



# streetsounds

Music for Your Main Street

## Design & Planning Guide

V7.1

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## Planning Your StreetSounds Network.

This document will help you with the process of planning for your StreetSounds installation. There are several important decisions to be made in order to achieve a reliable network with good audio coverage.

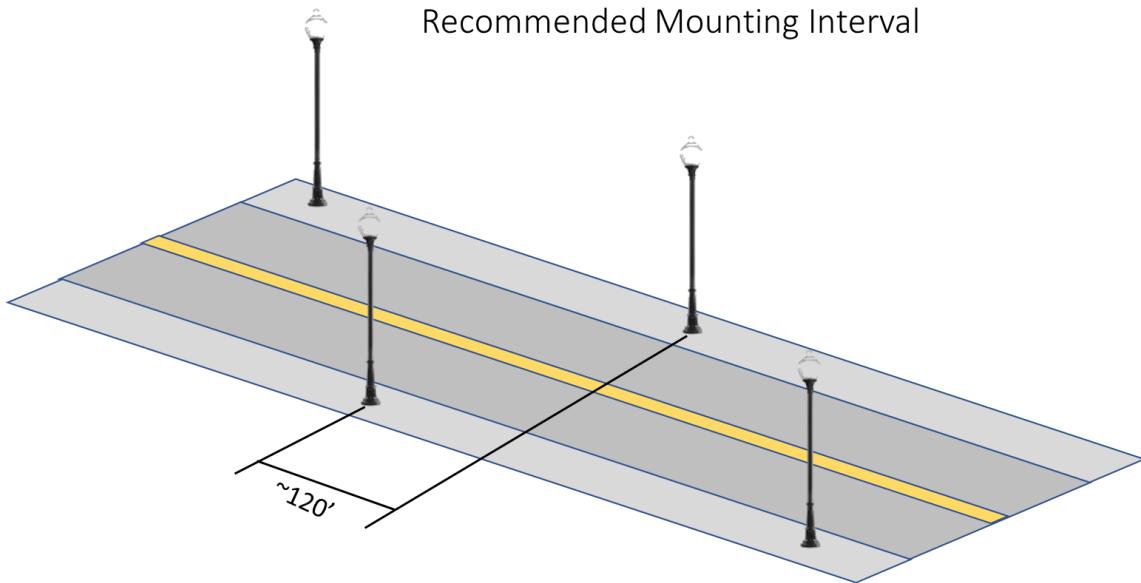
### Select Your Coverage Area and Poles

The first step in the planning process is to decide exactly where you want the audio coverage. This may sound simple, but in fact may be a bit more difficult due to physical limitations. The wireless audio system is designed to be mounted on existing streetlight poles from which it gets its AC power (110VAC).

Most small-town city blocks are between 250' and 350' long. Street light poles are typically situated about 120' to 150' apart so that the light illumination coverage is adequate for the surroundings. This provides the perfect mounting location for the wireless speakers. A good way to begin the planning process is to walk your streets and decide which poles would be good candidates for the speakers. Some towns have poles that have been installed in an alternating pattern on opposite sides of the street. Good audio coverage can be achieved by placing the speakers in a zig-zag pattern on these poles. Note that not every pole needs a set of speakers.



You will need to identify specifically which poles you would like to mount each StreetSounds unit on. We recommend that the poles be 100' – 120' apart (150' max). If your street is not too wide, remote units can be mounted in a zig-zag pattern across the street for better audio and radio coverage. If your street is wide and/or noisy, you will need to have more remote units placed at a reduced interval. AirNetix can help you decide on the best approach by looking at Google Maps.



You will need to come up with a “name” for each pole, such as “North Main #1” (NM1), “East Square 2” (ES2), or “Flower Shop”. This will help identify the units on the Network Management System software.

The mounting location on the pole will need to be clear of any obstructions, such as flower baskets, flag holders, banners, or signs near the top where the remote unit will be mounted. The StreetSounds units should be mounted as high as possible on the pole (i.e. 12' or higher) for optimum radio performance and sound coverage.



In some cases the remote units will need to “share” the space with existing on the pole with other items, such as banners. The optimum mounting location is above any obstruction. However, in certain cases this is not possible and the radio may need to share the space with the obstruction. It is important



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to prevent the antennas from touching any metal items such as the bottom of the light mounting bracket (tenon), or mounting brackets.



It is highly desirable to mount the radio on the “street side” of the pole instead of the “shop side”. This will help with RF propagation for the radios. In certain cases it may be necessary to add “antenna extenders” to move the antennas away from the radio to prevent them from being blocked by the metal pole. This can help with RF signal reception.



