA Largest authorized distributor of IC Ceramic Packages and Lids. It offers multi sourced plastic "open cavity" package options and has on site product inventory ready for immediate shipment.

All packages comply with RoHS and REACH Directives. Certified to ISO 9001:2015 / AS9120B



AmpliTech Group's True G Speed Services (AGTSS) division was founded to serve and provide complete system integration and ORAN compliant O-RU's for telcos, enabling the industry to access 'True G Speeds'. AGTGSS provides Managed Services, Cyber Security, Cloud Services, Data Sciences and Telco Cloud Services.

MANUFACTURING LOCATIONS



**Spectrum Semiconductor
Materials**
San Jose, Silicon Valley, CA



**AmpliTech Group, HQ
AmpliTech Inc.**
Specialty Microwave
AG True G Speed Services
Hauppauge, NY

**AGMDC MMIC
Design Center**
Plano, TX

ON THE CUSP OF A NEW CHAPTER



- 5G is breaking into mainstream, infrastructure needs are rapidly multiplying.
 - Low Noise in the signal is essential for signal amplification!
- Future growth being driven by new products and services:
 - Company has industry-leading high performance low noise amplifier (LNA) technology.
 - This proprietary technology is currently being transferred into new MMIC chip designs that includes industry-leading low noise performance.
 - Acquisition of Spectrum increases global distribution and specialized packaging for semiconductor chips.
 - Recent agreement to distribute NGK Electronics leading RF Microwave Package products
 - Launch of AGTGSS, with its flagship product, 5G ORAN radios (with AmpliTech LNA MMIC Chip inside), enables the Company to enter P5G Networks market and Communications-as-a-Service (CaaS) industry.
- Highly committed and invested management team with 33% insider holdings.

COMPETITIVE EDGE: IT'S ALL IN THE NOISE!

Cholesterol



Artery Narrowed

LDL Cholesterol
(Bad)

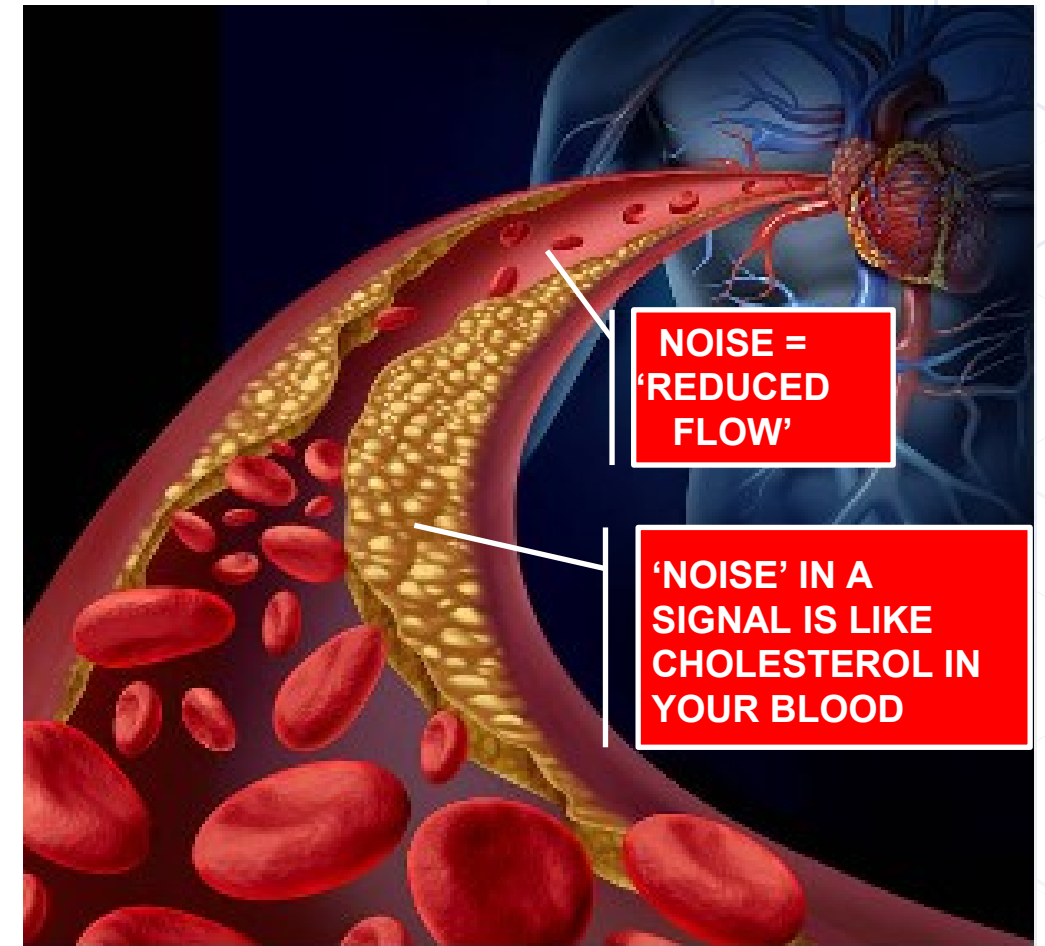
HDL Cholesterol
(Good)



Normal Artery

COMPETITORS LNA'S

AMPLITECH LNA'S



NOISE =
'REDUCED
FLOW'

'NOISE' IN A
SIGNAL IS LIKE
CHOLESTEROL IN
YOUR BLOOD

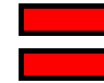
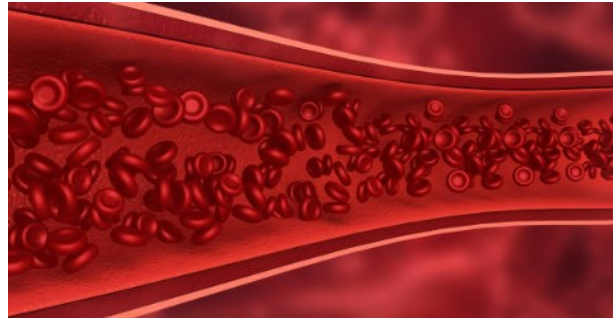
Noise in a signal can be compared to what Cholesterol does to Arteries/Heart ("flow of speed/5G")

AMPLITECH PROPRIETARY LOW NOISE TECHNOLOGY



CLOGGED!/NOISY

“OTHER LNA’S”



INCREASED AVAILABILITY

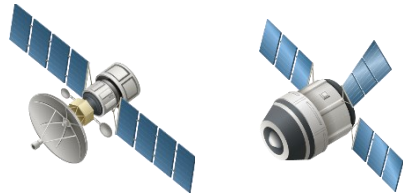
USING AMPLITECH LNA’S
“UNCLOGGED & HEALTHY” / LOW NOISE
INCREASING SIGNAL FLOW



AMPLITECH'S FUTURE: SUPPLIER OF LEADING-EDGE COMMUNICATIONS SYSTEMS



Accelerating Supply of Low-Cost Bandwidth



Targeting LEO & MEO Satellite Operators

New MMIC Custom Capabilities

Emerging LEO & MEO Satellite Systems

“One-Stop-Shop” Approach – Providing LNA’s, LNB’s, MMICS, and Radio Networks will allow AmpliTech to Maximize Market Growth Opportunities



Complete Solutions Portfolio

Deep, Global Market Access

R&D and Distribution Scale

Expect Rapidly Growing Demand for True 5 G Speed Services



Satellite Cellular for 3G/4G/5G

Satellite Launchers, System Integrators

Mobility / In-Flight (IFC)

