November, 2017

Michigan Technological University

THE RF CREW GUIDEBOOK

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I’ve been assigned as A2, Wireless Run Crew. What does this mean?

In some theatres, A2 and Wireless Crew are two different people and jobs. But since we are a small production, the jobs are combined as one. You will be dealing with the wireless microphones we use for theatre productions, as well as putting them on actors, and helping out with any other sound task given. This guidebook is to help you through this process. You will find all the supplies you need, how to use the and how to troubleshoot any problems you may encounter.

What You Will Need

All of these items can be located in Rozsa storage, unless noted otherwise.

Refer to Attached RF Inventory list:

Wireless Rack Units 1 & 2

Transmitter packs and Lavs

Wireless Mic Bodypack kit

Body pack belts

Batteries and charger stations

Mic hair Attachments

Body Attachment supplies

SHOW DUTIES

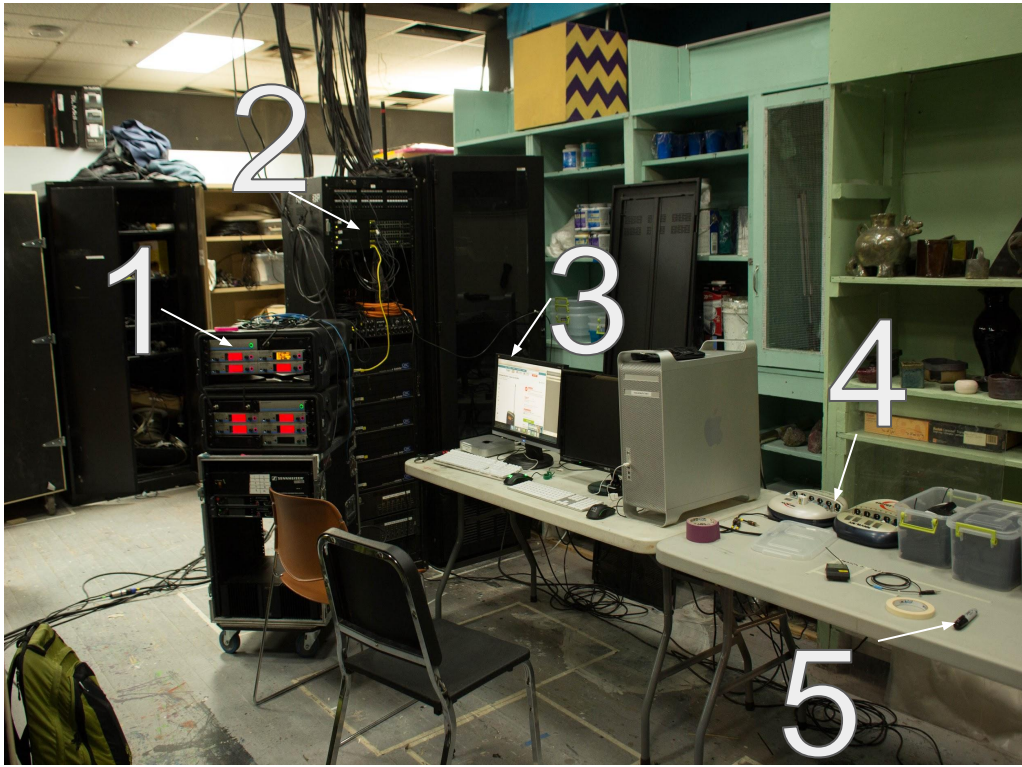
- Before the start of the show, you need to create an RF Bible. Instructions and examples are described later in this Guide Book.
- You are responsible for starting up your station upon arrival. This includes putting batteries in transmitter packs, turning on receivers and monitoring computers, and any other item that your A1 assigns to your pre-show routine.
- You dress the actors with their microphone and pack, and are responsible for hiding the mic accordingly
- During the show, you might have an actor or two that have issues with their microphones coming out of place. In this case, it is your job to make sure when they have time off stage to resolve these issues and get them back on stage. Make sure to make note of recurring issues that your Stage Manager might want to be aware of.
- You are in charge of monitoring transmitter pack battery levels, and replacing batteries as needed.
- You are in charge of gathering all mic packs and any items used to dress the mic.
- Take out batteries in packs and put them in the charger
- Shut down your station

How-To’s

How To: Organizing Your Station

Organization is key to a smooth operation. Here you can see an example of what “RF World” looks like in backstage McArdle.

