

Schaedler
yesco

 SureCall®



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An Authorized Verizon 5G Vendor

WWW.SURECALL.COM



- Who is SureCall?
 - Why partner with SureCall?
- What is DAS and what causes weak in-building cellular coverage?
- Product review
- Evolution of Passive DAS
 - Extended Range Technology (ERT)



The SureCall Benefit

FCC and Carrier Approved
4G LTE / 5G Compatible



Rapid deployment to extend coverage area in any building type



Low-cost hardware and installation



Network Protection Technology

Automatic Gain Control (AGC)



Oscillation Detection and Prevention



Minimize noise impact to tower



High Linearity



Extended Range Technology



No fiber or any other additional spectrum resources required for backhaul

Industry Leading 3-Year Warranty

What is **DAS**?

Distributed Antenna System



Signal Booster vs. Active DAS

SureCall Signal Booster (passive DAS)

- Carrier and FCC approved
 - NO additional approvals are required for deployment
- Quick deployment
 - Without a lengthy approval and design process, full systems can be turned around and deployed in a matter of days.
- Cost effective
 - Turn-key installation at < \$1.00 per square foot (typically \$0.50 - \$0.75).

Active DAS

- Long lead time for approval and deployment
 - Generally, 6-12 months
- Expensive
 - Average deployment costs are \$2.00 - \$4.00 per square foot
- Carrier involvement is often required
 - Adds to the approval and deployment time)

The Great Growth Opportunity



Wireless Market:
\$4.5B TAM + 18% CAGR
AV Market:
\$4.2B TAM + 5% CAGR



Wireless devices are
the standard
Zoom / Telehealth /
Remote work



Major factor
in customer
experience



80% of cell use is indoors
Workplace flexibility is king



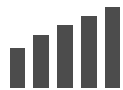
Connectivity is
the 4th Utility



Public Safety
code requirements

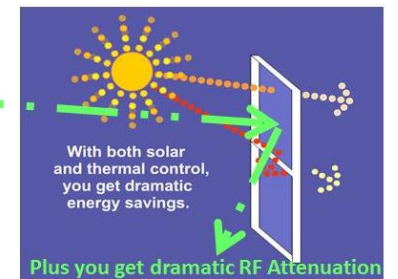
Top Growth Markets

- ✓ Residential
- ✓ Commercial
- ✓ Education
- ✓ Hospitality
- ✓ Healthcare



5G – very dense networks
*Requires Connectivity,
Power at Edge*

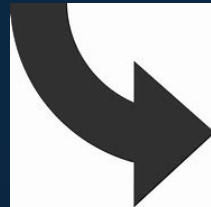
Buildings block
5G



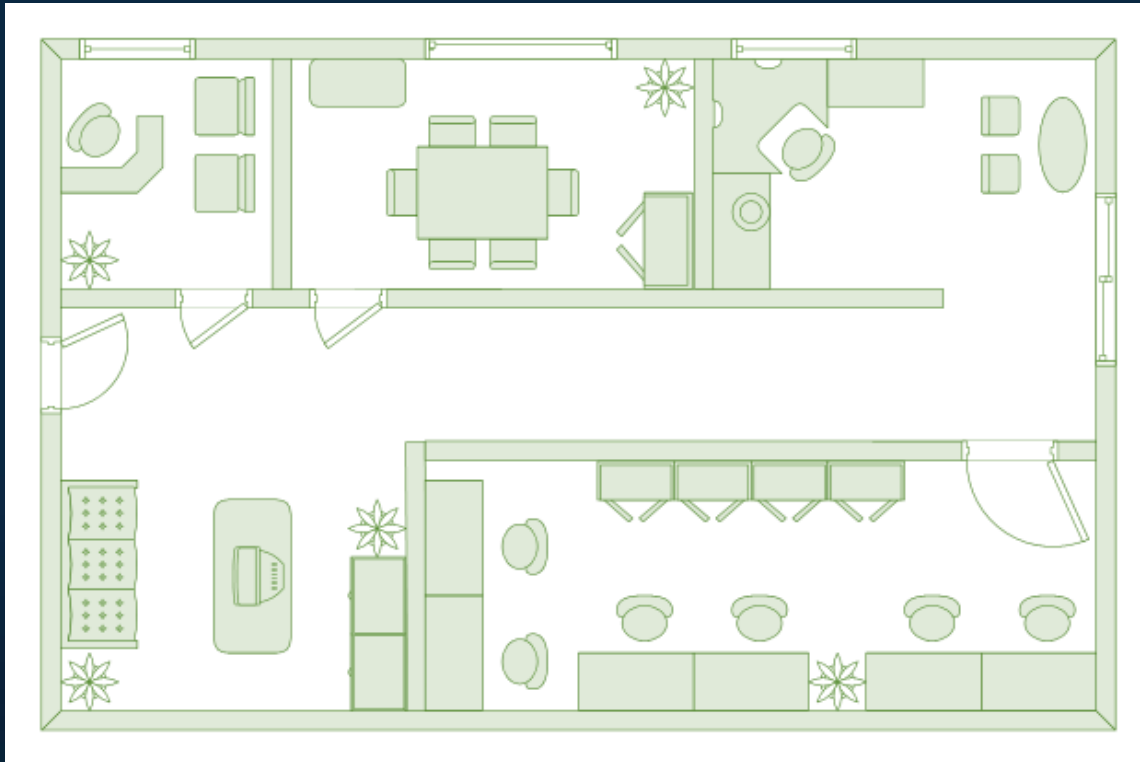
Why is DAS needed and what causes weak indoor signal?



“Energy Star” is the “Death Star” to Cellular



Everything Reflects or Rejects Signal



Drywall	-2dB
Fiberglass	-2dB
Solid Pine(½")	-3dB
Plywood	-4dB
Solid Oak (½")	-5dB
Solid Wood Door	-6dB to -12dB
Brick	-7dB to -12dB
Plaster	-8dB to -16dB
Concrete (6")	-10dB to -19dB
Low-e Glass	-30dBto -34dB



What Causes Weak Cellular Signal?



Building Materials

- Low-E glass
- Metal/concrete



Terrain

- Mountains/valleys
- Foliage



Distance from Cellular Tower

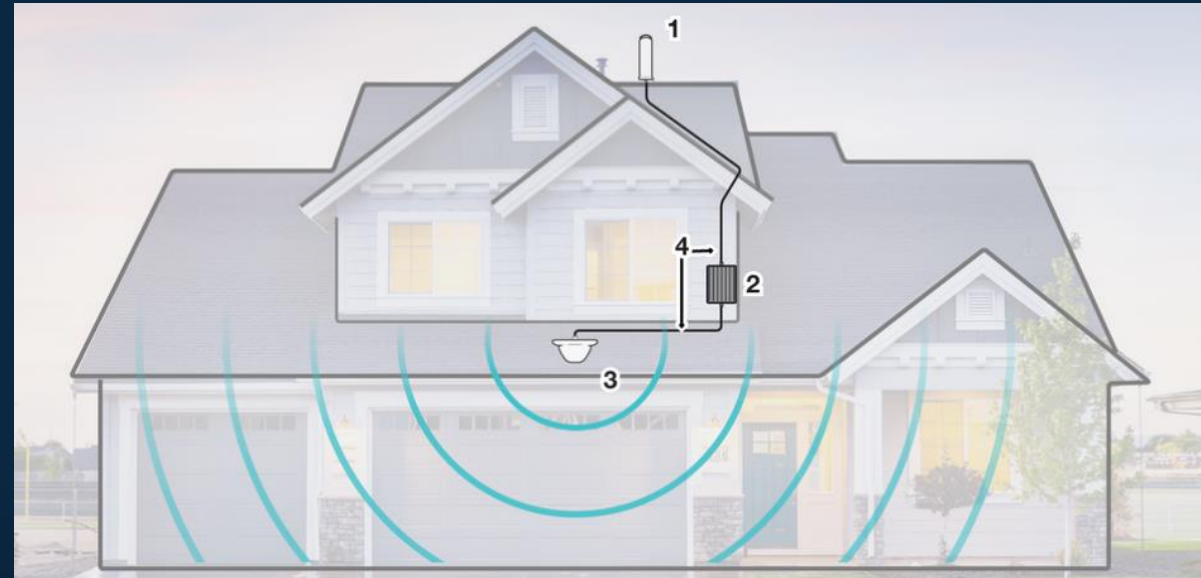
- Phone is limited in uplink power



How a Traditional Signal Booster Works

Regardless of the space, the specific components of a cellular booster include:

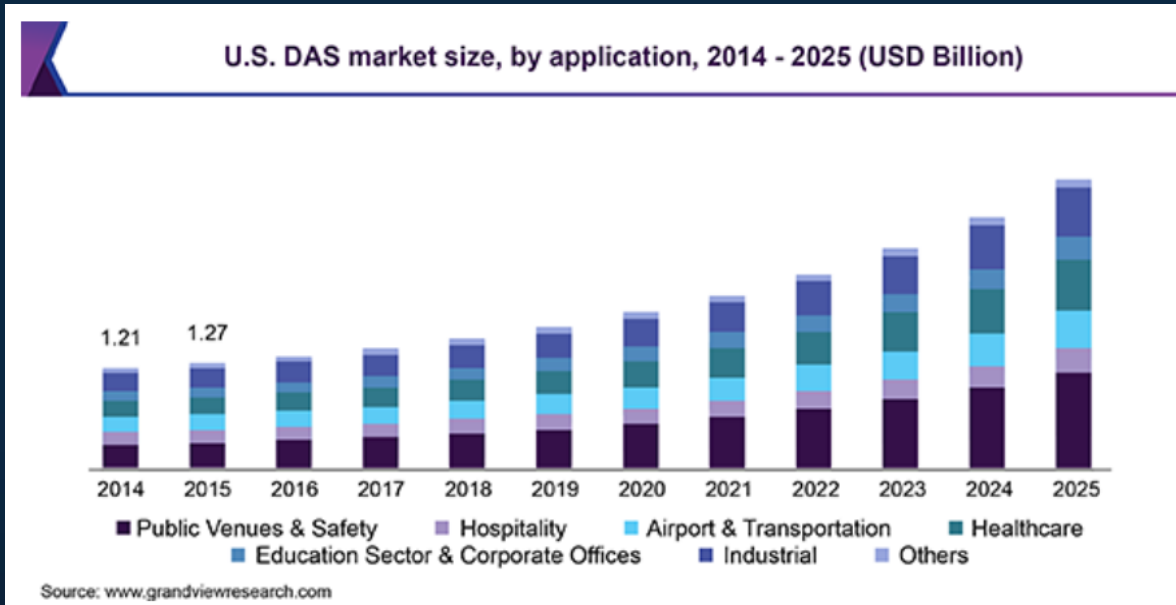
1. **Outside Antenna** - Installs on the exterior of your building in the location that receives the strongest signal from a nearby cell tower. This captures the strong signal outside of the building and pulls it into the building.
2. **Signal Booster** - Receives the signal from the outside antenna and amplifies the signal strength before sending the improved cellular signal to the indoor antenna(s).
3. **Indoor Antenna(s)** - These are installed inside of the building to distribute the amplified signal throughout your building or vehicle. Some buildings may require multiple indoor antennas and/or multiple boosters.
4. **Cables** - Connects the outdoor antenna with the booster and the booster with the indoor antenna.



Just how Big is the Market?
Whats in it for you?



Market Size and Growth



Distributed Antenna Systems Market Report Scope

Report Attribute	Details
Market size value in 2020	USD 7,834.9 million
Revenue forecast in 2025	USD 13,788.5 million
Growth Rate	CAGR of 11.4% from 2019 to 2025
Base year for estimation	2018
Historical data	2014 - 2017
Forecast period	2019 - 2025
Quantitative units	Revenue in USD million and CAGR from 2019 to 2025

- **Largest growth areas for passive DAS**
 - **Residential / Consumer**
 - **Commercial / Industrial**
 - **Education**
 - **Hospitality**
 - **Healthcare**



Who can you sell it to?

- ✓ Distributed Audio
- ✓ Networking
- ✓ Security
- ✓ Entertainment
- ✓ A/V
- ✓ Conferencing



AUSTIN HIGH SCHOOL

STOP



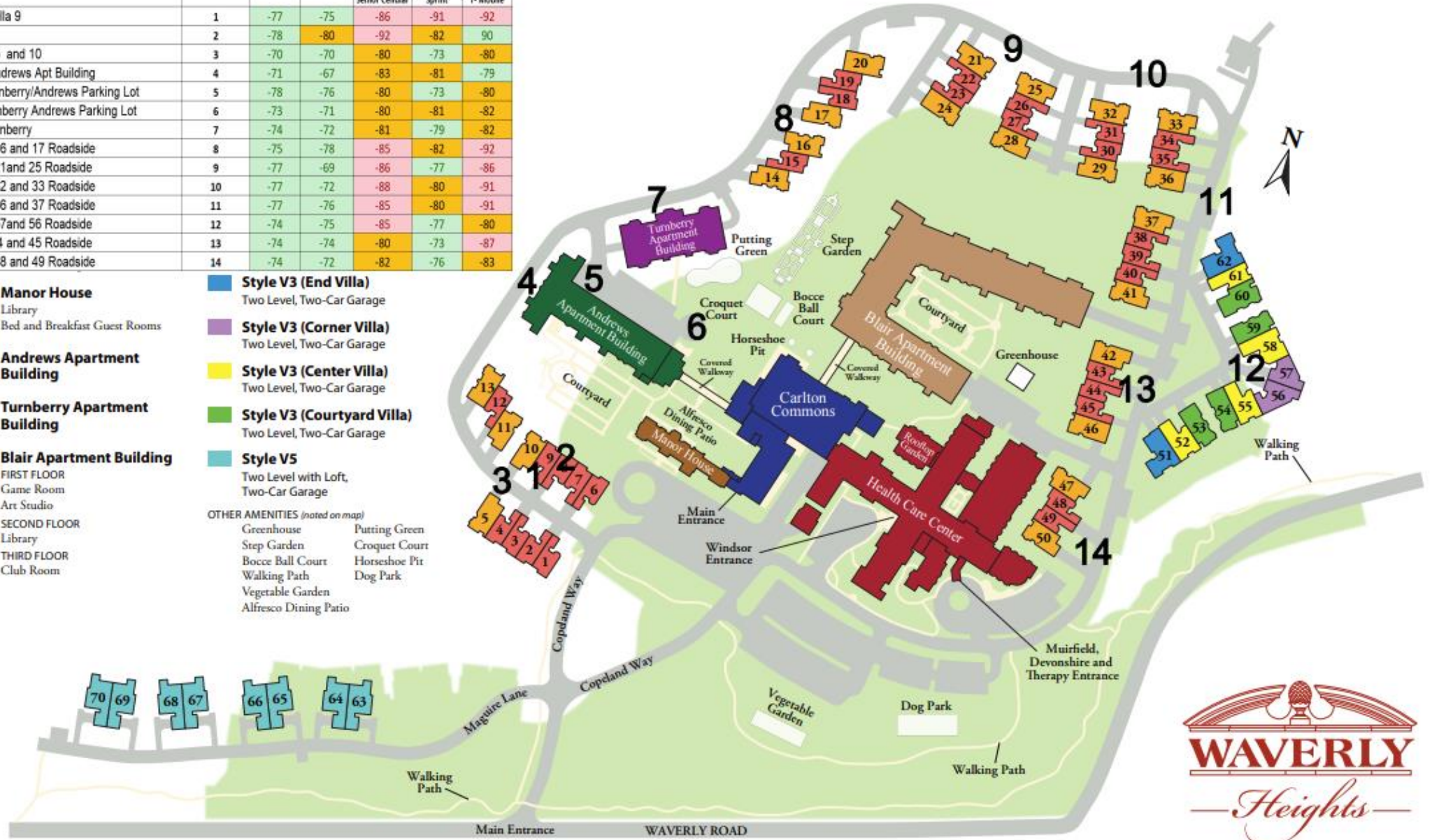
Decatur Alabama High School

Description		AT&T-LTE	Verizon-LTE	Cellular	PCS-1900	AWS-2100
Outside				Senior Cellular	Sprint	T-Mobile
Front Door Of Villa 9	1	-77	-75	-86	-91	-92
Patio of Villa 9	2	-78	-80	-92	-82	90
Between Villas 5 and 10	3	-70	-70	-80	-73	-80
West end Of Andrews Apt Building	4	-71	-67	-83	-81	-79
West end of Turnberry/Andrews Parking Lot	5	-78	-76	-80	-73	-80
East End of Turnberry Andrews Parking Lot	6	-73	-71	-80	-81	-82
Roadside Of Turnberry	7	-74	-72	-81	-79	-82
Between Villas 16 and 17 Roadside	8	-75	-78	-85	-82	-92
Between Villas 21 and 25 Roadside	9	-77	-69	-86	-77	-86
Between Villas 32 and 33 Roadside	10	-77	-72	-88	-80	-91
Between Villas 36 and 37 Roadside	11	-77	-76	-85	-80	-91
Between Villas 57 and 56 Roadside	12	-74	-75	-85	-77	-80
Between Villas 44 and 45 Roadside	13	-74	-74	-80	-73	-87
Between Villas 48 and 49 Roadside	14	-74	-72	-82	-76	-83

