



# Aviation

Antenna, Filter & Coupler Solutions

**SINCLAIR**  
A DIVISION OF NORSAT INTERNATIONAL INC.

## ABOUT SINCLAIR

Sinclair Technologies, a division of Norsat International, is a leading designer and manufacturer of antenna and RF signal conditioning products, systems, and coverage solutions. Sinclair products are used extensively in public safety and private industry communication networks, such as emergency services (police, fire, rescue and military), transportation, natural resources, and utilities. We have almost 70 years of industry-leading expertise in all aspects of antenna and RF signal conditioning design and manufacturing. With a strong focus on R&D, we continue to expand our product offerings and offer industry-leading technical solutions. We have offices in Canada, United States, and the United Kingdom.



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# Airport & Aviation Needs



Airports rely heavily on wireless critical communications systems to coordinate highly complex operations to ensure efficiency and safety of airports and their personnel. The infrastructure of an airport wireless system is comprised of two main areas - ground to air communications and airport 2-way radio networks.

## Ground-to-air Communications/navigation systems

Ground-to-air communication systems enable communication for planes and air traffic control (ATC), caterers and mechanics, as well as safety solutions such as cameras and perimeter security. Air traffic controllers coordinate the safe, efficient, and orderly flow of air traffic from Area Control Centres (ACCs). Each ACC is responsible for a large section of airspace called a Flight Information Region (FIR) which is further divided into sectors. Controllers track flights within each sector, give pilots en-route instructions and provide terminal clearances. As safety-critical information is exchanged between pilots and air traffic controllers, wireless systems need to be extremely dependable to ensure reliable communications and to avoid hazardous situations in airspace and on the ground.

## Airport 2-way Radio Networks

The daily operations of airport terminals consist of multiple interdependent services. Effective and reliable communications are essential for managing critical airport services and workflow to ensure safe and secure operations. Failures in communication can lead to catastrophic degradation of services, placing aviation personnel, passengers and critical operations at immediate risk. Terminal wireless systems, typically utilizing critical communications technologies such as P25, Tetra, PDT and DMR tier 3, support all communication within the terminal between airline employees, security and first responders. These wireless systems must be highly reliable, fully redundant, extremely robust and easy to use.