1. Wireless Receiver Racks
2. Network Switch Rack Unit with Amplifiers
3. Wireless System Manager Computer
4. Batteries Charging Station
5. Mic pack layout area



*This is backstage McArdle, Rozsa will look different, as will other theatres.

How To: Organizing Your Station cont'd

Here you see an example of a taped layout of the actor's pack, lav, and anything else used in mounting it. This allows for consistent and fast mounting every night. Be sure to collect everything from the actors after the show.

A side note: You may also use an over the door shoe pocket organizer to store your products.

How-To's: Dressing an Actor with a Microphone

There are many ways you can mic up an actor. The best sounding placement is in the center of forehead, along the hairline. This method is called crown mounting. If the actor wears a hat or any head piece that comes on and off frequently during the show, or the actor has no hair, this may not be the best option. Second best is along the ear and extended just to the end of the hair. This method is called jaw bone mounting.

First, make sure your pack has charged batteries in it

It is easiest to leave the Lav unattached to the pack while you place it. That way it will not fall and tug the lav loose from the actor, and you will be able to maneuver it freely without the pack being in the way.

Your goal is to hide the lav, any clips and ties you use and the pack from the audience.

Next is to place the pack belt that holds the transmitter pack. This location will be different for each actor and each show. Generally, you want the pack around their belly, and have the pack placed in the small of their back. You may need to strap it to female actors' leg like a holster if they are wearing a dress, or corset, or anything that prevents the belt from being around their waist.

You will most likely have to use a combination of wig clips, and bobby pins to get the lav to stay in its place.

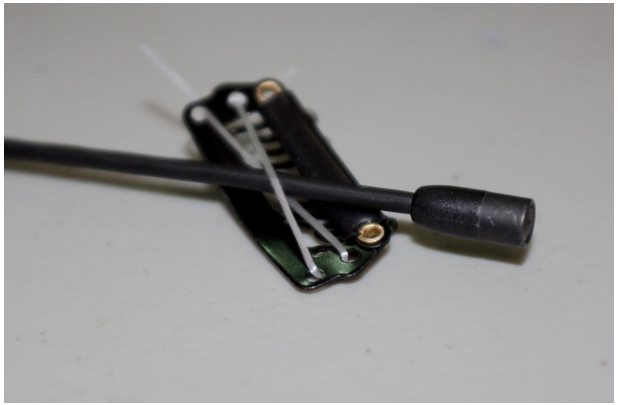
How-To's: Dressing an Actor with a Mic Cont'd

To get the lav to stay in place along the back of the neck, we usually tape it to their skin on the back of the neck. You first need to use the Skin Prep Wipes to clean the area, place the lav where it needs to be, and tape it down.

A good method to start with is 2 thin strips in an "X" formation, as shown on the next page.

Be sure when you place the lav on the neck, that the actors have enough slack for full range of motion of their head.

While doing all of this for the first time, you should be making notes of what you did to the actors to get it to work properly. This will be known as your RF Bible. Instructions for how to make one are on page 10.



Here is the end of the element, with a wig clip held on by stretch cord

How-To's: Dressing an Actor with a Mic Cont'd

An example of the element up through the top of the head, just outside the hairline. You want to make sure the hair curls over the element, and you don't fight it.

Here you see the lav run down the back of the head, held With bobby pins, and taped down.