Market Dynamics Driving Demand for Amplitech’s 5G Technology Capabilities

AMPLITECH'S CURRENT AND FUTURE VISION



Existing Product

Satellite links

Multiple satellite links feed small cell and ground station networks for cloud data access currently using our connectorized LNA Products



Thousands of LEO/MEO satellite constellations being launched

Near-term Products

Access Point/Wi-Fi Base Stations

U.S currently has 220,000 cell towers, 1 million will be needed to fully implement 5G^{2,3}



Hundreds of MIMO antennas

Small cells

Over 6 million small/micro cells expected to be deployed or upgraded in 2020, growing to 10+ million in 2025¹



Small/Micro-cells allow extensive network coverage

Future potential

Mobile devices

Over 7.3 billion mobile phones expected to be in use by 2023⁴, 75 billion connected devices expected by 2025⁵



Smartphones, laptops, tablets, PDAs, wearables

1. Qorvo: <https://www.qorvo.com/design-hub/blog/tips-and-trends-small-cell-5g-systems>
2. <https://www.globenewswire.com/news-release/2019/12/05/1956598/0/en/Digital-Locations-to-Focus-on-Smaller-Towers-for-the-5G-Market.html>
3. <https://www.forbes.com/sites/stephenmcbride1/2019/03/20/this-stock-is-americas-5g-landlord-and-it-pays-a-3-8-dividend/#216ff4376644>
4. <https://www.statista.com/statistics/218984/number-of-global-mobile-users-since-2010/>
5. <https://securitytoday.com/Articles/2020/01/13/The-IoT-Rundown-for-2020.aspx?Page=2>

RAPIDLY EXPANDING TARGET MARKETS

Wireless Power Transmission, Satcom, Space Products¹

Projected to reach US\$35.2 billion by 2030, a 10-year CAGR of 21%

North America accounts for \$2.0 billion in 2020, estimated to reach \$11.8 billion by 2030, a CAGR of 21%.



Standard & Custom LNA's,
MMICS and Cryogenic
Networks

5G, Internet of Things²

The 5G services market size is projected to surpass ~\$1.87 trillion by 2030, an 8-year CAGR of 45%.



Standard & Custom
LNA's Custom MMIC's

Defense and IT Security³

Market valued at \$185 billion in 2021 and is expected to grow at a 12% CAGR from 2023 to 2030.



AmpliTrust Security

Quantum Computing/ Blockchain^{4,5}

Market projected to reach \$5.9 billion by 2025, expected to reach \$39 billion by 2025⁵.



Cryogenic LNA's

1. <https://www.alliedmarketresearch.com/wireless-power-transmission-market>

2. <https://www.globenewswire.com/en/news-release/2023/06/02/2455380/0/en/5G-Services-Market-Size-to-Surpass-US-1-87-Trillion-by-2030.html#:~:text=Ottawa%2C%20June%202022%2C%202023%20,increase%20in%20mobile%20data%20traffic>

3. <https://www.grandviewresearch.com/industry-analysis/cyber-security-market>

4. <https://www.prnewswire.com/news-releases/enterprise-quantum-computing-market-to-reach-5-853-mn-globally-by-2025-at-31-7-cagr-says-amr-300789692.html>

5. <https://www.statista.com/statistics/647231/worldwide-blockchain-technology-market-size/>

THE PROBLEM

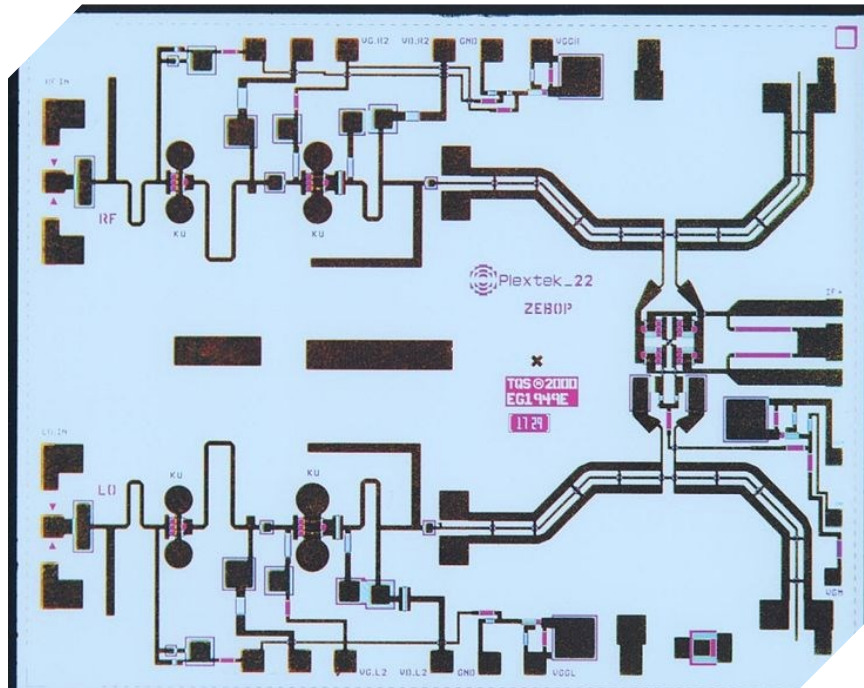


Increasing Demand for Higher Speed, Secure Networks

Growing Number of Cyber Attacks

- Crowded wireless frequency spectrum and older tower infrastructure
- Signal distortion (PIM), speed limitations and limited range in wireless base stations, cell towers, Wi-Fi hot spots, and many wireless communication systems
- Different architectures for different networks (CDMA, LTE, GSM, UMTS) make it difficult to expand universal coverage for 4G and 5G systems
- Billions of data records compromised
- Crypto-currency exchanges, social media, corporate and government servers HACKED and ransomware is prevalent
- Software-only protection hasn't worked for the past 35 years