- Manor House**
Library
Bed and Breakfast Guest Rooms
- Andrews Apartment Building**
- Turnberry Apartment Building**
- Blair Apartment Building**
FIRST FLOOR
Game Room
Art Studio
SECOND FLOOR
Library
THIRD FLOOR
Club Room

- Style V3 (End Villa)**
Two Level, Two-Car Garage
- Style V3 (Corner Villa)**
Two Level, Two-Car Garage
- Style V3 (Center Villa)**
Two Level, Two-Car Garage
- Style V3 (Courtyard Villa)**
Two Level, Two-Car Garage
- Style V5**
Two Level with Loft,
Two-Car Garage

- OTHER AMENITIES (noted on map)
- Greenhouse
 - Step Garden
 - Bocce Ball Court
 - Walking Path
 - Vegetable Garden
 - Alfresco Dining Patio
 - Putting Green
 - Croquet Court
 - Horseshoe Pit
 - Dog Park





Product Overview
Solutions for Commercial and Residential

What Types of 5G are Available?

Nationwide 5G (Low / Mid / C Band)

- Today's LTE and 5G(E)
 - Sub-6 GHz, frequencies 410 MHz to 7125 MHz
 - SureCall's 5-Band (LTE) boosters enhance 728 MHz – 2155 MHz
 - Envisioned to carry most of the traditional communications traffic (Voice / Data)
 - C-Band 3.5 GHz – 3.7 GHz
 - Dedicated for data transmissions

Dynamic Spectrum Sharing (DSS)

- 5G through LTE

Ultra-Wide Band (Millimeter Wave)

- Much greater bandwidth
 - Up to 3 gig of download speeds
- Frequencies 26 GHz to 38 GHz
 - Limited range
- Dedicated for data transmissions

Traditional In-Building Signal Booster Solutions



Fusion Professional



Fusion5x 2.0

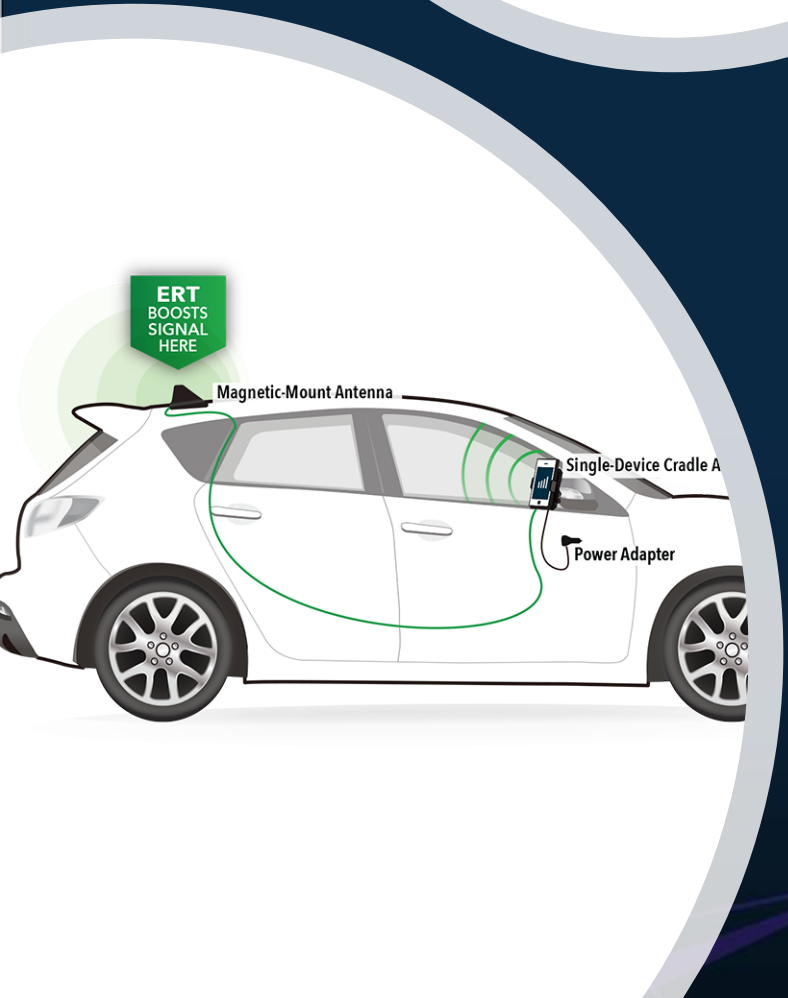
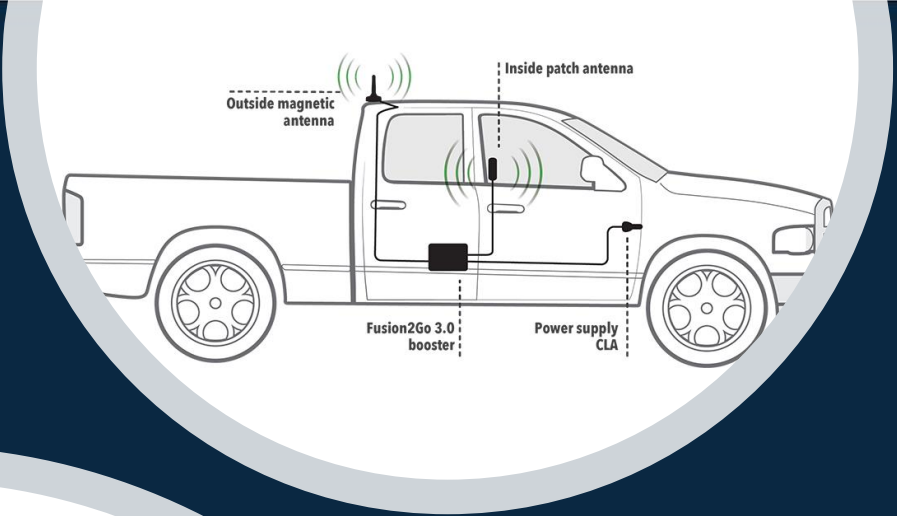


Force5 2.0

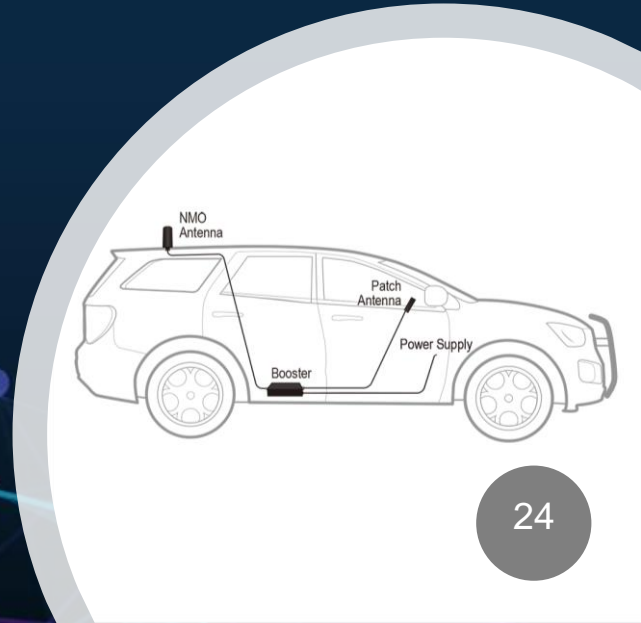


Force 8

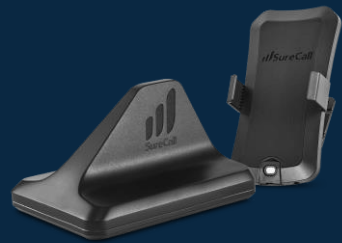




How does it Work?