How-To’s: Making the RF Bible

The purpose of the RF Bible is to have all your notes and methods in a book so in case you cannot be there, someone can pick up the book and know how to put the mics on the actors the same way you did.

You should have been supplied with a template that you can fill out yourself, or click here.

What it Needs:

- Picture of the Actor and their Character name
- Picture(s) of the placement of the lav in the hair
- Transmitter #:
- Transmitter Make/Model:
- Transmitter Pack Gain Level:
- Frequency:
- Placement/Mounting Type:
- Element Type:
- Element Placement/Mounting Type:
- Element Accessories:
- Element Color:
- Mounting Materials:
- Headpiece/Hats/Wigs:
- Special notes:
- Additional placement photos:

RF Bible Page Example

Character Name: John Smith Actor Name: Jim Bob Joe

Transmitter #:	1
Transmitter Make/Model:	Sennhieser EW-100
Frequency:	536.50
Placement/Mounting Type:	Right Ear, Jaw bone
Element Type:	standard
Element Placement/Mounting Type:	
Element Accessories:	no
Element Color:	Tan
Mounting Materials:	Tape, bobbin pin
Headpiece/Hats/Wigs:	No
Special notes and additional placement photos:	Right side of head does not face audience, does not make any fast movements.

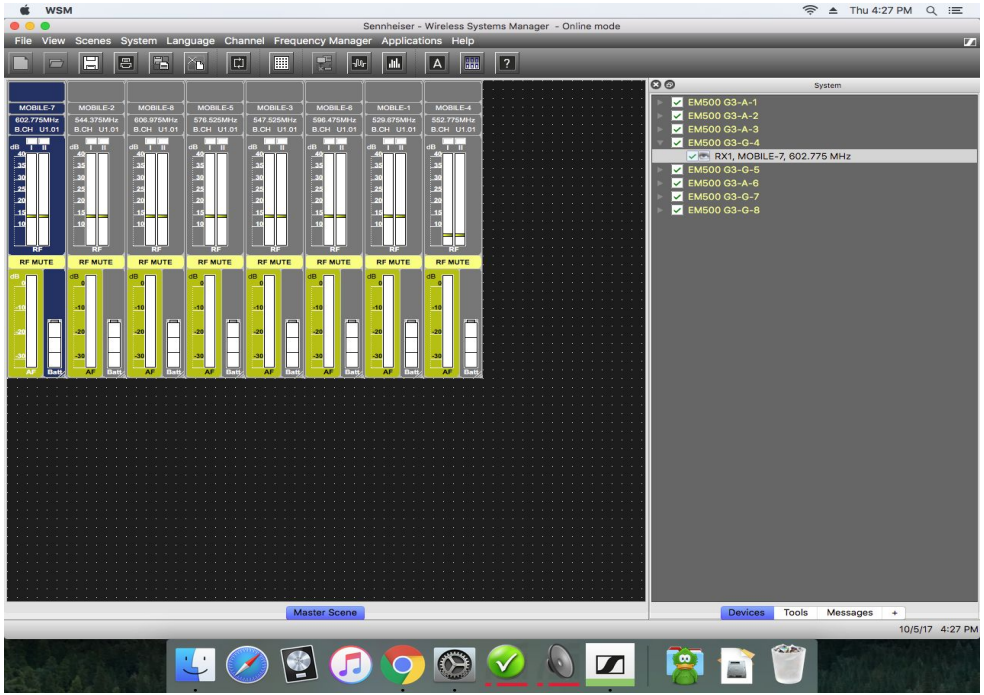
To create a multiple page PDF document, you need to fill out the template for each actor, and save a new individual PDF for each actor. Once you've done this for each actor, you need to create a file from multiple files within Adobe Acrobat.