AMPLITECH'S SOLUTIONS

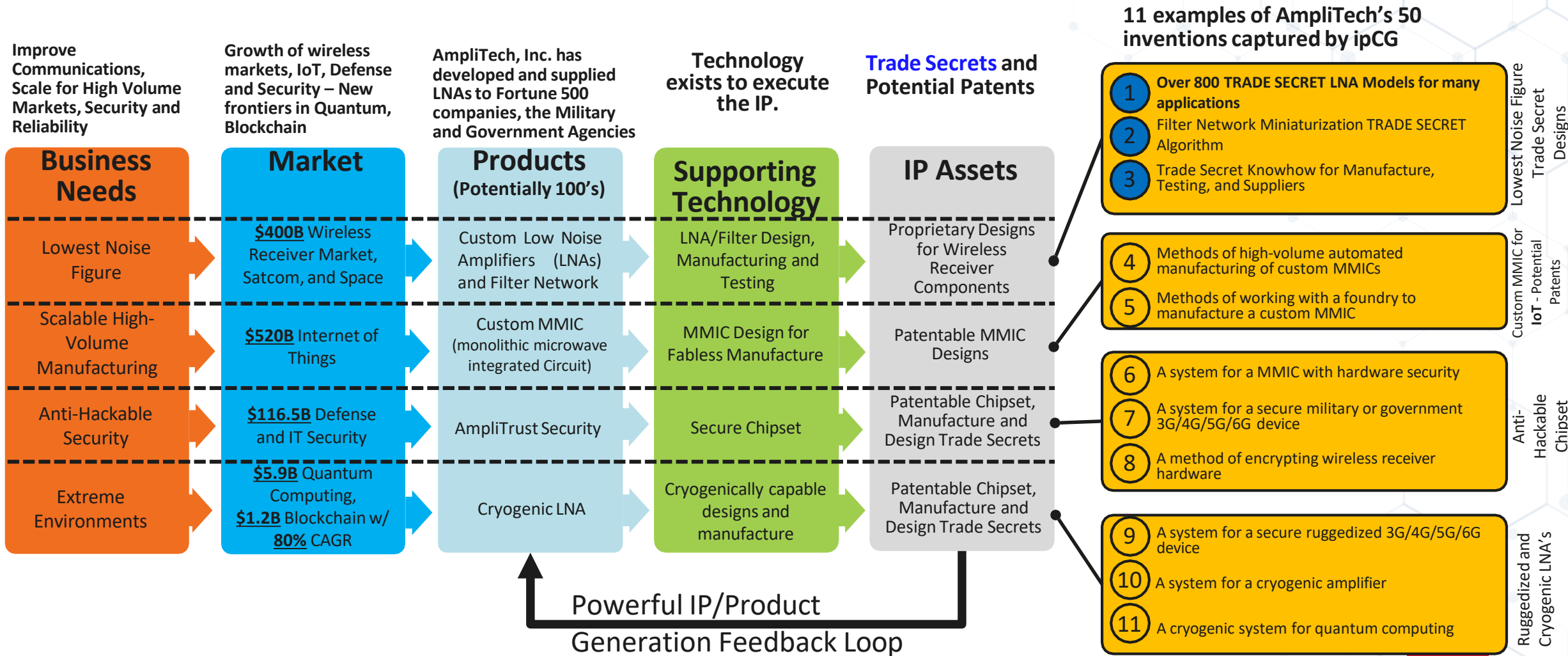


MMICs + CRYOGENIC COOLING + MIXED-SIGNAL CHIPSET + ANTI-HACKABLE LEVEL 6 NSA PROTOCOL CYBER PROTECTION AND SECURITY



- *MIXED SIGNAL* MMIC (Monolithic Microwave Integrated Circuit) Chipset. Transferring our connectorized LNA solutions via AmpliTech Inc, into MMICs via AGMDC.
- Above solutions offered in customer selected semiconductor packages via Spectrum Semiconductors.
- Latest Low Noise Amplifier (LNA) Technology to receive and amplify weak signals
- Cryogenically cooled assembly for enhanced coverage and reduced distortion for base stations and towers
- Cryogenic Amplifier assemblies are located at the antenna on the tower for retrofit, regardless of types of architecture (CDMA, GSM, etc.)
- 5G ORAN Radio networks which include AmpliTech's Low Noise MMIC Chips!
- Retrofittable solution for ALL types of communication systems
- Digital hardware quad-core processor and software to detect and eliminate cyber threats via SN2N solution.
- *UNIQUE ONE-CHIP Solution provides ANTI-HACKABLE interface in any cellphone, computer, server, router, PDA, etc.*

AmpliTech's Solutions IP STORY



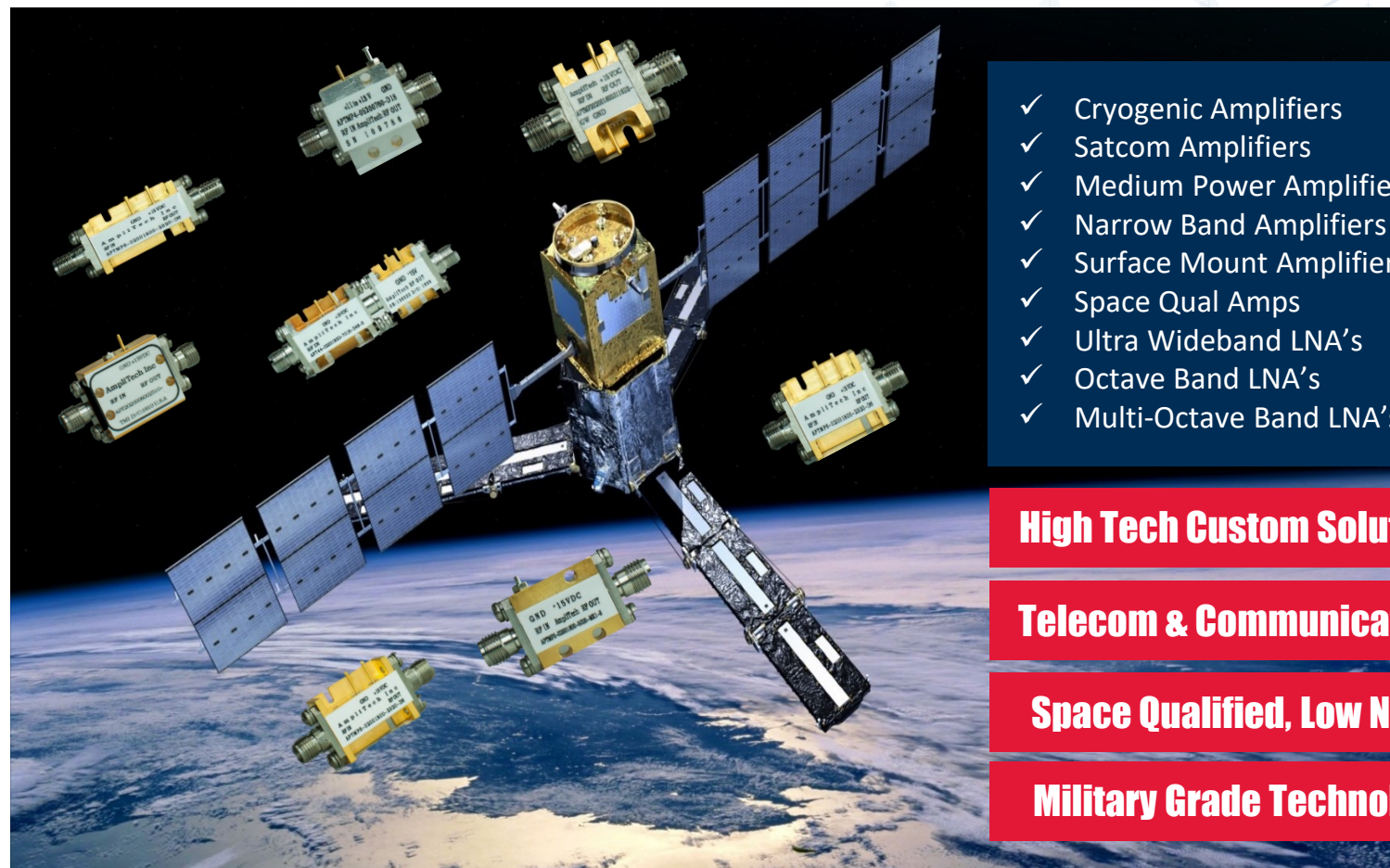
AMPLITECH INC DIVISION



AmpliTech Group, Inc. designs, develops, and manufactures state-of-the-art radio frequency (RF) microwave components for:

- Global Satellite Communications
- Telecom (5G & IoT)
- Space
- Defense
- Quantum Computing

LNA's are in 99% of all communication systems



- ✓ Cryogenic Amplifiers
- ✓ Satcom Amplifiers
- ✓ Medium Power Amplifiers
- ✓ Narrow Band Amplifiers
- ✓ Surface Mount Amplifiers
- ✓ Space Qual Amps
- ✓ Ultra Wideband LNA's
- ✓ Octave Band LNA's
- ✓ Multi-Octave Band LNA's

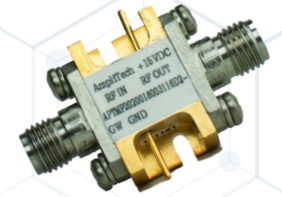
High Tech Custom Solutions

Telecom & Communications

Space Qualified, Low Noise

Military Grade Technology

AMPLITECH INC DIVISION



COAXIAL LNA'S ARE
ABOUT 1.5" BY .75"



MMIC'S LNA'S ARE
FROM AROUND 1 mm²
to 10 mm²!

