


# COMMUNICATIONS WITH CLARITY

Today's global battlespaces demand a higher level of adaptability when making crucial mission connections

By Alan Breitbart, business development manager, Collins Aerospace

 Intuitive, adaptable, reliable and clear. These are your requirements for a communications system, whether you're operating at a fixed site or in a moving environment such as a ground vehicle or ship.

Collins Aerospace's 721S family of V/UHF air traffic control (ATC) and battle-management communication solutions offers customers highly flexible, portable and space-efficient choices. These systems are for primary, emergency and backup AM/FM V/UHF ground-air communication.

The 721S family comprises the 721S fixed site VHF-UHF radio transceiver, the 721S Blade ground V/UHF radio and the 721S Emergency Transceiver Radio.

Modular, building-block architecture makes the systems easily scalable to address unique customer requirements. Superior radio-frequency performance combines with a size small enough to accommodate both transportable and fixed-site applications.

Pete Iversen, program manager at Collins Aerospace, provides an overview of the Collins Aerospace 721S family of radios and the technology required to address the needs of the FAA and military customers for airspace control.

## Bespoke and flexibility

"Customers can choose from two Collins Aerospace systems when evaluating fixed-site communications operations," Iversen says. "The 721S fixed site transceiver delivers superior connectivity in a tailorable solution for stand-alone or networked transceivers. It's a direct, drop-in replacement for legacy GRC-171 and GRC-211 systems."

Options include electronic protection measures with Talon, Talon II, HAVE QUICK I/II and SATURN waveforms.

"The second fixed-site system is the 721S Blade," Iversen added. "It offers modular flexibility in a small form factor that can scale to a customer's site and capability requirements."

For transportable operational requirements and for primary, emergency



**Left & below:** The 721S fixed site VHF-UHF radio transceiver and the 721S Blade ground V/UHF radio

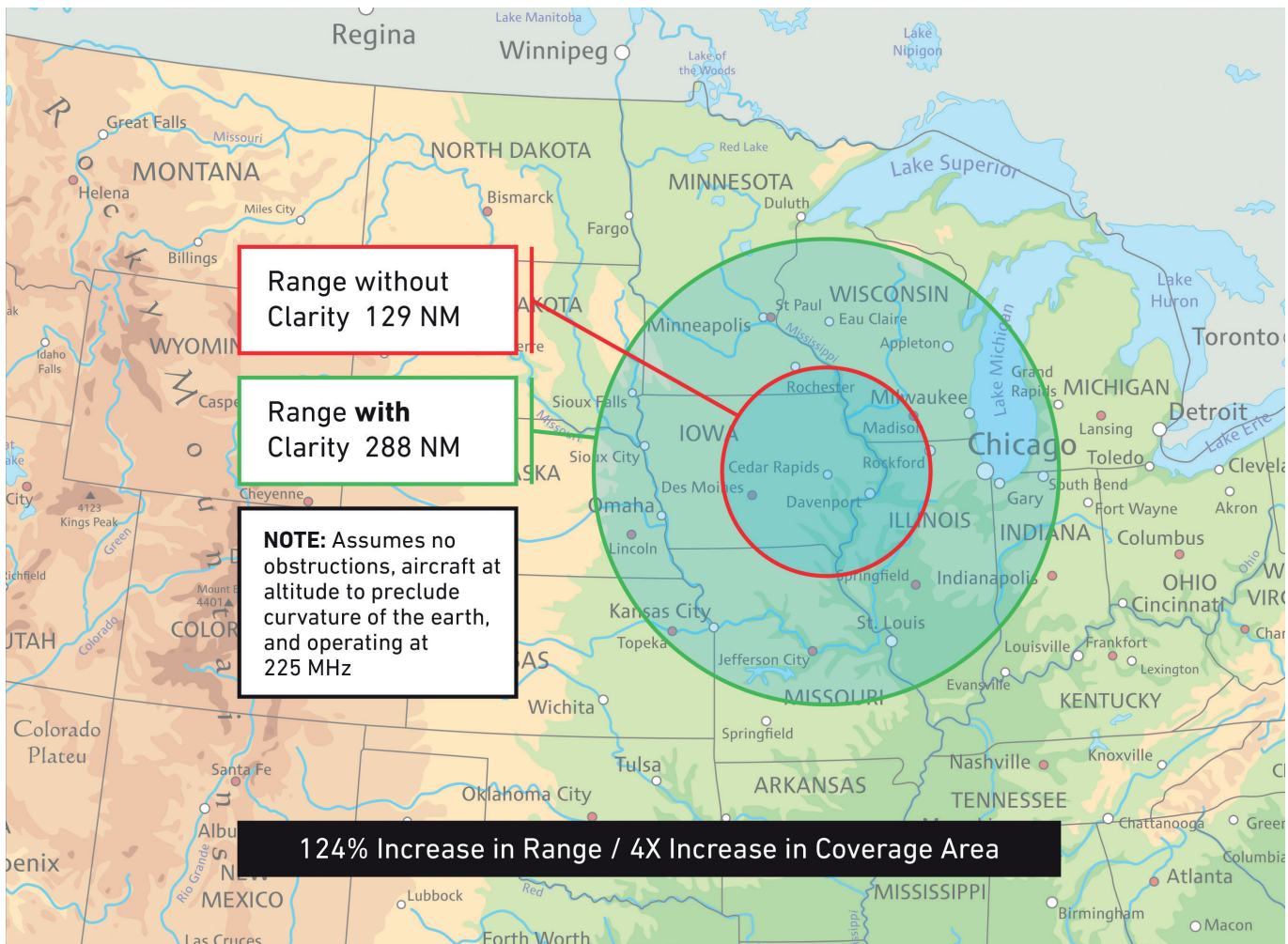
**Right:** The communication range extension using Clarity noise reduction technology