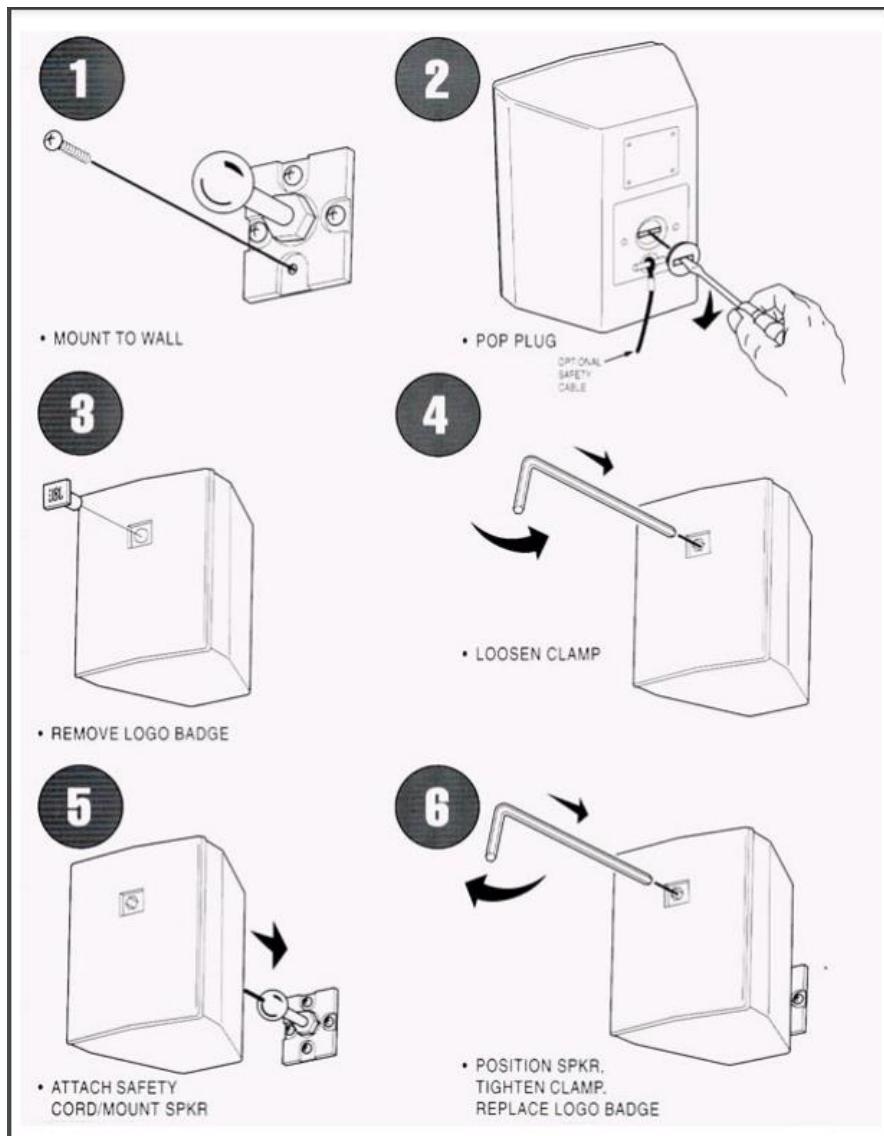
Figure 1- STS-270-205J Remote Dual-Speaker Unit



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The JBL Control-25 speakers have a hidden mount adjustment screw inside the FRONT grill of the speaker behind the plastic JBL "badge" (logo). Simply remove the badge with a small screwdriver (or by hand) to access this screw. Then use the provided hex wrench to loosen and/or tighten the screw after the speaker is placed on the InvisiBall mount.

The speakers have some degree of adjustment so that they can be aimed in the desired direction. They should be mounted with a down-tilt of 5 – 10 degrees to keep rain from collecting inside. The speaker cable gland (rear protective cover for speaker wire connection) should be oriented at the **top** of the speaker.





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## Verify AC Power

Finally, you will need to make sure that each pole has an AC power outlet. It is best if the outlet is covered with a weather cover as shown below and has a GFI (ground fault interrupt) breaker. Verify that the AC power is always "ON" as opposed to power that only comes on in the evening (photocell or timer). This is a very important consideration and enables the StreetSounds network to be monitored and controlled remotely at all times. The AC power cable on the radio is ~7' long. So, the AC power plug will need to be within 5 to 6' of the radio mounting location.



## Who Owns the Poles?

The next planning question is "who owns the poles?" If the local municipality owns the poles the plan is simplified. If the local or state power company owns the poles, you will need "Pole Attachment Permission" like what is needed for holiday decorations or hanging baskets. The power company will consider the size and weight of the speaker system as well as the power consumption. These specifications can be provided by AirNetix if required.