AmpliTech Inc Division is at the forefront of cryogenic technology used on Quantum Computing
Proprietary Low Noise Figure Technology working at sub-zero temperatures!

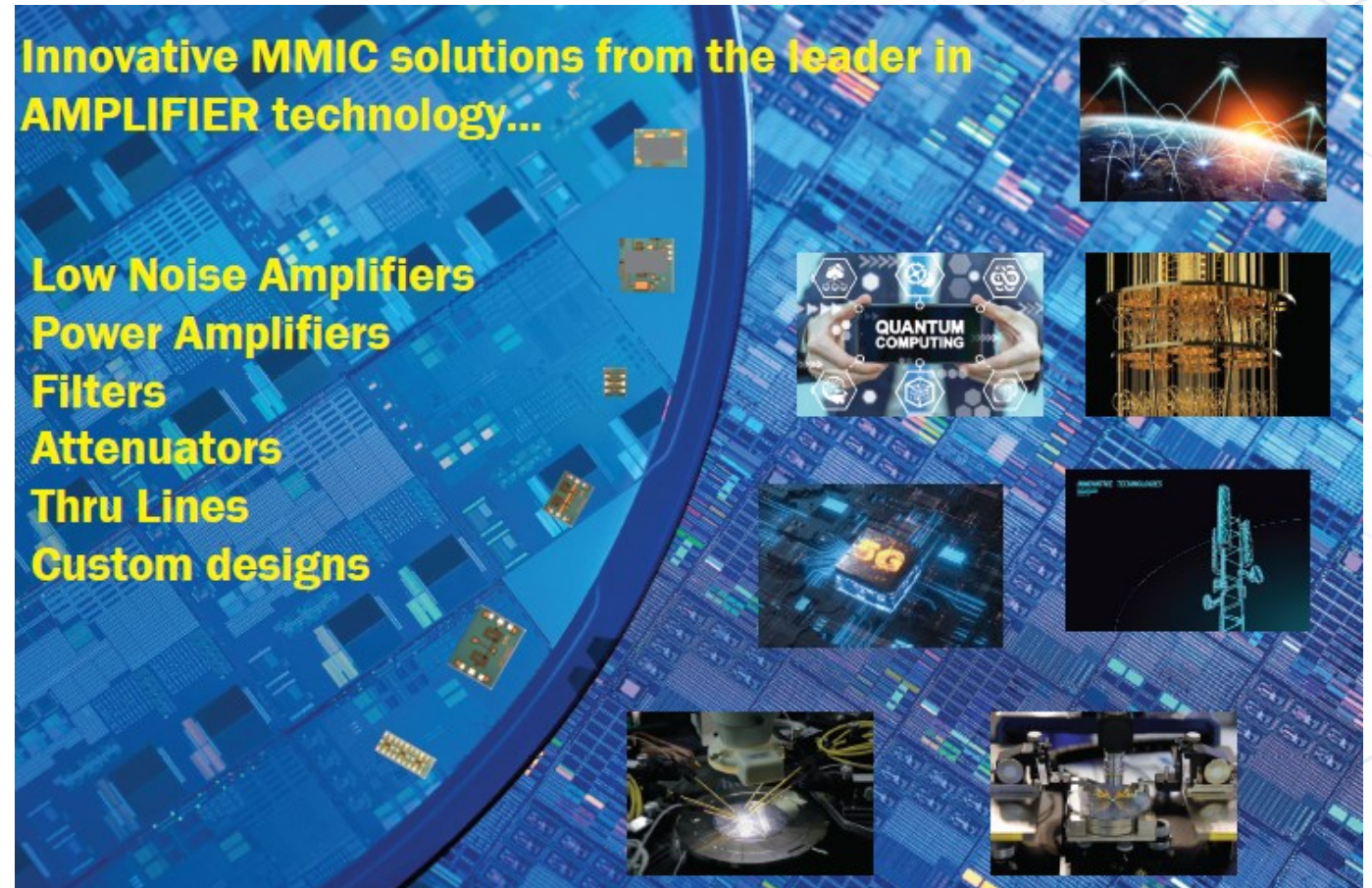
MMIC DESIGN CENTER DIVISION



The **MMIC Design Center** designs, develops and manufactures state-of-the-art signal-processing components for satellite and **5G** communications networks, defense, space, and other commercial applications, allowing the Company to market its products to a wide base of customers requiring high technology in smaller packages. Grow strategy includes complementing the front end MMIC design with Back End Manufacturing capabilities.

Innovative MMIC solutions from the leader in AMPLIFIER technology...

Low Noise Amplifiers
Power Amplifiers
Filters
Attenuators
Thru Lines
Custom designs



MMIC DESIGN CENTER DIVISION

Design Services

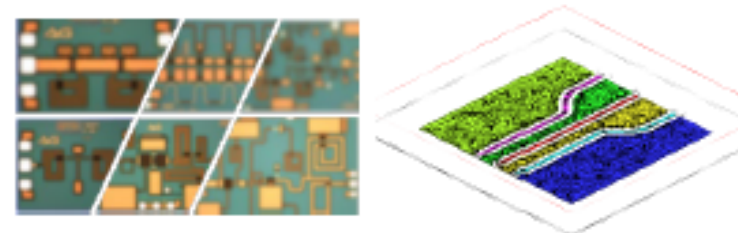
AGMDC offers full RF design, verification, and modeling for custom MMICs, RF modules, packages, and boards in addition to selling a variety of off-the-shelf MMICs.

- Located in Plano, TX at the [Legacy Central Tech Park](#) in the very heart of the Dallas Telecom Corridor with diverse RF infrastructure nearby.
- MMIC design team experienced in military and commercial product development and applications.
- Offers test and measurement services for both fixtured and wafer probe.
- Maintains relationships with multiple foundries to provide customers III-V Gallium Arsenide (GaAs) and Gallium Nitride (GaN) technologies.

Design Capabilities

AGMDC has a variety of resources to ensure quick and successful RF and MMIC designs including:

- Linear and Nonlinear Circuit Simulation
- Full 3D Planar and Finite Element EM and Thermal Simulation Capability
- Test Equipment for S-Parameter, Noise, and Power Measurements up to 50 GHz
- MMIC and RF Board Layout
- Board and Package Assembly resources



MMIC DESIGN CENTER DIVISION



MMIC Foundries

AGMDC works with several partner foundries with access to advanced MMIC materials and production manufacturing processes

Wolfspeed



HRL

NORTHROP GRUMMAN

win
SEMICONDUCTORS

QORVO

UMS
United Monolithic Semiconductors

Off the Shelf Parts

AGMDC creates off-the-shelf bare die and packaged parts focusing on the lowest noise figure and power dissipation parts possible for the following functions. Custom Designs can also be created per customer needs:

- LNAs
- Gain Blocks
- Drivers
- MPAs
- Attenuators
- MMIC Filters
- Switches
- TFN Transitions



SPECTRUM SEMICONDUCTOR MATERIALS DIVISION



Spectrum Semiconductor Materials, is a global distributor of specialty semiconductor components and the largest authorized distributor of IC Ceramic Packages and Lids.