To do this, open Adobe Acrobat,

File<Create<Combine Files into a Single PDF

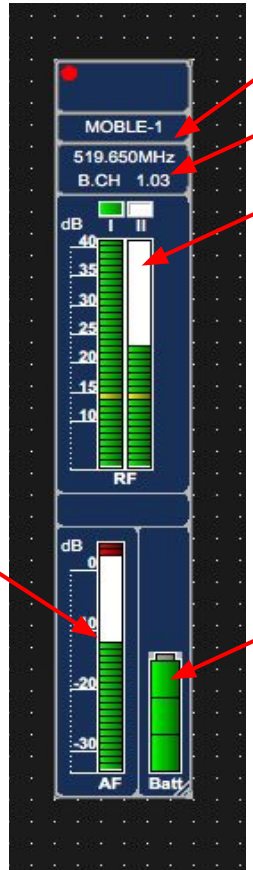
How-To’s: Sennheiser Wireless System Manager

The Sennheiser Wireless System Manager (WSM) is a computer program we use to monitor the Sennheiser wireless receivers and packs we use. The receivers are connected to the computer via ethernet cable into network switch.



How-To's: WSM Cont'd

Here you see the channel strip of a single channel.



Name of Wireless Receiver

Frequency, Bank number and Channel

RF Strength on both antennae

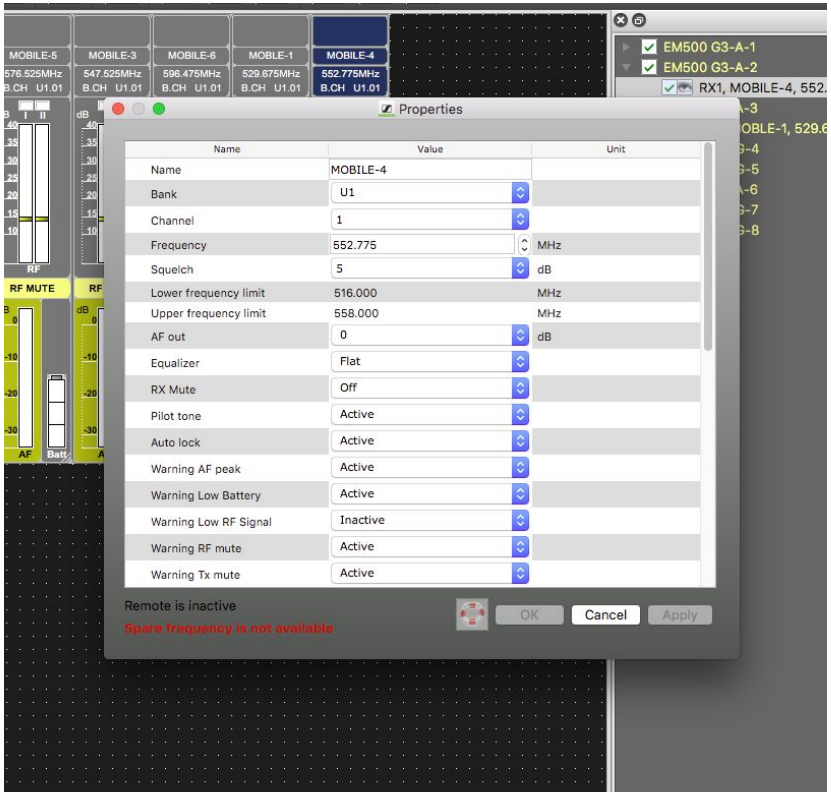
Audio Level

Battery Meter of Pack

How-To's: WSM Cont'd

You can open the properties of each receiver unit, and change various properties of the receiver.