and backup AM/FM V/UHF ATC requirements with flyaway operation, the 721S Blade is the best choice. It offers the smallest footprint for size, weight and power usage in the dual-band V/UHF market. Features of the 721S Blade include: voice only, data/networking, protected communications, no compromise in RF

performance for the transportable/expeditionary market, 10-minute setup time in deployable configurations, modular design enables flexible scalability and easy upgradability and an embedded scanning guard receiver mode.

The 721S Blade consists of small, hot-swappable TCP/IP-based 10- or 50-watt



radio frequency receiver-transmitters that are integrated into a 19in rack mount transit case. Each receiver-transmitter exhibits excellent radio-frequency co-site performance, which enables deployment of multiple 721S Blade systems at one site.

With a compact size for easy deployment, the 721S Blade has been fielded with numerous voice communications systems. It features a user-friendly interface for simple and intuitive operation. It's compatible with USAF Rome Touch Control Software, as well as ED-137 VoIP audio compatibility using the G.711 codec. Iversen points to the following as benefits of the 721S family of

radios: compact, modular packaging that minimizes transport space and simplifies deployment; the lowest size, weight and power usage footprint in the dual-band V/UHF market; no radio-frequency compromise for the transportable/expeditionary market space; a 10-minute setup time in deployable configurations; a modular design that enables easy upgrades and Clarity noise reduction that boosts area of coverage 4X over conventional V/UHF transceivers.

The Clarity noise reduction technology is a standout feature of the 721S family. "Clarity significantly reduces operator fatigue by

removing non-syllabic background audio in both transmit and receive operations," Iversen says. "That could be noise from a cockpit, an aircraft, a heating and cooling system, street noise, office sounds or signal interference from co-location pollution." The result is a clean and uncluttered communication signal between ground radio operator and pilot.

#### When disaster strikes

The third system in the 721S radio family is the 721S Emergency Transceiver Radio. Like the others in the family, it checks the boxes for a portable ground-fixed ATC radio.

***Every day, in battlespaces around the world, Collins communications equipment performs with precision and reliability in highly demanding conditions***



The 721S Emergency Radio is designed to be simple to use

You can think of the ATC tower as the conductor of the orchestra that is any airspace. To successfully direct traffic, ATC uses great attention to detail and ultimately keeps our airspaces, both civilian and military, safe. But what happens when something like a natural disaster or an environmental threat requires the ATC team to leave its post? Any aircraft within 20 nautical miles of the tower's airspace is still reliant on the ATC team for guidance.

To address these situations, the controllers require a product that places all of the core communication capabilities of an entire ATC tower into a form that fits into a backpack for grab-and-go portability in the event of evacuation.

Iversen provides a better understanding of the technology required to address the needs of controllers when the airfield is closed or has limited capability. He also describes how the military airspace would benefit from Emergency Transceiver Radio. He discusses three key factors for success:

**Frequency interoperability:** "Because ATC is required to manage military and

civilian aircraft, this radio must be equipped to communicate with both UHF and VHF frequencies," Iversen says.

**Fool-proof operation:** "The lynchpin is that at this point, you've lost all of your primary and even most of your backup systems. Your last resort is this portable radio. It's a no-fail mission; the radios must work, and they must be easy to use," Iversen says. Reliable, rugged hardware is a must for the mission.

**Clear, fail-safe audio:** "In a situation like a natural disaster, there is bound to be some background noise that controllers have to account for when trying to communicate with remaining aircraft in their space," Iversen says.

He notes the complexity of delivering a ground-fixed site capable radio in a portable package.

"The purpose-built Emergency Radio is based on the 721S Blade radio. Collins Aerospace tactical radios have the filtering necessary to allow multiple radios to operate in close proximity," Iversen says. "This makes crystal clear audio of utmost importance in

an emergency situation for ATC and explains why controllers are seeking a reliable solution that portably addresses those communication needs."

Collins Aerospace already uses its Clarity Noise Reduction algorithm to tackle this challenge for ATC within the existing ground-fixed radio solution.

Iversen says, "The result is clearer, more intelligible audio. It means that the controller doesn't have to work nearly as hard to understand the same message. And in a scenario where the ATC team could be dealing with severe weather, taxiing aircraft and other background noise, that clarity is critical."

Every day, in battlespaces around the world, Collins communications equipment performs with precision and reliability in highly demanding conditions. The company was founded on the delivery of innovative radio communications technologies. It is the trusted source for V/UHF battle-management solutions that provide capability and flexibility for continually evolving missions. ❖

***You've lost all of your primary and even most of your backup systems. Your last resort is this portable radio. It's a no-fail mission, the radios must work.***