The Company offers multi sourced plastic “open cavity” package options and has on site product inventory ready for immediate shipment.

All packages comply with RoHS and REACH Directives and are certified to ISO 9001:2015 / AS9120B.

In April 2023, announced partnership with NGK Electronics Devices to become the US distributor for NGK's state-of-the-art RF Microwave products, marking NGK's first distribution agreement with a US partner.

Spectrum is based in Silicon Valley, San Jose, CA, was founded in 1990, and was acquired by AmpliTech in January 2021.

A large satellite with solar panels is shown in space against a blue sky with clouds. To the right, a hexagonal grid contains various semiconductor components like chips, packages, and lids.

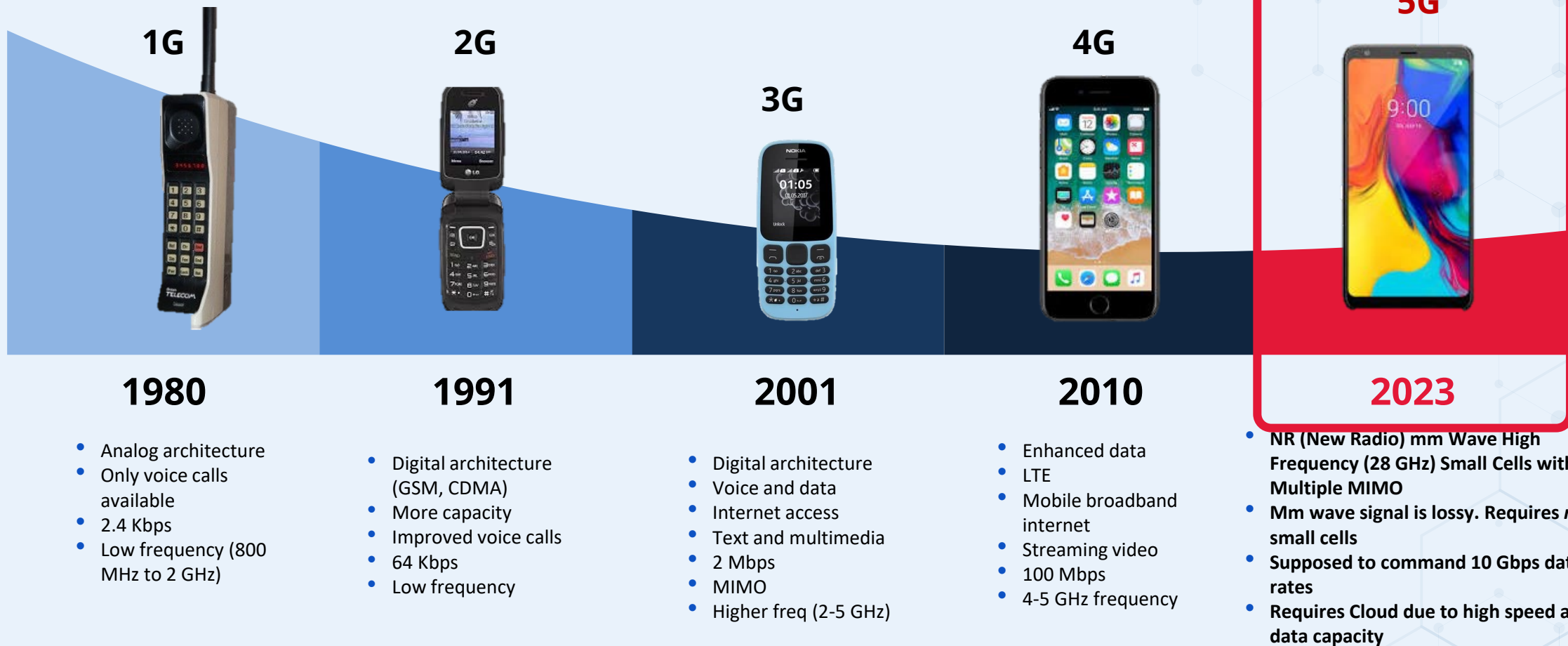
**Mil-Aero, Automotive,
Communications,
Medical, Wireless, Avionics
Components off the Shelf (COTS)**

**Packages
Lids
Sockets
Technical Support**

**Established in 1990
Worldwide Authorized Distributor/
Reseller of Hi-Rel IC Packages and Lids
ISO-9001:2001 and AS9120B QMS Certified**

AMPG-Nasdaq

Evolution of Wireless Mobile Technology



TRUE G SPEED SERVICES DIVISION



The **True G Speed Services (AGTSS)** division was founded to provide complete 5G system integration and ORAN compliant O-RU's for telcos, enabling the industry to access 'True G Speeds'.

AGTSS provides

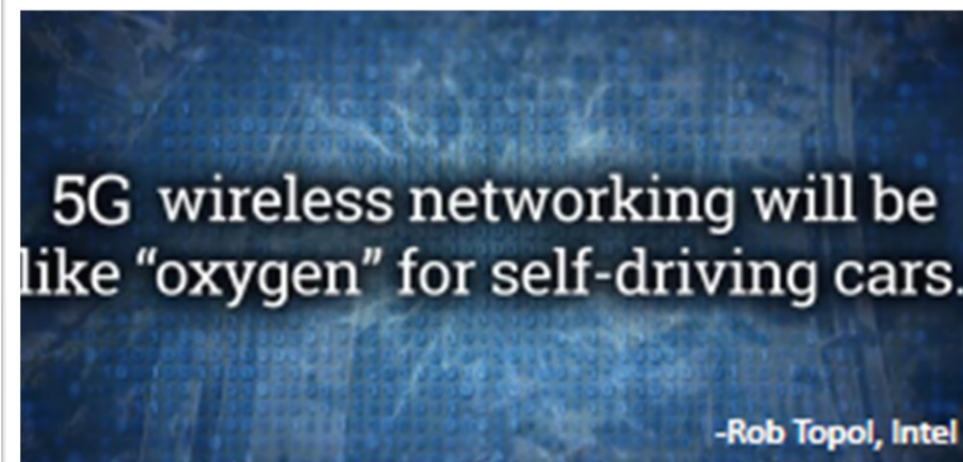
- Managed Services
- Cyber Security
- Cloud Services
- Data Sciences
- Telco Cloud Services



These fully designed in house 5G ORAN radios are made with our own 5G MMIC chips, enabling our radios to achieve higher area coverages without compromising signal speed!



- AmpliTech 5G ORAN prototype radios currently in manufacturing.
- Each radio requires 1 LNA per element.
- AmpliTech 5G radios will have our Proprietary Low Noise Amplifier Technology, enabling data transfers at high rates of speed! 64 elements.



AGTGSS 5G Technologic Advantages*



- Gig Speed Mobile Network
- Low Latency
- Area of Coverage
- Number of Users
- Physical Blocking Signal Solutions
- Public to Private Handover
- Software-based Upgrades without Changing Hardware
- Support Previous Generations
- Security
- Tracking

*** See appendix section for additional details**

SPECIALTY MICROWAVE DIVISION

Specialty **MICROWAVE**

Specialty Microwave designs and manufactures state-of-the-art precision SATCOM microwave components, RF subsystems, and specialized electronic assemblies for the military and commercial markets, flexible and rugged waveguides, waveguide adapters and more. CBS, Viacom as customers.