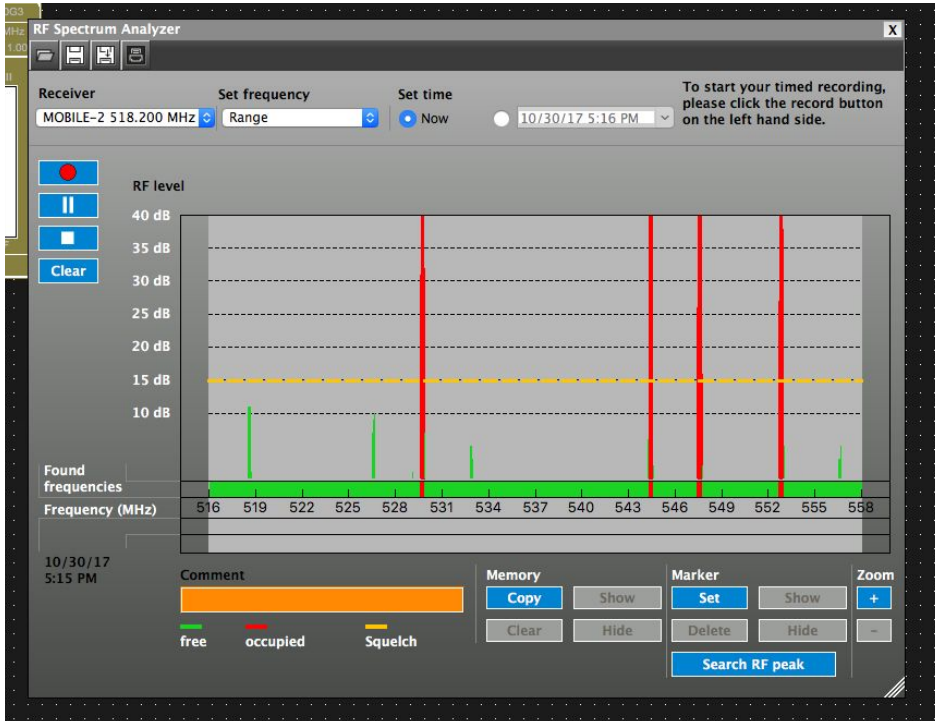
To do this, you can double click the channel strip, or right-click > Properties.



How-To's: WSM Cont'd

This is the RF Spectrum Analyzer. This will automatically scan the area, and show which frequencies are being used, and which frequencies are open. Access this panel by following the path:

Applications > Spectrum Analyzer

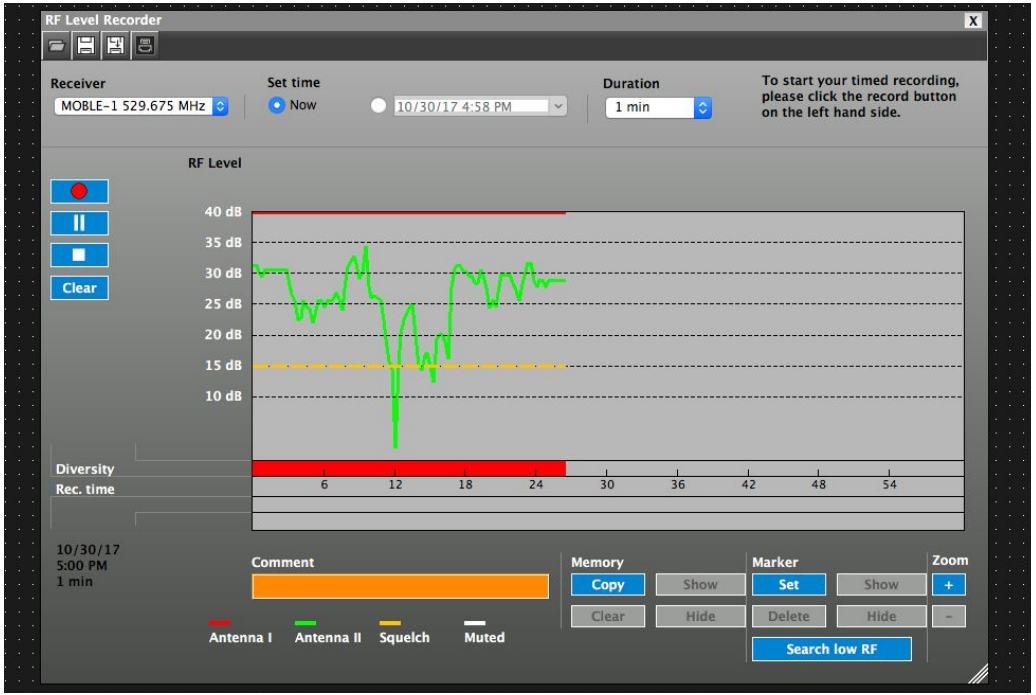


How-To's: WSM Cont'd

This is the RF Level Recorder.