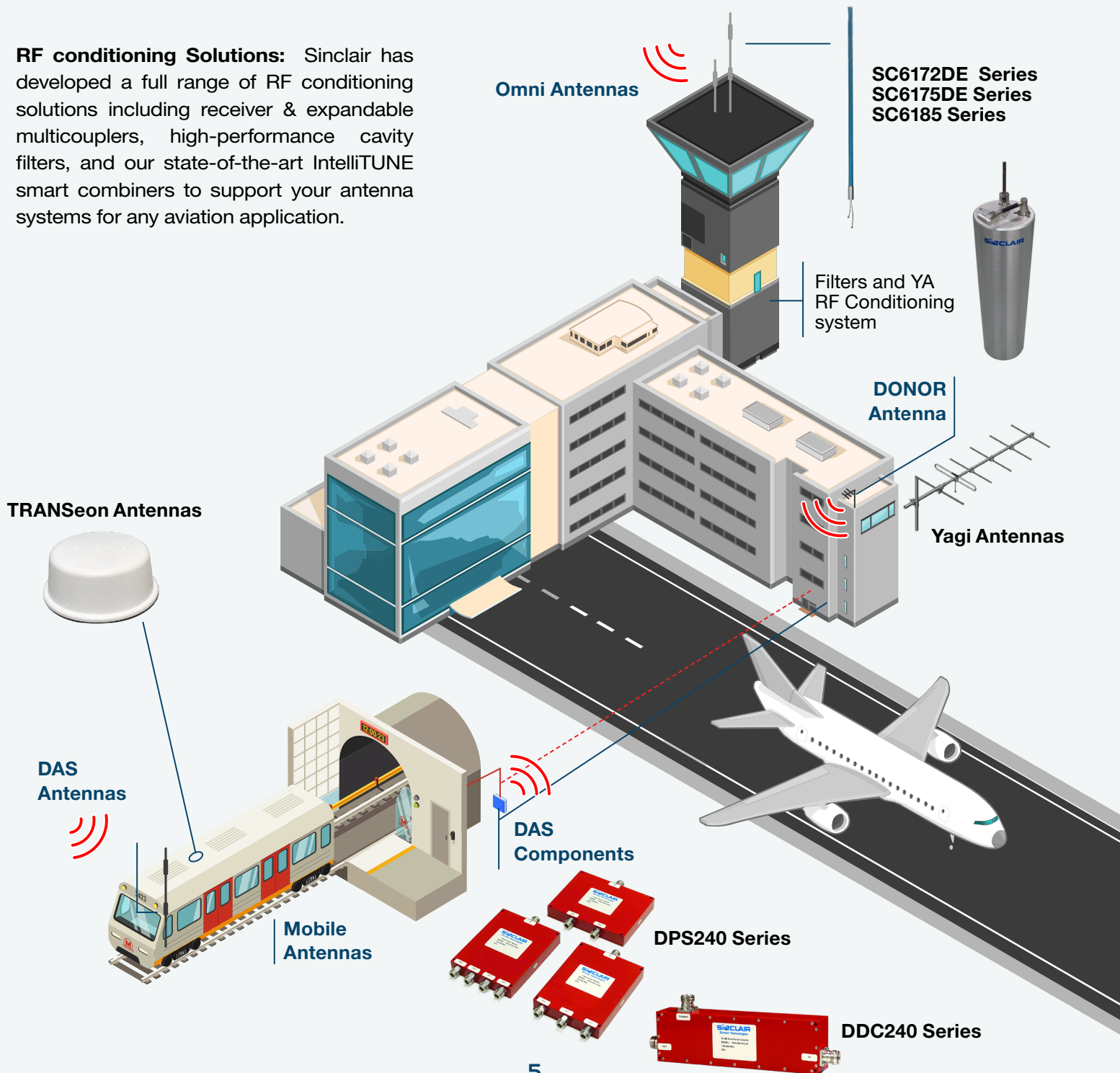


# Summary of Product Offerings

Sinclair has developed a full range of communication solutions for your aviation requirements.

**Antenna Solutions:** Sinclair's line of rugged and durable collinear, dipole, and yagi base station antennas will ensure dependable and robust air-to-ground communications. Sinclair's expansive portfolio of mission critical antennas will guarantee high-quality and reliable coverage for a wide range of indoor and outdoor airport applications. Sinclair also has an extensive line of mobile automotive antennas which will support and connect mobile radio and public safety networks throughout the airport. We also offer an extensive DAS solution - an industry-leading communication system which caters to in-building communication needs and is suitable for mission critical operations and public safety applications within your airport.

**RF conditioning Solutions:** Sinclair has developed a full range of RF conditioning solutions including receiver & expandable multicouplers, high-performance cavity filters, and our state-of-the-art IntelliTUNE smart combiners to support your antenna systems for any aviation application.



# Antenna Solutions for Ground-to-Air Communications

VHF is the predominant frequency range used by civil aviation in most parts of the world, with communication frequencies typically spanning the 118-138 MHz band. Frequencies for Military ATC typically span from 225-400 MHz. Sinclair develops rugged and durable collinear, dipole, yagi and base station antennas that are optimal for both civil and military aviation applications covering both VHF and UHF frequency bands. Designed to meet strict aviation requirements, these antennas are weather-resistant and provide consistent, reliable performance in harsh environments.



## SD210 Series

The SD210-H series is unique in its high efficiency and exceptionally wide bandwidth. It is ideally suited for multi-coupled systems.



## SD235 Series

The SD235 series is a highly versatile broadband antenna featuring omni-directional or bi-directional pattern coverage. It is ideally suited for use in multi-coupled systems. Heavier duty and higher power rated models are available on request.



## SG217 Series

The SG217 series is a low-cost frequency-adjustable antenna with an omni-directional radiation pattern and 2.5 dBd gain. It is an ideal antenna for leased system service; it can be quickly and easily adjusted to each new frequency as needed. It is an excellent antenna to stock for reuse or resale.



## SG238 Serie

The SG238 series is a broadband omni-directional antenna offering a low VSWR over the operating frequency range. Constructed of aluminum alloy and stainless steel, the series is designed to withstand winds of 155 mph while supporting 0.5 inches of radial ice.