- Waveguide Assemblies
- Waveguide to Coax Adapters
- Waveguide to Waveguide Transitions
- Waveguide Broadwall & Crossguide Couplers
- Waveguide Dividers & Combiners
- High Power Waveguide Terminations



- Integrated Systems
- Block Downconverters
- 1:2 Tx Protection Switch Panels
- Redundant LNA Controllers/Plates
- Specialized Electronic Assemblies
- RF Switch Matrix
- Table-Top Amplifiers





Standard & Custom Design LNA & MMIC Products

THE BEST LOW NOISE & SYSTEM PERFORMANCE

Up To
40%



MORE Throughput
Faster Data Processing

+

Up To
4



Hours LESS Outage
Consistent Linkability

=

Up To
40%



COST Reduction
Increasing Your Bottom Line

RF MICROWAVE, SATCOM, AND 5G SOLUTIONS

PIONEERING DISRUPTIVE TECHNOLOGY WITH
LOW NOISE AMPLIFIERS, CUSTOM MMICS AND 5G NETWORKS



Low Noise Amplifiers

Designs to 60 GHz
Cryogenic Amplifiers
Space Qualified Amplifiers



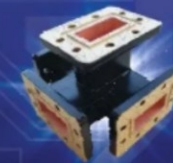
SATCOM Amplifiers

Waveguide Amplifiers
X, Ku, Ka Band
Custom Amplifiers



MMIC Design Center

Low Noise Amplifiers
Power Amplifiers
Custom Amplifiers



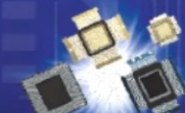
Waveguide Products

Assemblies
Coax Adapters
Broadband Couplers



SATCOM/ Specialized Assemblies

Integrated Systems
1:2 Tx Protection Switches
Redundant Plates



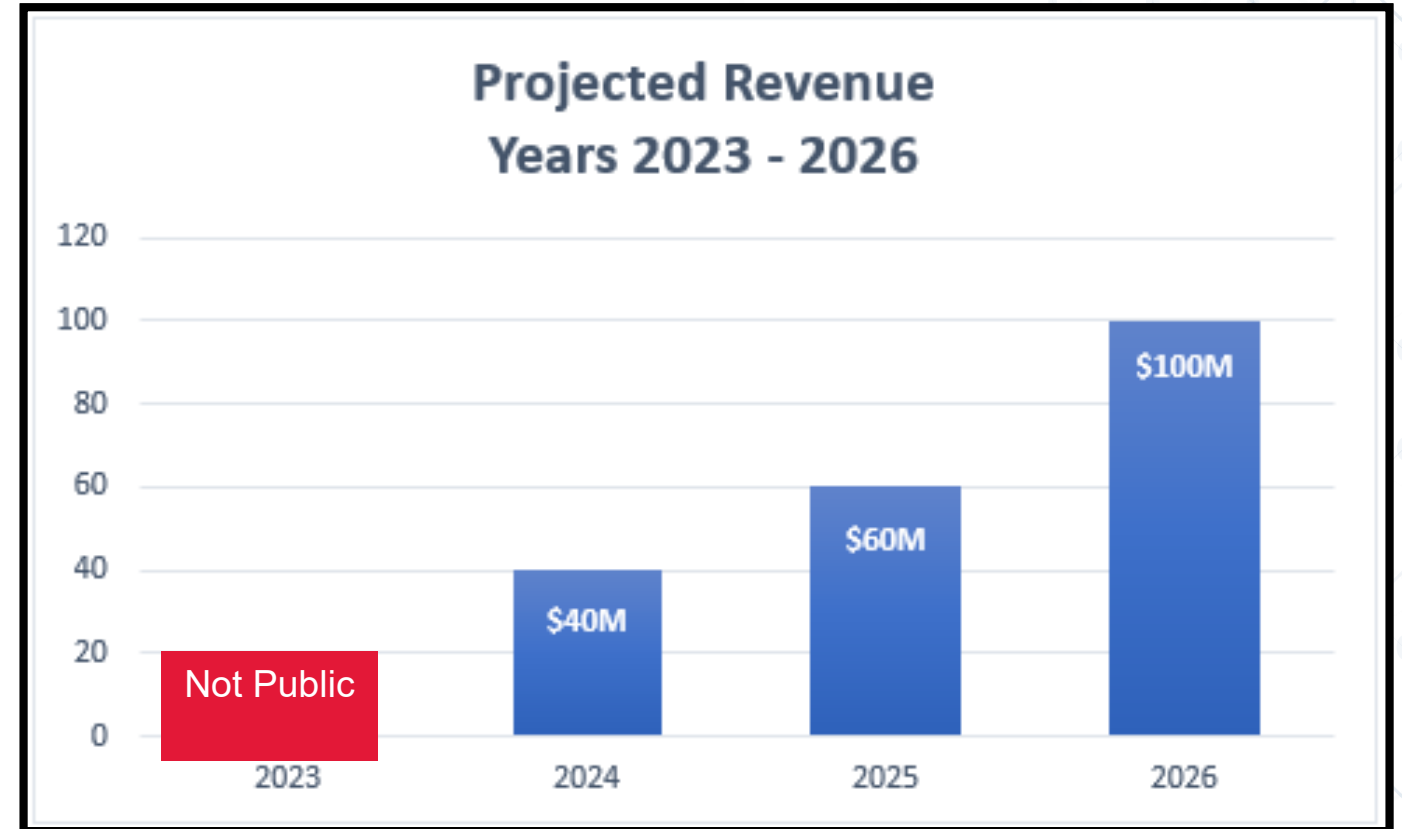
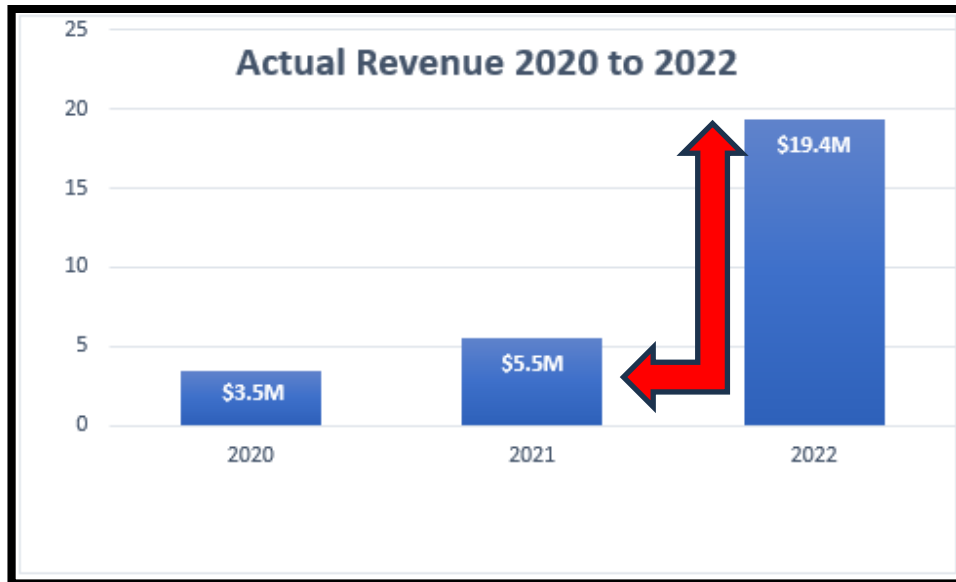
Special Packages

Ceramic Quad Flat Package
CERDIP Dual-In-Line Package
Hybrid Multi-Chip

PRIOR & FUTURE YEARS REVENUE GROWTH



All Revenue Numbers in \$Millions



Current Pipeline of Opportunities in our CRM system of ~ \$80M, not including 5G Radio sales.