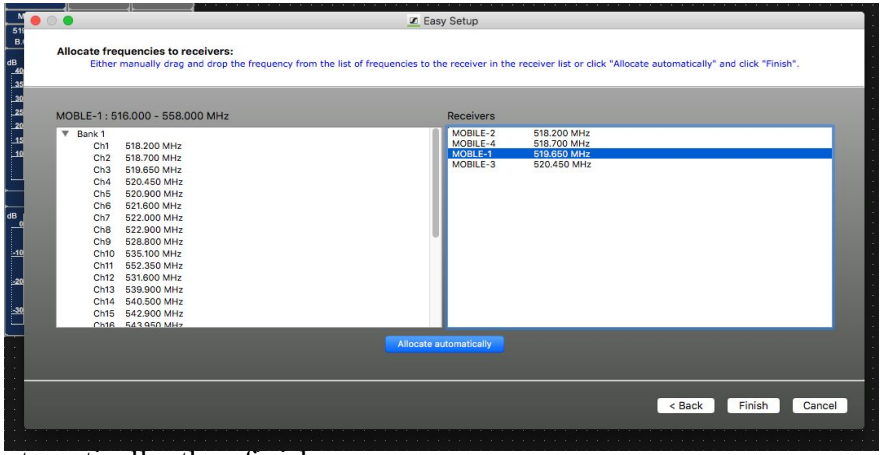
Application > RF Level Recorder

This tool shows you the strength of your antennas, as well as your squelch level.



How-To's: WSM Frequency Manager

The Frequency Manager tool is an application that allows you to assign multiple receivers to open frequencies. To start the process, go to Frequency Manager in the toolbar, and select Easy Setup



Frequency Manager > Easy Setup

Select Wireless Microphone System option

Select the Receiver you wish to change *

Select Preset Scan

Select a bank with unused frequencies

Select the receiver in the Receiver side and select Allocate Automatically, then finish

Sync transmitter packs to corresponding receiver

*If a menu appears saying "remote access is not turned on, would you like to activate?" select yes.
Remote access can be activated before hand by going to System > Remote Access

How-To’s: Syncing a Pack to Receiver

On the receiver, press the sync button

On the pack, hold the IR transmitter close to the receiver’s IR transmitter

Hold until you get a check mark on the receivers screen

How-To's: Working With Actors

Remember to be nice to them.

When you're going to touch them, let them know. Ask if they would rather wire the lav under their shirt or if it's ok for you to do it.

Ask if they have any allergies to tape, latex, or anything that might harm their skin.

THINGS GO WRONG! Resolving interference problems

- Make certain that no radio transmitters, including the system transmitter or those for other wireless systems, are allowed to come closer than approximately 10 to 15 feet (3 to 4.5 m) to the wireless receiving antennas. Such items to keep clear are phones in particular. This can overload the receivers and increase the chances of interference.

- Make certain not to allow receiver antennas to touch each other when arranging receivers. Make especially certain that the antennas from one receiver do not touch, or come too close to, those of another receiver. Try to provide at least 10 inches (25 cm) of separation between the antennas of any two receivers.

- Make certain that all transmitters have good batteries. The low output voltage of weak batteries can cause some transmitters to generate harmful interference. If there is any doubt, install a new, fresh alkaline battery in all wireless transmitters.

Intermodulation can also cause issues where frequencies can overlap and it is necessary that every transmitter have its own frequency.