Mobile Signal Booster Solutions



N-Range



Fusion2Go 3.0



Fusion2Go Fleet



Fusion2Go RV



Fusion2Go MAX



Fusion Professional

Compatible with All Carrier Voice & 4G LTE and 5G devices

Targeted Verticals

- Residential
- Utility (Power/Oil & Gas/ Rail)
- Two-Way Radio Dealers
- Small Business

Cost Effective Solution for Reliable Indoor Cell Signal

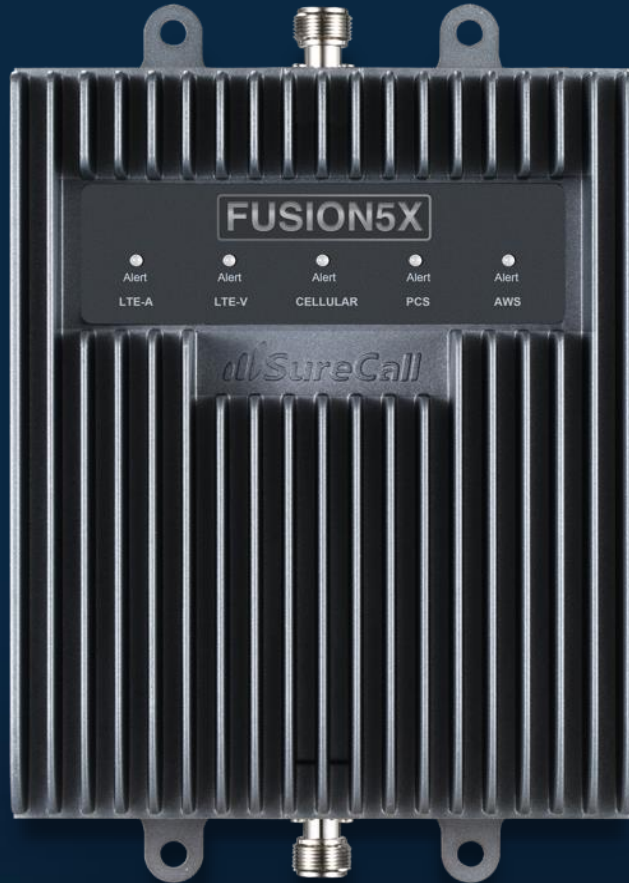
- Covers up to 8,000 sq. ft.
- 5G compatible supporting 4G/ 5G devices, MiFi hotspots and datahubs
- Significantly improves voice, text and data speeds for all North American carriers

Connectivity in the Weakest Signal Environments

- Exclusive 2XP technology delivers twice the signal power to the tower
- Patented technologies deliver best-in-class performance in weak signal areas



Fusion5x 2.0



- SureCall Fusion5X 2.0 with Auto Adjusting Gain
- +16 dBm downlink power for 2X more coverage area than the competition
- Built in SureIQ™ technology eliminates shut-down caused by overpowering and replaces attenuators to deliver 24/7 uptime
- Compatible with SureCall Sentry™ for remote monitoring
- 3-year warranty



Large Building Use



Boosts 4G & 5G
Signals



SureIQ Technology



Sentry Remote
Monitor



Force 5 2.0



- SureCall Force 5 2.0 with Auto Adjusting Gain
- +17 dBm downlink power for 2X more coverage area than the competition
- Built in SureIQ™ technology eliminates shut-down caused by overpowering and replaces attenuators to deliver 24/7 uptime
- 1st Booster on the market to include built-in remote management
- 3-year warranty



Large Building Use



Boosts 4G & 5G Signals



SureIQ Technology



Sentry Remote Monitor



Force 8



- **First 5G signal booster** that improves 5G service inside buildings, including T-Mobile's 600MHz (Band 71)
- Eliminates dropped and missed calls in buildings up to 80,000 sq ft.
- Customizable kitting and multi-amplifier scalability provide flexibility to accommodate any floor plan
- Each band is independently configurable to function in the most challenging signal environments



Industrial Use



Works With 5G*



SureIQ Technology



Sentry Remote Monitor



Introducing...

Extended Range Technology

THE GAMECHANGER



DOUBLE THE
POWER



CLEAR CALLS



MAX PERFORMANCE
IN RURAL AREAS

Why is this Important to Passive DAS Systems?

SureCall patented signal booster architecture that significantly improves the user experience. ERT eliminates much of the signal loss in the coaxial cable between the donor antenna and the booster providing:

- **Maximum Coverage**
- **Maximum Connectivity/Range**
- **Maximum Data Performance**

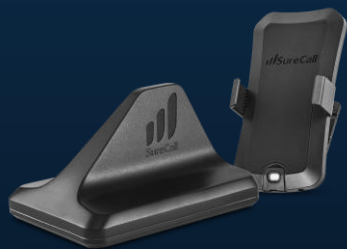


SureCall ERT Solutions

Mobile



Fusion2Go 3.0 MAX



N-Range 2.0

Residential



Fusion4Home MAX

Commercial/Enterprise



5X MAX



5X MAX



Exclusive SureCall Patent

1st Multi-Port commercial booster with ERT

Best performing booster for larger commercial buildings

- ERT & 2XP delivers the best performance in the most rural areas
 - Max gain, 72dB
 - Max Uplink Power, 1Watt EIRP
- Multi-Port (2) output with maximum downlink power on each port
 - +17dBm DL power per port (FCC limit)
- Scalable
 - Can cover up to 75,000 sq. ft.



Large Building Use



Boosts 4G & 5G Signals



SureIQ Technology



Sentry Remote Monitor

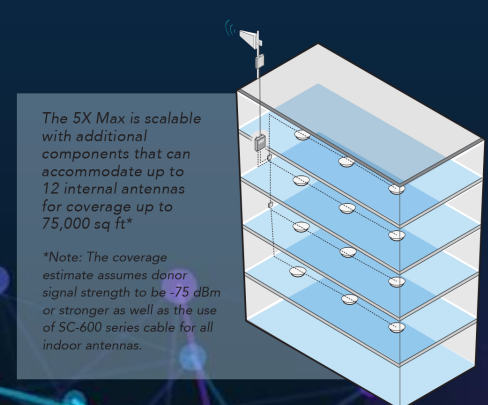


Extended Range Technology



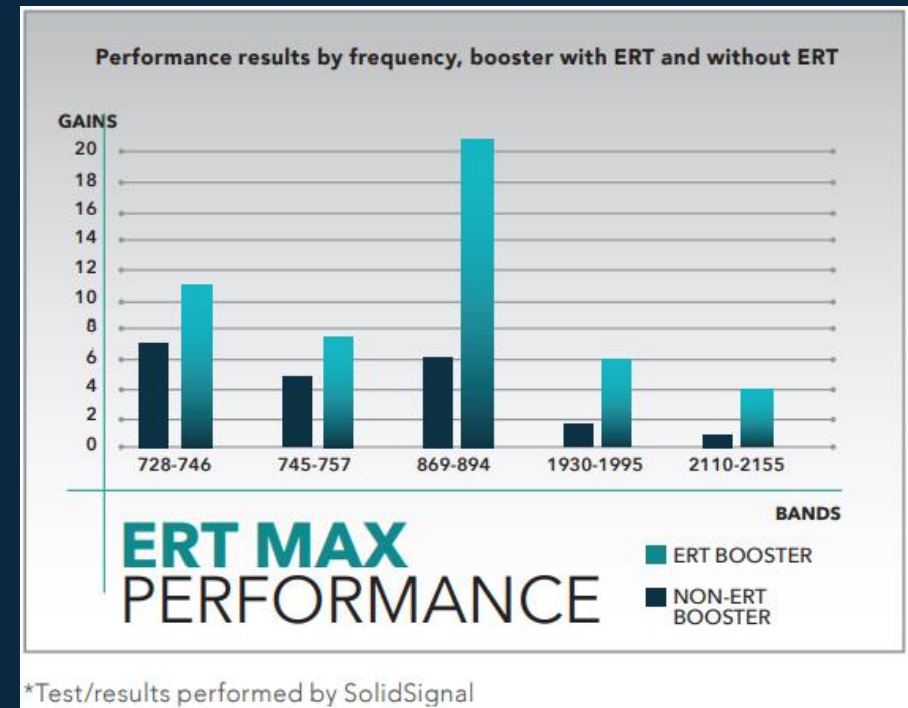
How Does ERT Work?

1. **Outside/Donor Antenna** - Installs on the exterior of your building in the location that receives the strongest signal from a nearby cell tower. This captures the strong signal outside of the building and pulls it into the Outside Amplifier, eliminating the loss over 150' LMR 400 series cable.
 - Enhancing the signal at the donor preserves SINR, providing better signal, and data performance over any other competitor.
 - Allows for maximum power, 1-watt EIRP, allowed by FCC.
2. **Inside Host** - Receives the signal from the External Booster
 - Providing full power, +17 dBm, from each port
3. **Indoor/Broadcast Antenna** - These are installed inside of the building to distribute the amplified signal throughout the building.