## What is the Pole Diameter?

We offer two sizes of mounting bands for the remote units. One fits a pole from 4" to 6" in diameter, which is typical. However, some poles are tapered or larger in diameter and require a larger band. We also offer a band that can accommodate a pole up to 9" in diameter. We will need to know the size of mounting band required for your poles. If your poles are larger than this (i.e. wooden utility poles), you will need to provide the appropriate mounting bands.



## Installing the Speaker Units

The installation of the remote speaker units has been greatly simplified and requires only two hose clamps for attaching the units to the streetlight poles. **Please note that AirNetix does NOT provide installation services.** The customer is responsible for the installation of all remote speaker units, as well as the Master Transmitter. Most towns utilize their Public Works personnel for installation. Some hire a third-party contractor. We have provided an instructional video on our website detailing the process. It is highly desirable to watch this video to fully understand the process.

## Network Application and Transmitter Location

You will need to decide how you want to use the system. Background music and public address announcements are quite simple to implement for farmer's markets, shopping music, parades, etc. However if you plan to "mic your band" (called "sound reinforcement") you will need to take "delays" into account. Delay settings can be controlled for each remote unit through the Network Management System application that runs the network.

A basic background music network requires a "Fixed" master transmitter (see below) mounted on an elevated location such as a roof-top or façade of a building. This location will house a laptop computer that runs the Network Management System application software. It will also need to be connected to the internet for a "streaming audio" business subscription services such as Mood Mix or Cloudcover Music. A Cat5 cable must be run between the laptop and roof-mounted transmitter.



The Fixed Master consists of an outdoor unit (ODU) and an indoor unit (IDU) which are connected together by a Cat5e shielded cable up to 150' long. The outdoor unit can be mounted on the façade of a building (above left) by using an inexpensive mount such as the Ubiquiti "J-Mount" (Ubiquiti UB-AM ~\$20). An alternative is the "non-penetrating" roof mount (above right) such as the EZ-NP-60-200 from Solid Signal (~\$90). It is important to mount the Fixed master greater than 20' above ground level WITH GOOD LINE OF SIGHT TO ALL REMOTE UNITS.



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The IDU has inputs for power (for the ODU), audio (from your streaming audio source), and USB (for the Network Management System). The USB attaches to a PC which runs the Network Management System application.



Figure 2- STS-200-TXRX Outdoor Unit



Figure 3 STS-200 Indoor Unit (IDU)

However, if you plan to use the system for special outdoor events, you will need both a Fixed, as well as a “Mobile” master transmitter (see below). Using the network for this type of application requires that you carefully select a location for the Fixed master, and take into account the transmit range required for the Mobile master. During your special event, the Fixed Master will be re-configured to be a “repeater” so that it can “relay” the signal from the Mobile Master to all of the remotes. It is best to discuss this element of planning with an AirNetix professional well in advance of the installation of the system.



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## Mobile Master

The Mobile Master (Mobi) is a battery powered "mobile" Master Transmitter that can easily be transported down to the street during a special outdoor event, such as a festival or parade. The Mobi includes a built-in 2-channel mixer for a microphone and an audio player (iPod, smartphone) that eliminates the need for an external, bulky mixer and all the wires and knobs that come along with it. A function called "Mic Priority" automatically reduces the level of the audio player when you speak into the microphone. The audio level automatically returns to its previous level when you stop speaking, eliminating the need to "fiddle" with the knobs. The Mobi includes a 12-hour rechargeable battery that can be recharged with any standard USB port so that you can keep rockin' all day long.



When using the Mobi for a street-side event, the roof-mounted Master is reconfigured to be a "repeater". Thus, the Mobi talks to the repeater, and the repeater retransmits the signal to all the remotes. This means the Mobi does not have to cover the entire network from the ground.

## Laptop for Network Management.

You will need to provide a laptop that is dedicated to the StreetSounds network. It must be a Windows PC running either Windows 7 or Windows 10. The Network Management System will not run on a Mac. There are no special hardware requirements for the PC, so a mid-range or used laptop should work fine. Below are desired specs for the laptop:

Windows 7 or 10

6GB RAM

Intel i5 or better processor.

Minimum screen resolution of 1366 x 768

(Note: Dell offers refurbished PC's with these capabilities for \$400 - \$450).



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Prior to installation, we ask that you download and install the Chrome browser (if not already installed). Then download and install Chrome Remote Desktop ([remotedesktop.google.com](http://remotedesktop.google.com)) using a new, custom Google account so that you can share the login credentials with others, including AirNetix. This will allow us to keep an eye on your network during the first few weeks.

