

# Wireless Microphones for Film Directing Students

with Bradford Craig  
bcraig77@gmail.com

# Wireless lavalier mics don't sound good!\*

- \*When compared side by side with shotgun mics and studio mics, lavaliers sound quite thin.
- The mic capsule is too small to pickup the full range of frequencies from bass to treble.
- There are several components, each a potential point of failure.
- Because they're so close to the subject, they capture less ambient sound and room reverb.

# So why do we use wireless mics?

- Dialog is unscripted
- Subjects are too far apart to cover with one or two shotgun mics
- Framing is too wide to allow a shotgun mic to be within a usable distance
- If concealed in an ideal position, they can minimize the effects of poor acoustics or background noise.

# Components

- Lavalier mic

Side note “A lavalier is an item of jewelry consisting of a pendant, sometimes with one stone, suspended from a necklace. The style was popularized by the Duchesse de la Vallière, a mistress of King Louis XIV of France.”

- Mic cable
- Connector
- Transmitter
- Receiver
- Output cable

# Common models

- Sennheiser G2 / G3
  - Prosumer cost and performance
  - Batteries last a very long time
  - Nice frequency scanning feature
  - Range is unreliable
  - Antenna can't easily be replaced.
- Lectrosonics 100 Series
  - Moderately priced, moderate performance
  - Bare bones in terms of features, no scanner
- Lectrosonics 400 Series
  - Professional cost and performance
  - Batteries don't last very long
  - Excellent range
  - On some models, antenna can be replaced

# Steps to setting up wireless mic systems

- 1) Set receiver and transmitter to an unused frequency
- 2) Connect receiver to the device it will be feeding.
- 3) Set receiver output gain
- 4) Set transmitter input gain
- 5) Test performance and range.
- 6) Place mic on subject.
- 7) Turn up recorder's input gain as needed.
- 8) Use your ears!

# Choosing a frequency

- 1) Perform these steps one system at a time for best results
- 2) Turn on receiver, check batteries, and observe RF activity.
- 3) If RF activity is detected, use any scanning features to find an unused frequency. Use the manual!
- 4) Turn on transmitter, check batteries, and set frequency to match receiver.

# Setting receiver output gain

- 1) Connect the receiver to the device it will be feeding (we'll call this the recorder). If the recorder has a mic/line switch, set it to mic. Set that record's input gain exactly to the middle of its range.
- 2) Turn on transmitter and receiver. On transmitter, turn input gain/sensitivity all the way up, so audio is clipping.
- 3) Adjust receiver output level so that when audio is clipping, it registers on the recorder's meters as just below clipping.
- 4) Now the receiver and recorder are calibrated.

# Setting Transmitter Input Gain / Sensitivity

- 1) Assess the nature of the dialog you'll be recording – is it a scene of constant screaming? Will it be all whispers? Could be anything?
- 2) With the lavalier positioned in the middle of your chest, speak in the loudest volume you expect to encounter.
- 3) Adjust the input gain / sensitivity so that it is a little below clipping.
- 4) How will the audio be affected if the level is too low? Sound quality goes down, any radio interference is relatively louder.
- 5) How will the audio be affected if the level is too high? Loud dialog passages will be distorted no matter what you do after the fact.
- 6) It's very inconvenient to have to adjust this while shooting, so err a little on the low side.

# Potential Obstacles to a clear transmission path

- RF interference – other film crews, nearby broadcast antenna, high voltage power lines, cell phones
- Mechanical obstructions – transmitter antenna is bent, connector is loose, connector solder points is failing
- Poor mic placement – clothing is rubbing, noisy jewelry