Why is ERT Important?

- ERT provides a clear technological performance advantage among all wideband signal boosters.
- Every “dB” matters
 - +3dB = 2X the signal power
 - +6dB = 2X the boosted coverage area
- Eliminates much of the cable loss between the donor antenna and booster.
- Reduces noise, allowing for faster data speeds through the booster



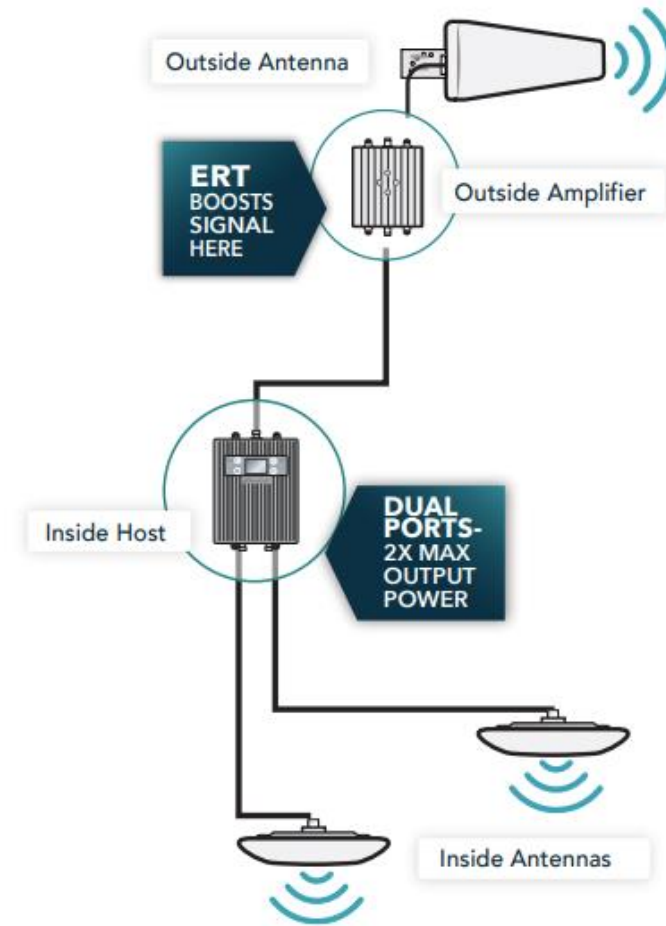
Booster Downlink Gain (dB) – ERT vs. Competitor Like-Product			
Booster Downlink Gain (dB)	Fusion4Home Max	Competitor	Gain Difference per Band
Band 12	61.9	57.8	+4.1dB
Band 13	61.7	56.5	+5.2dB
Band 5	61.0	58.6	+2.4dB
Band 25	67.6	60.7	+6.9dB
Band 4	69.5	62.2	+7.3dB



5X MAX EXTENDED RANGE TECHNOLOGY™

SureCall's exclusive proprietary ERT delivers the performance advantage among all wideband signal boosters

- Amplifies signal at the strongest point
- Overcomes initial cable-loss
- Reduces noise for faster data speeds



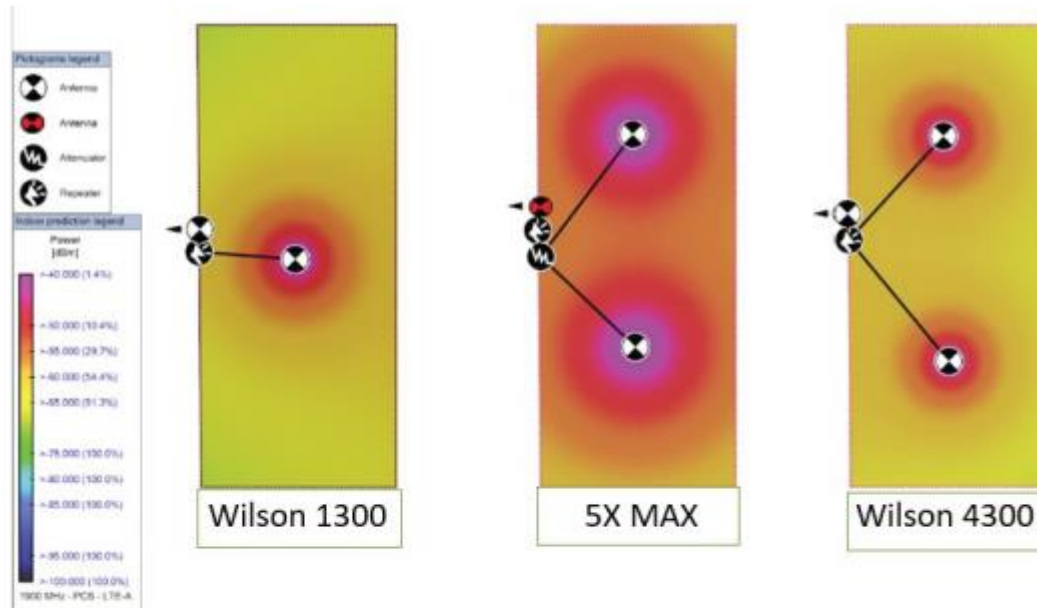
Part: SC-5XMax-Y2U



5X MAX VS THE COMPETITION

SureCall 5X Max is the winner

- ✓ Donor Signal -55dBm (RSSI)
- ✓ Equal Cable Length (loss)
- ✓ 5x MAX (ERT) equals MORE POWER!

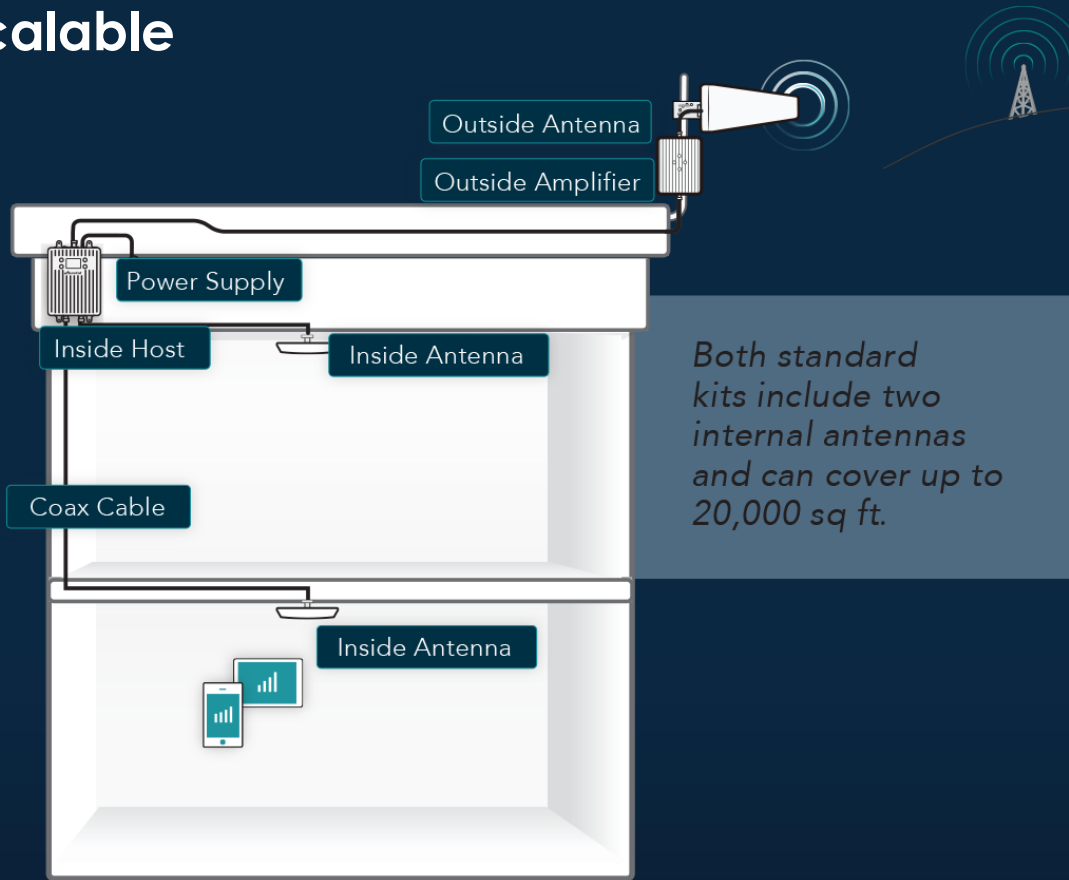


Booster Downlink Gain (dB) – ERT vs. Competitor Like-Product



Frequency Band	5X Max (dB)	Competitor (dB)	Gain Advantage per band (dB)
Band 12	61.9	57.8	+4.1 dB
Band 13	61.7	56.5	+5.2 dB
Band 5	61.0	58.6	+2.4 dB
Band 25	67.6	60.7	+6.9 dB
Band 4	69.5	62.2	+7.3 dB