## SY206 Series

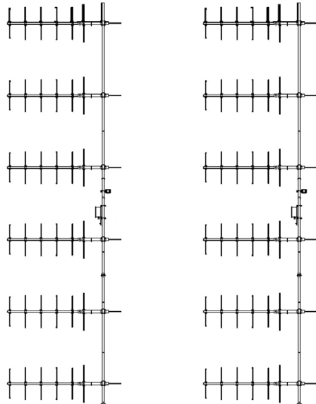
The SY206 series consists of six elements of outstanding durability and performance. All elements, including the folded dipole, are maintained at DC Ground potential for lightning protection.

## SC6172DE Series / SC6175DE Series / SC6185 Series

These series are fabricated using lightweight and rugged components to ensure easy installation while providing superior resistance to harsh environmental conditions. These antennas offer reliable omni-directional coverage.

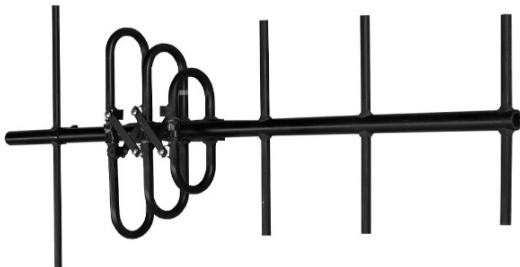
# Mobile Radio and Public Safety Networks for Airports

Communications are vital to support the complex ecosystem of the aviation industry and ensure the daily operations for airports and its personnel are optimized and safe. Failures in communication can result in catastrophic degradation of services and can place airport personnel, passengers, and critical operations at immediate risk. Communication networks thus need to be able to handle high peak demands, provide penetrating coverage, and guarantee reliability and resilience. Sinclair has an extensive portfolio of high-performing, durable and easy to install mission critical grade antennas designed for a wide range of outdoor and indoor applications to ensure high-quality connection and seamless communication anywhere.



## SY2066 Series

The SY2066 antenna is a six yagi array with heated elements and boom. This series is designed to provide maximum performance and reliability under the harshest weather conditions using a special heating mechanism and black anodized surface. The heating element automatically adjusts the power it draws depending on the temperature to save energy and provide the best de-icing. The same heating mechanism can be applied to all of Sinclair's SY206 series antennas.



## SY350 Series

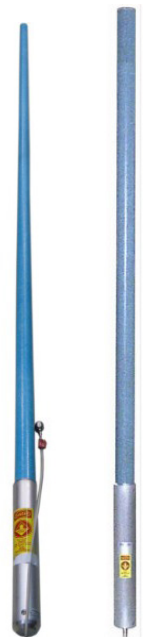
The SY350 Series wideband yagi antenna has been developed to meet the need for a high gain, broadband, top quality directional antenna in the 380-512 MHz frequency range. Two or more antennas may be stacked for added gain. Designed for high performance, versatility and ease of installation, this series is well suited for a wide range of applications.

## SC34X Series

The SC34X series is Sinclair's next generation of public safety collinear antennas. The patent-pending design utilizes cutting-edge technology to deliver an unparalleled combination of highly stable RF pattern, high gain, short length, and wide bandwidth. The series includes the SC34A line that can withstand severe weather conditions with a rugged UV resistant fibreglass radome and features an extra-long base pipe for high wind rating.

## SC366 Series

The SC366 Series is a broadband, heavy-duty, omni-directional antenna that covers the 320-512 MHz frequency range in different band splits. It utilizes Sinclair's cutting-edge and field-proven balanced design technology, which not only delivers outstanding bandwidth and unbeatable stable RF pattern across the whole band, but also produces enhanced wind rating due to the shortened total length comparing to traditional design.



# DAS / In-building Products

Sinclair Technologies' high performance DAS line offers various rugged donor antennas, low profile, high efficiency server antennas, and durable DAS components that cater to in-building communication needs and specifications critical for daily airport applications and emergency response. Sinclair's in-building antennas feature multi-band designs that support a broad range of frequencies and provide coverage in confined spaces and large venues. Specifically, Sinclair's server antennas comply with the stringent NFPA in-building safety codes, making them truly public safety grade. Our DAS antennas and components are also a part of the iBwave component database, the largest database in the DAS industry today.



## SI300/SI400 Series

Sinclair's SI series is an omni-directional, low-PIM wideband UHF antenna ideal for airport in-building use. It offers a low-profile non-protruding form factor, ground plane independent design that facilitates installation, and is compliant with the most stringent in-building fire regulations.