For example:

Username: [yourtownstreetsounds@gmail.com](mailto:yourtownstreetsounds@gmail.com)

Password: yourtown123456!

PIN: (required by Chrome Remote Desktop) 515151 – easy to remember.

Finally, download and install the StreetSounds Network Management System application from the support page of our website, or from a link supplied by AirNetix.

## Internet Access.

The PC that runs the Network Management System will need internet access. It is best to have a wired LAN connection, but Wi-Fi will work also.

## Remote Access to Network Management.

We will remotely monitor your network for the first few weeks after install to make sure everything is operating correctly. This will require that the laptop have Chrome Remote Desktop installed, and that the Google account for the laptop is accessible by us. We can assist with installing and setting this up if you need help.

## IT Contact

We will need someone to be the point of contact for PC and internet related questions and/or issues. We will need to work with this person during the final part of the install when we have everything up and working. At some point in the future, you or your IT person will need to assume responsibility for “driving” the system (i.e. song selection and addressing any system alarms). For the first few weeks we will be keeping track of the system remotely and can make any changes that you like.

## Streaming Audio Services

There are numerous sources of “streaming” audio. Some legal, some not so legal. Obviously staying legal is of utmost importance for a public outdoor system. Services such as Mood Mix and CloudCover offer very affordable, fully legal, licensed music of all varieties. For example, Mood Mix offers a business license for unlimited play for ~\$35/month. Another streaming service, CloudCover offers a business license for \$17/mo. Both of these services run on a web-based application that runs on the Network Management System PC.

## Potential Interference

The StreetSounds system is certified by the FCC for operations in the 900 MHz frequency band (902MHz to 928MHz). Devices in this band must accept interference from other systems operating in the same



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band. This includes some AMI (automated metering infrastructure) systems operated by utility companies for water and electricity metering. We have operated successfully in some cities in the presence of this type of inference. In other cities we have had more challenges, which include dropouts of audio, or reduction of the number of available channels.

**PLEASE BE AWARE THAT WE CANNOT GUARANTEE THAT THE STREETSONGS NETWORK WILL OPERATE SATISFACTORILY IN THE PRESENCE OF THIS TYPE OF INTERFERENCE.**

If your city is using an AMI system that operates in the 900 MHz frequency band, AirNetix recommends a performance test prior to rolling out the network. AirNetix will work remotely with the City to perform this test, which will consist of mounting a transmitter on the roof, and a single remote unit on one of the poles. This will let us measure the level of interference present along the street and make a determination as to whether the system will perform to everyone's expectations.



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## StreetSounds Installation Check List

1. Interference Analysis
  - a. Does the city have an AMI system operating in the 900 MHz frequency band?
2. Poles
  - a. Select the specific poles for the remote units.
  - b. Check for 110VAC "always ON" power on each pole.
  - c. Measure the pole diameter at mounting location of remote.
  - d. Make sure the mounting location is clear of banners, flower baskets, signs, etc.
  - e. Name poles with a name you can remember. It is recommended that you make a map of your pole selections using a screen shot from Google Maps.
3. Installing Remote Units
  - a. Watch the installation video on the StreetSoundsWireless.com website.
  - b. Attach the StreetSounds remote units to the selected poles using the two stainless mounting bands supplied.
  - c. Mount the units as high as possible (>12 ft.) above the ground.
  - d. Avoid letting the antennas touch metal objects, such as the streetlight mount.
  - e. Mount the units with the Radio facing the street (not the stores).
  - f. Secure any excess AC power cord with zip ties.
4. Master Location
  - a. Select a location for the Master transmitter.
    - i. Decide if using Mobile or Fixed Master at this location.
  - b. Confirm that there is an internet connection in this location.
  - c. Designate a laptop or desktop computer that will be dedicated to running the Network Management System (NMS) application.
  - d. Download and install the NMS application.
  - e. Download and install Chrome Remote Desktop.
    - i. Create sharable login credentials for a new Gmail account.
  - f. When ready, have AirNetix test the remote login capability.
5. Fixed Master Installation
  - a. If installing a Fixed Master on the roof, purchase and install a suitable (satellite dish) mount.
  - b. Run the AirNetix-supplied Cat5 cable from the roof mounting location to the indoor location of the NMS computer.
  - c. Attach and test the connections to the Indoor Unit.
    - i. Power
    - ii. Audio
    - iii. USB
  - d. Have AirNetix test the operation of the Fixed Master remotely.
6. Streaming audio music subscription
  - a. Subscribe to a streaming audio business service.
  - b. Test this using the NMS computer.