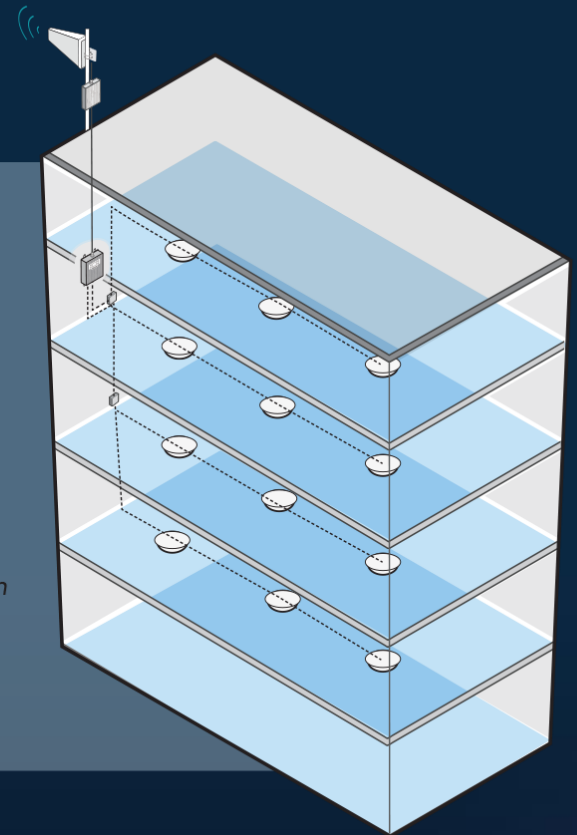
5X MAX Scalable



Both standard kits include two internal antennas and can cover up to 20,000 sq ft.

*The 5X Max is scalable with additional components that can accommodate up to 12 internal antennas for coverage up to 75,000 sq ft**

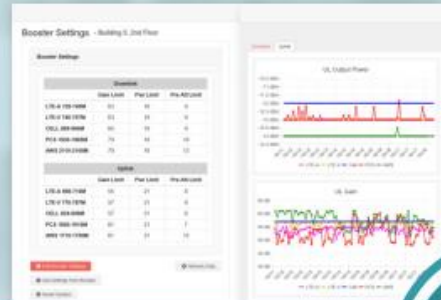
**Note: The coverage estimate assumes donor signal strength to be -75 dBm or stronger as well as the use of SC-600 series cable for all indoor antennas.*





IOT REMOTE MONITORING

- ✓ Monitor and adjust booster from anywhere, WITHOUT local Wi-Fi access
- ✓ Provides real-time outside signal readings
- ✓ Easy-to-read graphs can be used to troubleshoot installation
- ✓ Set customized alarm notifications



SCALABLE KIT OPTIONS

FREE SYSTEM DESIGN



TWO STANDARD KITS

The 5X Max is available in two standard kits which provide coverage up to 20,000 sq ft.

DUAL PORTS- ACCOMMODATE UP TO 12 ANTENNAS



a. SC-SXMax-Y2U

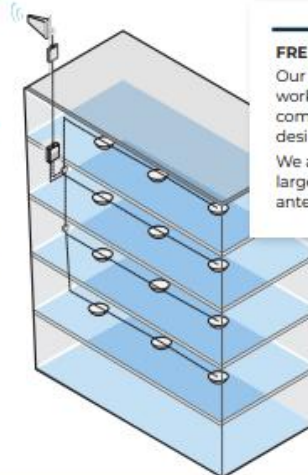


b. SC-SXMax-Y2P

SCALABILITY

The 5X Max is scalable with additional components that can accommodate up to 12 internal antennas for coverage up to 75,000 sq ft*

**Note: Coverage estimate assumes donor signal strength to be -75 dBm or stronger as well as the use of SC-600 series cable for all indoor antennas.*



FREE SYSTEM DESIGN

Our expert design team can work to provide a comprehensive configuration, design layout and BOM. We also offer iBwave designs for large buildings with multiple antennas.



Next-Generation Cloud Management System

Unique Features

- Integrated 4G/LTE Modem
 - Monitor and adjust the 5X MAX anywhere, WITHOUT the need for access to your customer's WiFi
 - First-year service included (\$150 value)



Finding the Outside Signal

SureCall Signal Meter

- Essential site survey tool
- Detects signal from all carriers
 - PCS (1930-1995 MHz)
 - Cellular (869-894 MHz)
 - AWS (2110-2155 MHz)\
 - LTE-A (746-757 MHz), LTE-V (728-746 MHz)
- Includes whip antenna, 9' and 24' SMA-Male to N-Male and N Female connectors, AC mini-USB power supply, 4 rechargeable AAA batteries, and User Guide



Finding the Outside Signal

SureCall Signal Meter

Reliable results

- ✓ SURECALL SIGNAL METER OFFERS 3 DISTINCT MODES
 - ✓ ALLOWING YOU TO INSPECT EACH FREQUENCY TO ELIMINATE ALL OVERLOAD OR LIMITED SIGNAL ISSUES PRIOR TO INSTALLATION



Hold down the mode button to toggle between modes

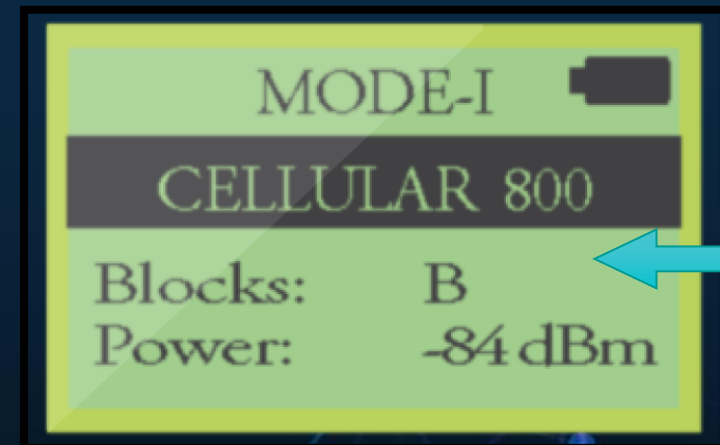
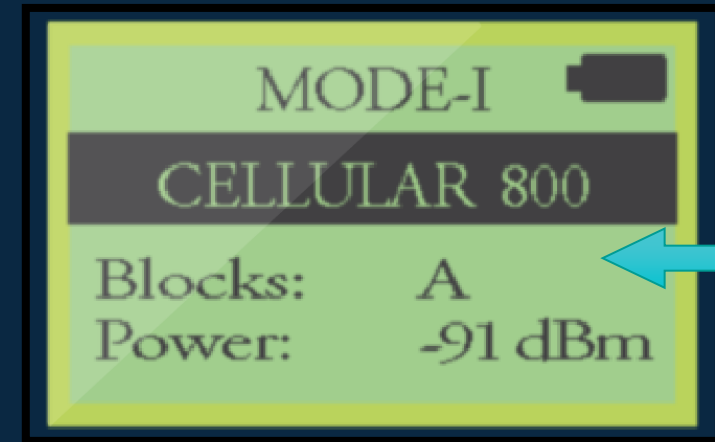