NASDAQ: AMPG

Thank You!

Market Data

Ticker (Nasdaq)	AMPG
52 Week Range	\$1.72 - \$3.57
Market Cap	~\$20M
Average Daily Trading (30 day)	~43,000
Common Shares Outstanding	9.6M
Insider Ownership	33%

www.amplitechgroup.com

For more information, contact:

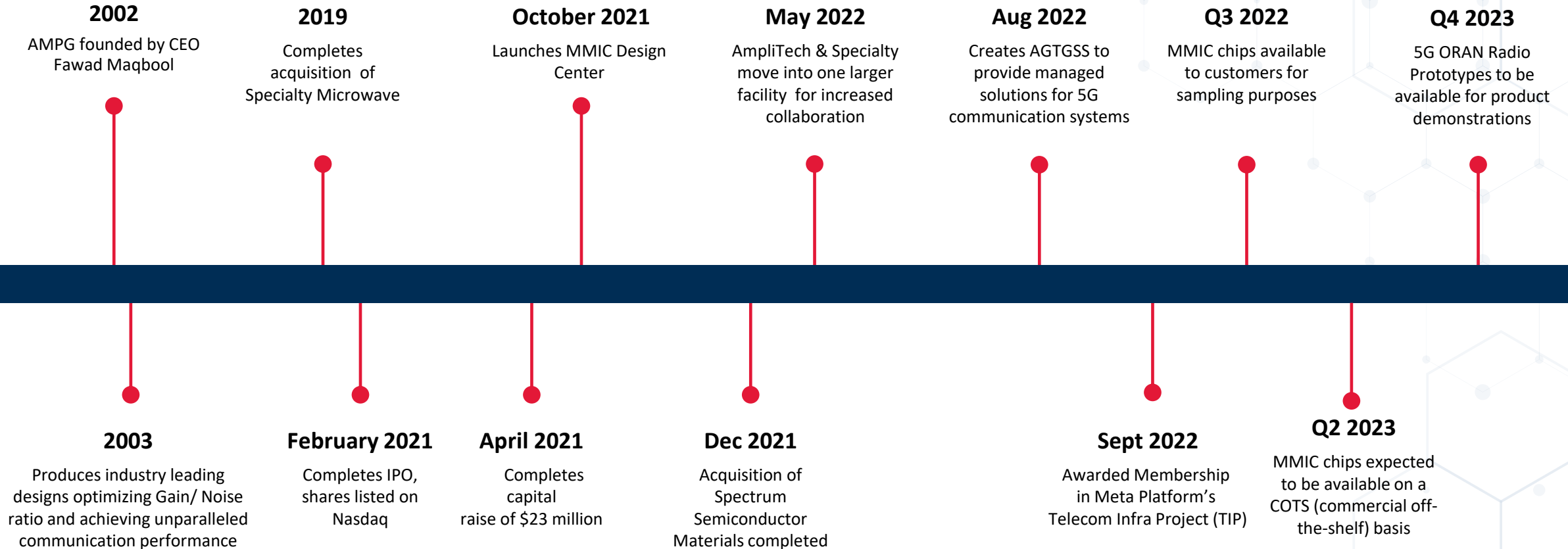
Kirin Smith, President

PCG Advisory, Inc.

ksmith@pcgadvisory.com

APPENDIX SECTION

AmpliTech Group Corporate Timeline



Gig Speed Mobile Network:

- 5G Networks offers significantly higher bandwidth and higher speed up to 10 or 20 GBPS of data. Ideal for AR and VR Applications

Low Latency:

- Our Radio Units reduced latency experienced by the end users in 5G networks from hundredths of seconds to a few of milliseconds can have an unexpected impact, leading to a real digital revolution.



Nasdaq: AMPG



300 milliseconds



3 milliseconds

Area of Coverage:

In the fifth-generation (5G) mobile communication system, the outdoor-to-indoor (O2I) coverage in urban areas is an important scenario for the network deployment. The base stations on building rooftops or towers provide O2I coverage for nearby buildings.

Nasdaq: AMPG



Number of Users:

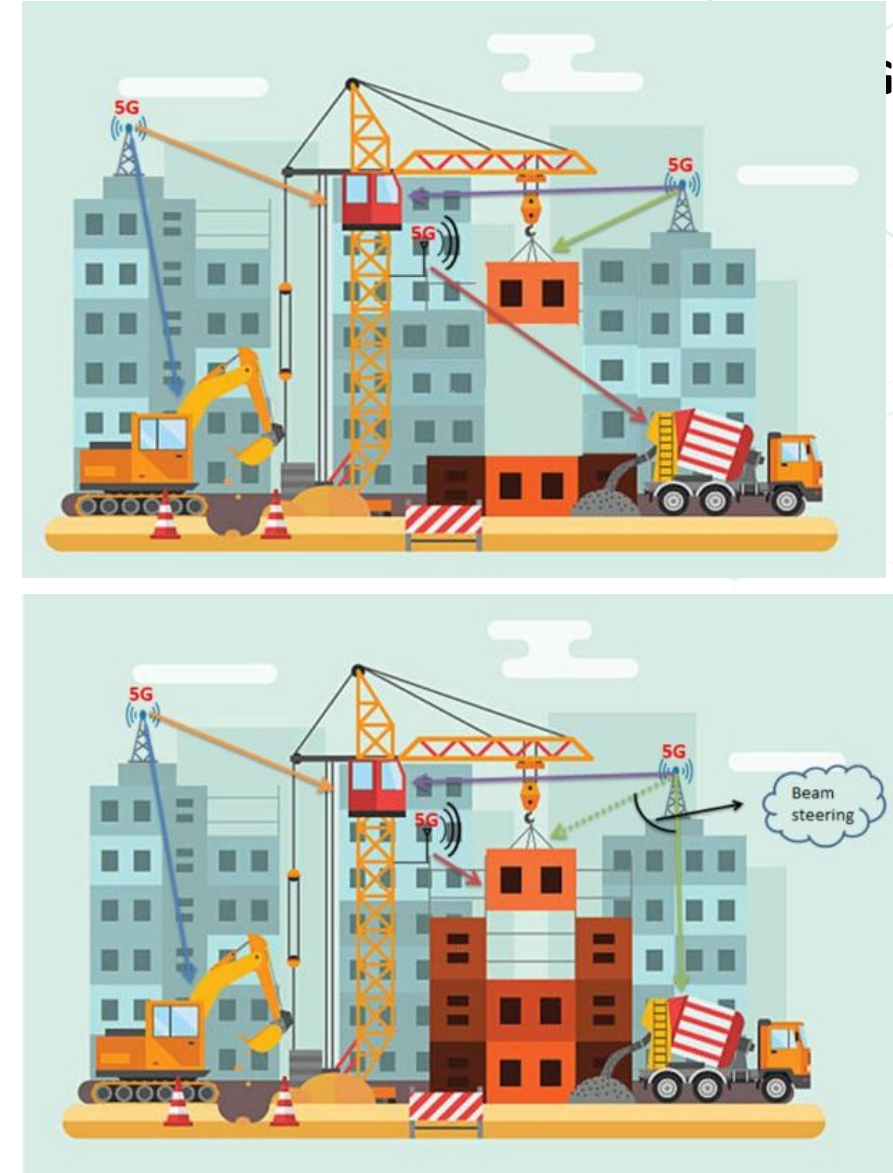
Nasdaq: AMPG

- The maximum number of 5G cell depends on the specific configuration of the cell and the type of 5G technology being used. 5G networks can support up to 1,000 users per cell, with some configurations supporting up to 10,000 users.
- With our LNAs, Low Noise figure not only increase the covering area but massive users accommodations are also increased.
- Additionally, Massive MIMO in our Radio Units also increase the number of users within each 5G cell.