## Power Splitters



## DPS240 Series

The DPS240 series of splitters features a wide band that covers all public safety frequency bands (VHF, UHF, and 700/800/900 MHz). It has an industry-leading -153 dBC PIM rating and rugged construction for public safety applications.

## Directional Couplers



## DDC240 Series

Sinclair's DDC240 series of directional couplers features a wide band that covers all public safety frequency bands (VHF, UHF, and 700/800/900 MHz). It has an industry-leading -153 dBC PIM rating and rugged construction for public safety applications. Mobile antennas for vehicles are frequently utilized in airport applications.



Proud Partner of the iBwave Component Database





# RF Conditioning Solutions

In addition to its expansive offering of antennas, Sinclair offers a full suite of RF conditioning solutions, from traditional high-performance cavity filters, receiver multicouplers, expandable multicouplers, to the state-of-the-art IntelliTUNE smart combiners that support autonomous frequency tuning.

## Bandpass filters: FP20207 Series



The FP20207 series of cavity filters are the building blocks of the finest antenna systems. These filters pass a band of frequencies while attenuating frequencies on either side of the desired frequency band.

## Q circuit filters: FQ20107 Series

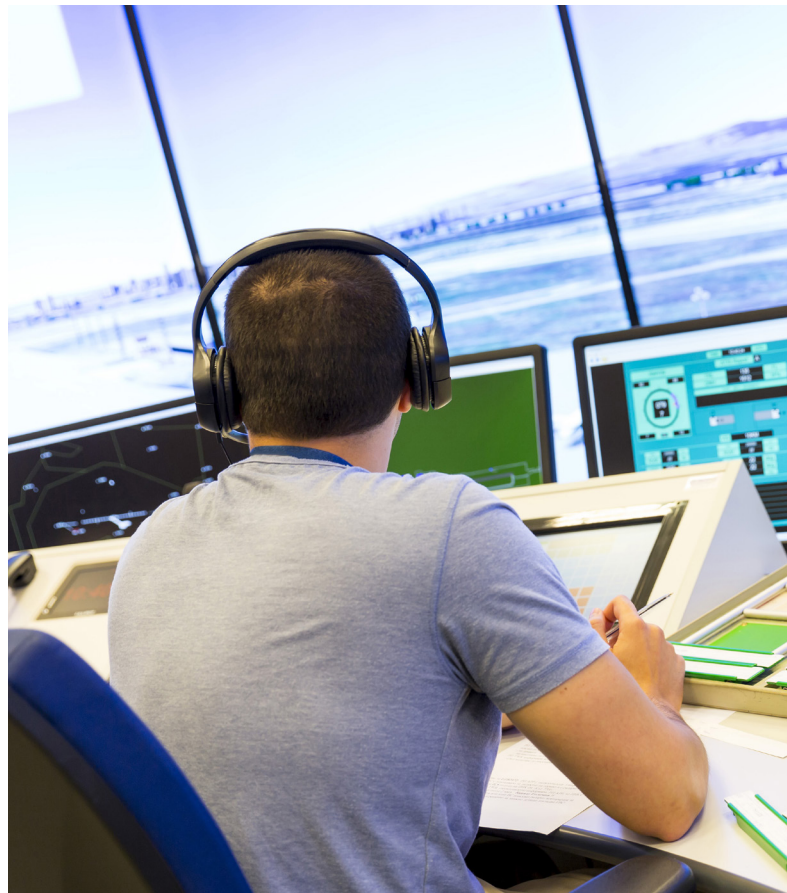


The FQ20107 series of filters employ the Sinclair-developed Q-circuit design. The Q-circuit inverts the characteristics of a standard notch filter and uses the narrow resonance notch to create the circuit passband while allowing the lower Q elements, to produce the relatively broad isolation notch.

## Reject filters: FR20107 Series



The FR20107 series of notch (reject) filters provide precisely the opposite response to a bandpass filter — they “notch out” or reject an unwanted frequency, while passing all others. An essentially symmetrical response is obtained where a passband is required, both above and below the notch reject frequency.



# RF Conditioning Solutions



## 7" Cavity Expandable Multicouplers

### C2037 Series:

The C-Series multicouplers offers excellent performance combined with ease of expandability required in many multicoupling systems. Each C-Series multicoupler channel consists of a reject cavity and one or more bandpass cavities, depending on the selectivity required. The reject cavity acts as a switch, diverting the wanted channel frequency to or from the antenna while allowing the remaining channel frequencies to flow in the antenna feed-thru line to or from the remaining C-Series multicoupler channels.