Finding the Outside Signal

SureCall Signal Meter

Mode 1

Allows for signal readings to be taken by blocks within each frequency



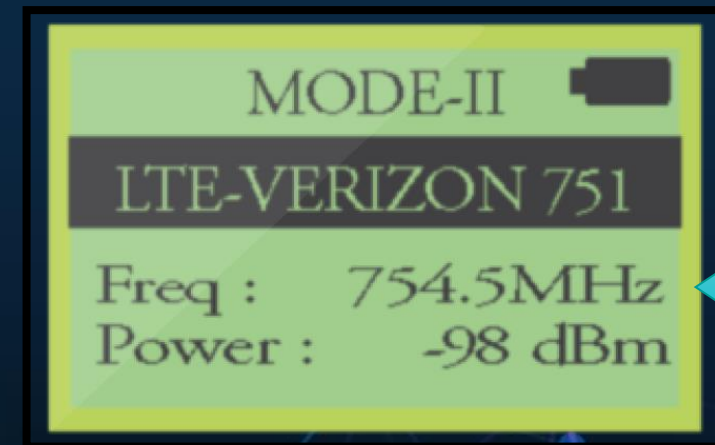
Finding the Outside Signal

SureCall Signal Meter

Mode 2

Allows readings to be taken by frequency

- LTE-A / LTE-V
- Cellular
- PCS
- AWS



Finding the Outside Signal

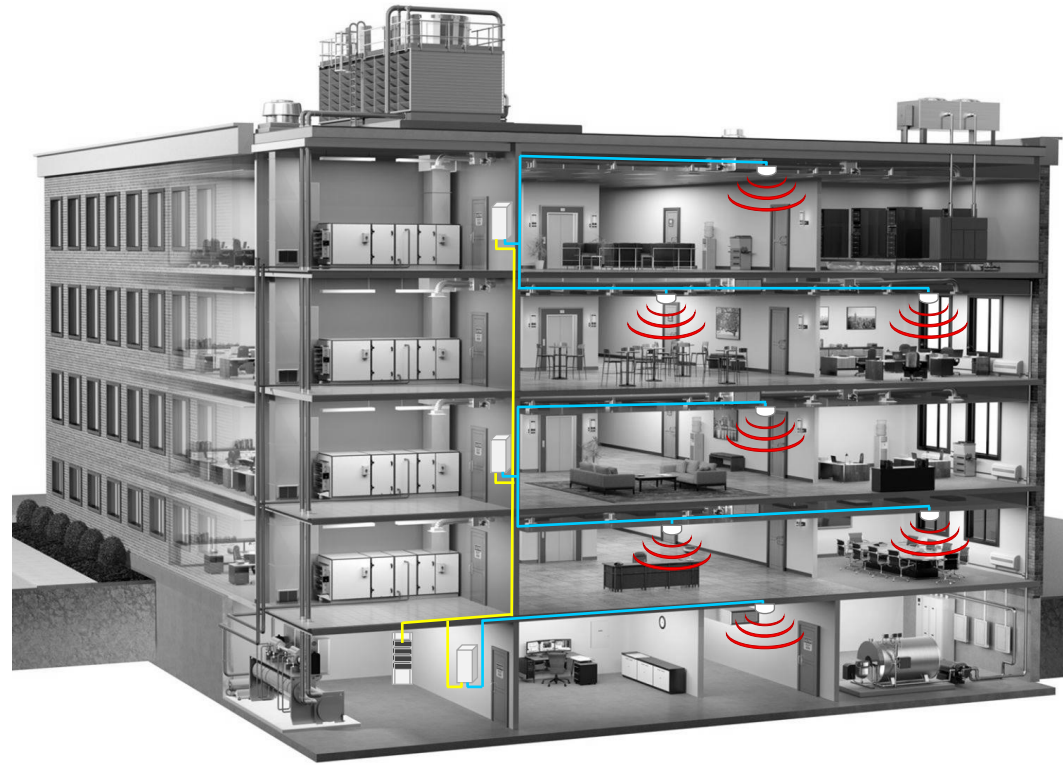
SureCall Signal Meter

Mode 3

Provides an average signal from all frequencies and bands



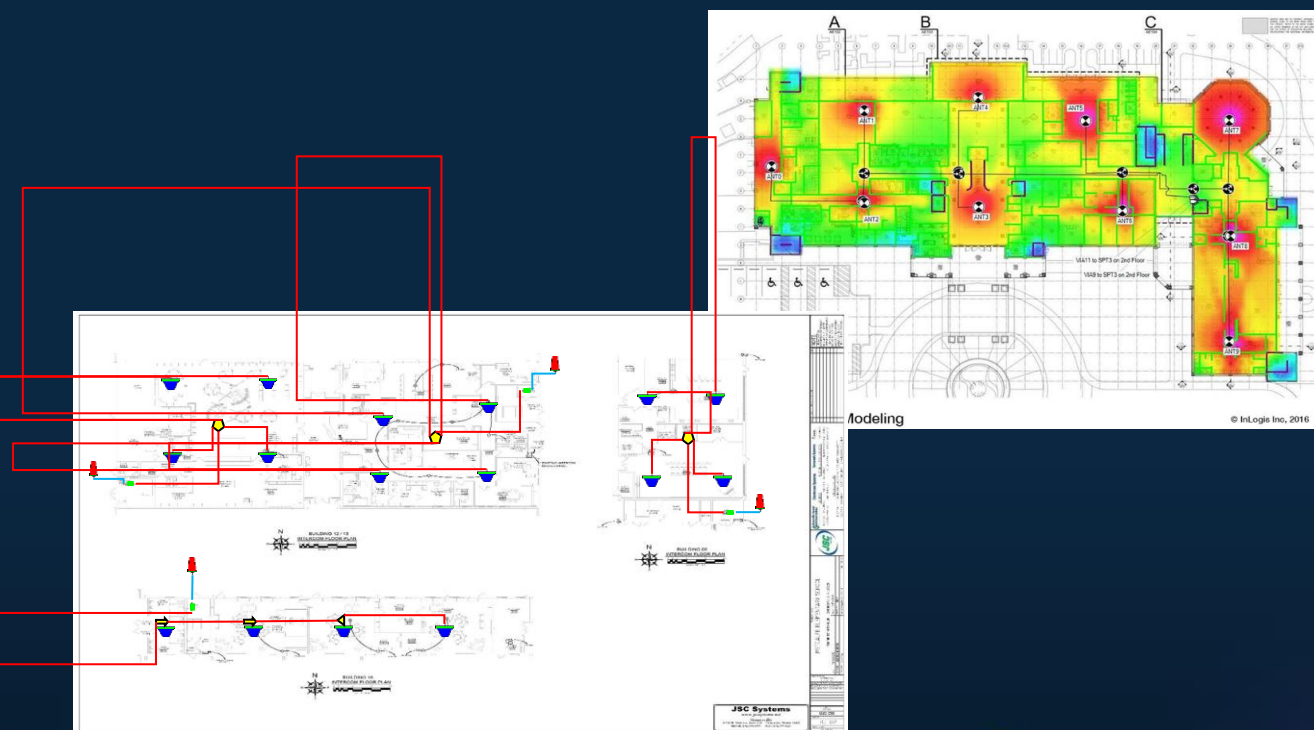
Step 2 – System Design and Layout



What Product is Right for your Customer?

SureCall Makes it Easy!

- Free Design Services
✓ www.surecall.com/designs
- US-Based Tech Support
- Marketing Support
- Call Ken, Eric, or Bryant!



Design Services

www.surecall.com/designs

- Design Services available for all building types
- Complete the entire Commercial Installation Questionnaire
- Provide a floor plan that includes approximate dimensions utilizing square footage
- Note the location where you will be mounting the booster
- Utilize a Signal Meter to record the signal
- **It's imperative to include ALL local carrier signal strengths in dB**

Commercial Installation Questionnaire



****Please allow 5 business days for configuration and BOM****

1. Which carriers are you looking to enhance reception for?
2. Are 1) voice (2G and 3G data only), or 2) 2G, 3G, and 4G amplification required?
3. What is the estimated number of cellular users?
4. What is the city, state and the zip code of the installation?
5. What is the square footage of the building?
6. What are the approximate dimensions of the building?
7. Are there internal concrete/metal obstructions within the building?
8. Are there any concrete/marble/slate floors/walls? If so, please specify on drawing.
9. What is the dB signal strength outside the building?



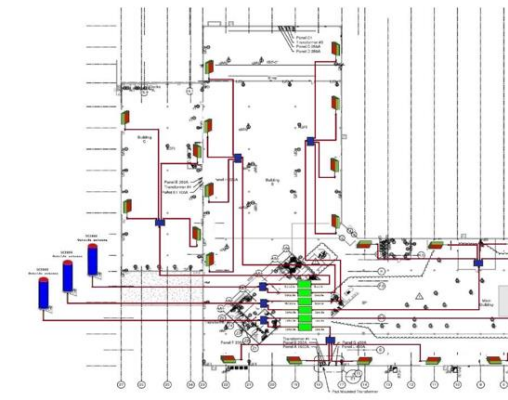
Design Services Complete Configurations

Buildings above 25,000 sq. ft.