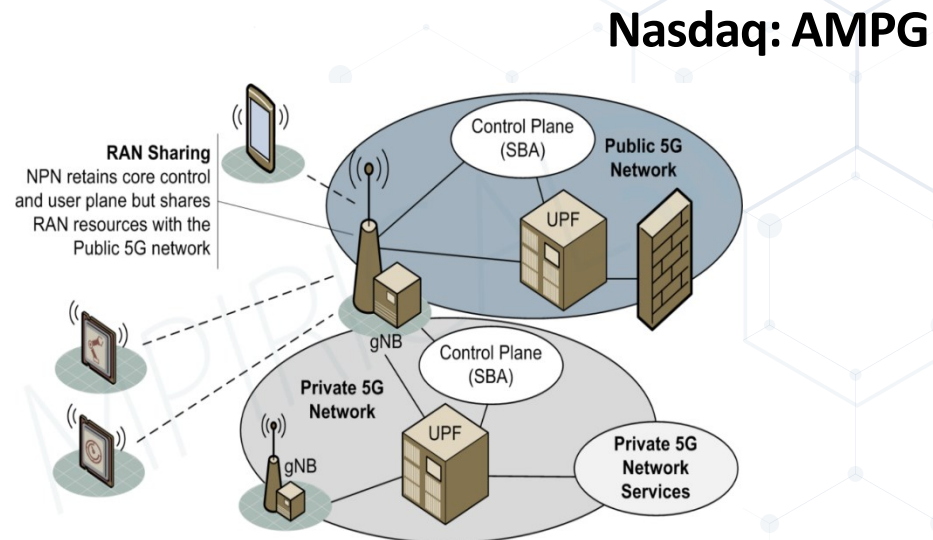
Physical Blocking Signal Solutions:

- Existing 5 GHz networks do not penetrate solid objects such as walls nearly as well as do 2.4 GHz signals. This can limit the access points reach inside buildings, like homes and offices, where many walls may come between a 5G antenna and the user.
- AMPG RUs, will steer the beams from the obstacle and create direct line of sight (LOS) in the intended area.



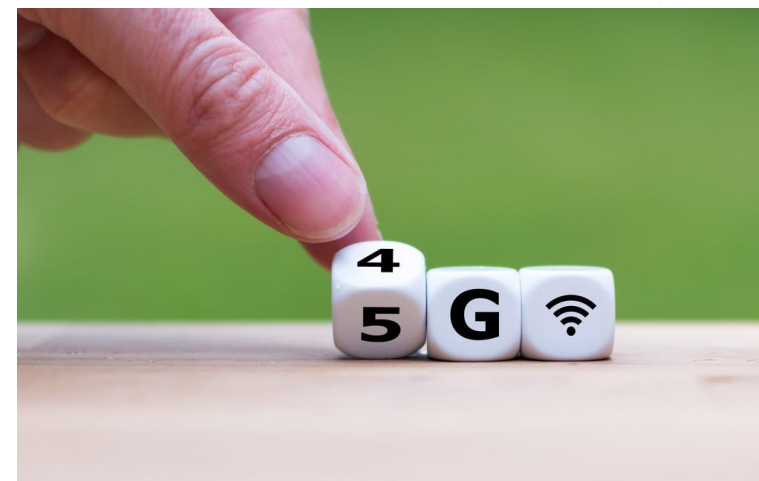
Public to Private Handover:

- AMPG radios provide accessibility of handovering of data networks from Public 5G network to Non-public (Private) network and vice versa.



Software Upgrades without Changing Hardware

- Software based upgrades, also known as, Zero Touch Provisioning (ZTP) automates 4G to 5G upgrade projects by removing the requirement for multiple truck rolls and highly skilled field staff to cell sites to reduce deployment workloads, schedules, and costs.

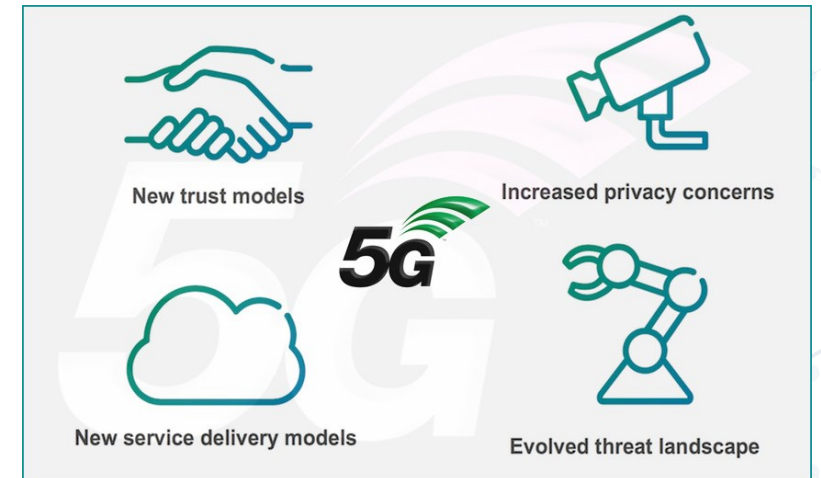
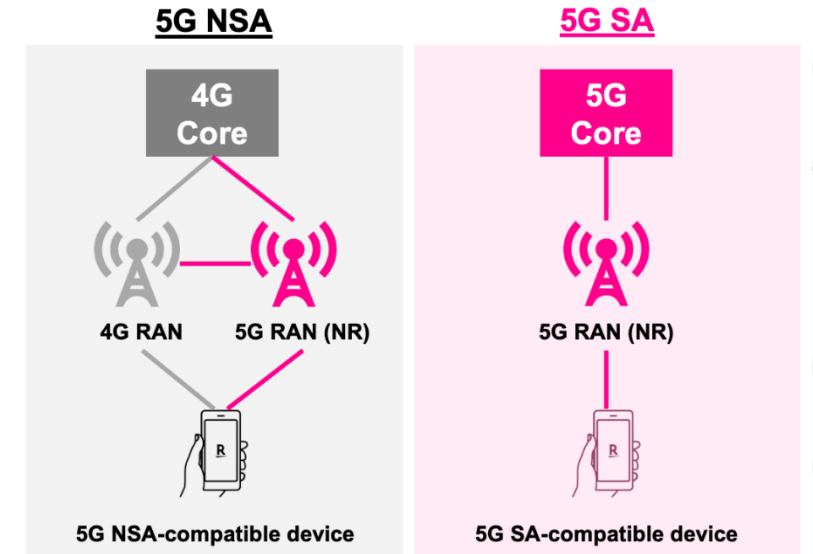


Support Previous Generations:

- 5G networks not only operate individually (SA) but also support previous generations like 4G/LTE(NSA) and our radio units are capable enough to support both of them.

Security:

- Our Radio Units provide greater security mobile network which can be deployed at one or more of the enterprise's sites. Therefore, security risks or threats are reduced, and data is processed on-site adding another layer of security to communications.



Tracking:

- The knowledge of which cell tower or antenna a mobile user communicates with can reveal valuable information about the user's location.
- Each time a user connects to a 5G antenna, mobile networks can pinpoint a user's location and can even determine what building, road or even car a user is in.

Nasdaq: AMPG