## Res-Lok Expandable Multicouplers:

### C2024 Series / C2034 Series

Sinclair's compact Res-lok C-Series multicouplers combine Sinclair's patented Res-lok construction with the ease of expandability required in many multicoupling systems. Each Res-lok C-Series multicoupler channel consists of a reject cavity and two or more band-pass cavities depending on the selectivity required. The Res-lok construction minimizes the number of inter-cavity cables required and allows for horizontal or vertical mounting.

## IntelliTUNE™ Series

This series of auto-tunable combiners features an integrated control unit for fully autonomous TX frequency tuning to keep return loss to a minimum and consistent, optimized performance. The user-friendly web-based graphical user interface (GUI) facilitates easy on-site configuration and remote access. They are easily expandable to up to 32 channels and is ideal for emergencies where flexibility and rapid deployment are crucial, or systems that often require changing operating frequencies.



FLEXIBILITY



REMOTE MONITORING



NEW TECHNOLOGY



TUNE ON THE FLY



EASY EXPANSION

# Mobile Radio & Public Safety Networks for Vehicles

Sinclair offers various series of industry-leading mobile antennas that provide optimal wireless coverage in transportation applications. The TRANSeon™ Series of mobile antennas consists of the SM601 and SM701 mobile communication solutions. The SM601 features a wide-band LTE port that covers all bands from 694 to 2700 MHz with high RF efficiency. The SM701 features an even wider band LTE port that covers from 694 to 6000MHz, which includes more LTE bands and the dual band Wi-Fi.

## TRANSeon Antenna



**SM601 Series:** the SM601 series is a 2-in-1 antenna. The RF port covers all the bands for 2G, 2.5G, 3G cellular, LTE 700-2600 MHz. The embedded GNSS antenna utilizes a high-performance LNA that offers outstanding performance. It features a rugged design with UV resistant radome and IP67 rating for reliability and long life in harsh environments. The compact size and low profile allow it to blend easily in any environment and can be mounted on a vehicle rooftop by drilling only one hole.

**SM701 Series:** The SM701 series of multifunctional transport antenna is compact, low-profile, broadband, and can be used in harsh environments. One single SM701 antenna can be easily expanded to serve multiple radio systems operating at different frequencies simultaneously with the help of a crossband coupler expansion kit. The SM701 series covers all bands for 2G, 2.5G, 3G, 3.5G, 4G, and 5G sub 6GHz cellular systems, and dual-band WLAN. It also features an unobtrusive low profile housing for great overhead clearance. Its rugged UV protected radome with UL94 HB fire rating offers maximum vibration absorption and ultimate waterproofing. This series delivers excellent performance on either metallic or non-metallic vehicle rooftops, and it is also ideal for ceiling mount in an in-building or outdoor wireless distribution system.

**SM715 Series:** The SM715 series is a rugged, high-performing 5-in-1 vehicle/transit antenna. The RF port covers all major LTE bands from 698 to 5600 MHz. The embedded GNSS antenna utilizes a high-performance LNA and supports all global navigation satellite systems, including GPS, Galileo, GLONASS, and Beidou, with precise positioning services. Its rugged design with UV resistant radome and IP67 rating ensure durability. The ultra low-profile design guarantees minimum potential downtime from damages. Its compact size allows it to blend with any environment and is ideal for vehicle roof-top mounting.

Product Series	Frequency Range	Number of Ports	Application				
			V2X	5G Ready	WIFI	GPS	GNSS
SM601	694-2700 MHz	1				✓	
SM701	694-6000 MHz	2	✓	✓		✓	
SM715	698-5900 MHz	5	✓	✓	✓		✓



## SINCLAIR TECHNOLOGIES

Sinclair Technologies is a global leader in the design and manufacture of high-quality fixed and mobile antennas, filters, combiners, and related products. Designed to function in extreme conditions, Sinclair's products have a globally recognized reputation for quality, reliability, durability, and value. For over 60 years, Sinclair has provided custom-designed antennas and RF signal conditioning products to fit our customer's unique requirements. From simple to complex issues, Sinclair offers antenna and RF signal conditioning solutions for utilities industry paired with the industry's best RF expertise.

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