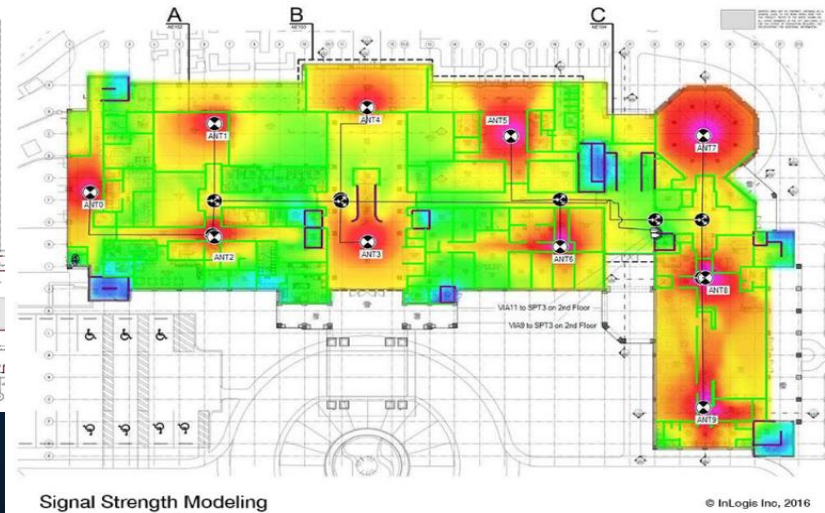
Link Budgets

Indoor Coverage Plan

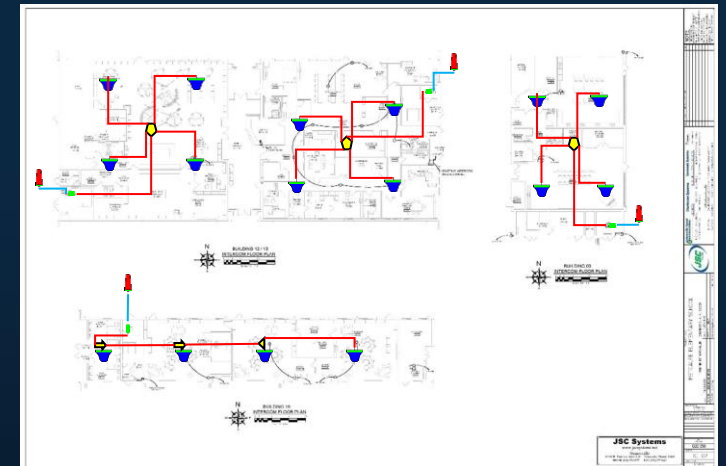
1. Indoor coverage schemes



iBwave Heat Maps



Standard Designs



Buildings below 25,000 sq. ft.



SureCall Bullet Points

- TARGET CUSTOMERS ARE STRUCTURED CABLING AND LOW VOLTAGE CONTRACTORS

- KEY MARKETS

- Senior Living Facilities
 - Residents Demand Cell Coverage
- Restaurants
- Retail Stores
 - Backup for POS System
 - Customer Satisfaction
 - On-line Coupons and Sales
 - Eliminate Missed Calls
- Manufacturing Facilities
- MDU's
- K-12
- Hospitals
- Underground Parking
 - E/V Charging Stations Require Cell Connection
 - 911 Calling
 - Safety
 - Protect Against Liability

- WHY ADD SURECALL

- BUILDING MATERIALS STOP CELL PHONE SIGNAL PENETRATION

- Poured and Pre-Cast Concrete Block Cell Signal
- Low-e glass has metalized mylar
 - Equivalent to Standing Next to a Steel Plate
- Profitable
 - 30% GPM on Hardware
 - Easy installation
 - No Programming Required
 - Remote Monitoring Included

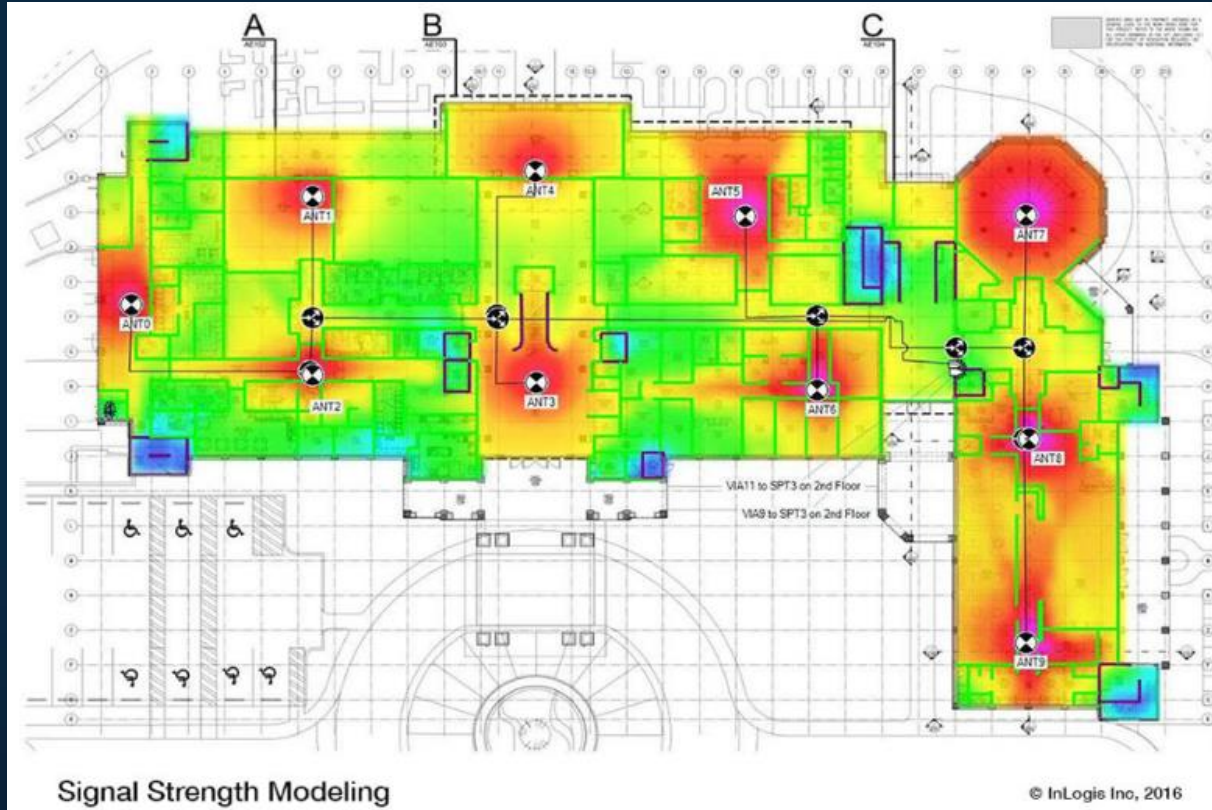
- PLANNING AHEAD SAVES MONEY

- Assume You Will Encounter Cell Problems
- Adding Cable Runs as a Retrofit is Expensive

- HOW TO GET STARTED

- Identify the opportunity
- Submit Design Request
- SureCall Provides a Design and BOM
- <https://surecall.com/design-service>
- Add to Your Bid Package Even if unsolicited

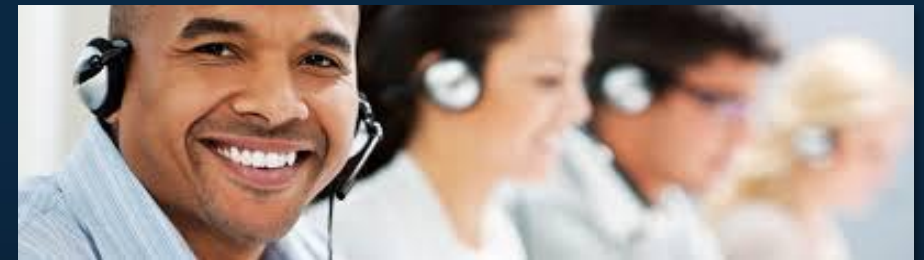
The SureCall Difference



Design Support



Marketing Support



Dedicated U.S Technical Support



Key Takeaways

Everyone of your customers needs SureCall

FCC / Carrier Approved

Extended Range Technology

SureCall Design Services

Support (Ken, Eric, and Bryant)



Ken O'Connor
Major Accounts Manager
(404)-514-5639
ken.oconnor@surecall.com

An Authorized Verizon 5G Vendor
THANK YOU

WWW.SURECALL.COM

