

Brian Anner's Culmination Project

My Background

My name is Brian Anner, I'm an Audio Engineer, Musician, and a video editor. I'm from Nassau County on Long Island, specifically in the village of Freeport, New York. Before I came to City Tech, I was working in off Broadway in the city and small scale shows on the island as an Audio Technician as well as already having an associate's degree in Studio Audio Recording from Nassau Community College. I got those opportunities through my Uncle Sean Bade, who's been working in the business since the 90's as a jack of all trades in our business. So, coming into the school I had 3 years of experience. I also continued working shows on weekends during my time here at City Tech until the pandemic. Currently I've been working in the business 5 years.

Brian Anner

Culmination Spring 2021

RF SOUND SYSTEM VS ANALOG SOUND SYSTEM

My Experience in Audio and in the Entertainment Business

Audio Technician - Five Ohm Productions 2015 - Present

Audio Technician - Hart to Hart Entertainment 2019 - 2020

Audio Technician/Stage Hand - Plaza Theatrical Productions 2017 - 2018

Stage Hand - Bestek Staging and Lighting 2016 - 2017

Audio Technician - Global Audio Systems 2018 - 2020

College Background

Associate's Degree in The Student Recording Program from
Nassau Community College

Currently in the Entertainment Technology Bachelor's program at City Tech
Tracks - Audio & Video

What is the Project?

This project will be demonstrating the various benefits and drawbacks of RF Microphones against Analog microphones.. RF technology including microphones are the here and now as well as the future for capturing audio signal and sound especially in a live setting. The goal of this project is to show various differences and similarities between both microphones through frequency response and system capabilities.

My Roles

Listener

Video Editor

System Builder

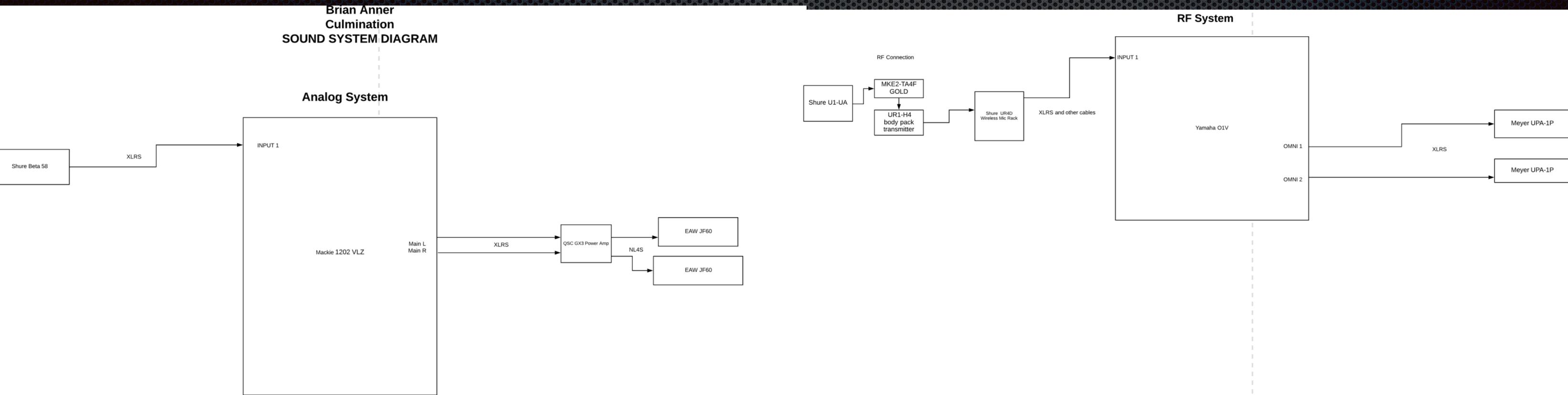
Listening Tests 1 and 2



Brian Anner - Listener
Colm Shaw - Speaker

The System Diagrams

Brian Anner
Culmination
SOUND SYSTEM DIAGRAM



Testing Layout

Overall Goal

Determine if there is an audible difference between two models of the same microphone, one hardwired and one transmitted through a radio mic system.

Setup

Physical Gear and Setup

Room 13 Setup:

Hardwired Beta 58 Microphone (Rented) on stand

Radio Beta 58 Microphone (School Owns) on stand

Note: Both mics placed in roughly the same acoustical environment

RF Receiver Rack using mic level output (so both channels are using the same kind of preamp)

Calibration

Have the speaker or a sound source played and precisely match the gain on both channels.

Make sure both mics are setup away from cabinets, walls, etc.

Test Procedure

One person, the “talker”, sets up in Room 13 with the door closed. Another person (or more than one) is the “listener” and sets up in Room 14 and can not see or hear what the talker is doing except through the microphone.

The talker flips a coin and designates one mic “A” and the other “B”. It doesn’t matter which is which but this should be written and labelled with tape on the mic stand to avoid any confusion. The talker does NOT DISCLOSE which is which until the test is over.

The talker then turns up mic A and talks into it, then turns mic A off and turns up Mic B, talking into each one for 10-20 seconds and going back and forth, disclosing which is which (“hey this is mic A, this is mic B”). The listener is listening for any audible differences between the two and can note a “favorite”.

The talker flips a coin, randomly picking either A or B and then speaks into that mic (turning only one mic at a time on) as a designated “X”. The designated X is NOT DISCLOSED to the listener until the test is over. The talker repeats this process 10 times and writes down which mic is which (Trial 1 was A, Trial 2 was A, Trial 3 was B, etc) but does NOT disclose which is which until after the test is over.

On each trial, the listener(s) makes their best guess as to which mic they think a given X is, and writes it down, repeating this 10 times.

Equipment Listings of Each System

The Analog System will include:

- ✦ QSC GX3 Power Amp
- ✦ XLR Cables
- ✦ Mackie 1202 VLZ
- ✦ Shure Beta 58 Microphone (rented from Rainbow Sound)
- ✦ (2) EAW JF60s
- ✦ NL4s

The RF System will include:

1. Receiver (rack mounted): Shure UR4D - UA
2. Bodypack Transmitter: Shure UR1-H4
3. Wireless Mic: Shure U1-UA
4. Hand held Transmitter: UR2/BETA
5. Yamaha 01V Soundboard
6. (2) Meyer UPA-1PÂ
7. XLR Cables and 2 Powercons

What I learned

Prior to this project I had a basic understanding of RF systems but, I didn't fully comprehend the audible differences between hardwired and RF Mics. I had some experience with older Sennheiser RF lavalier mics, I used them a lot when I worked for Plaza Theatrical Productions for plays. This project allowed me to find the answers I wanted and have a greater understanding of RFs especially how the Shure versions work. The challenges with this project was figuring out COVID protocols of the school especially for outsiders as well as discerning the differences audibly without a frequency response graph.

RF Sound System vs Analog Sound System

Brian Anner

Entertainment Technology Major, NYCCT, Brooklyn, NY 11201

Introduction

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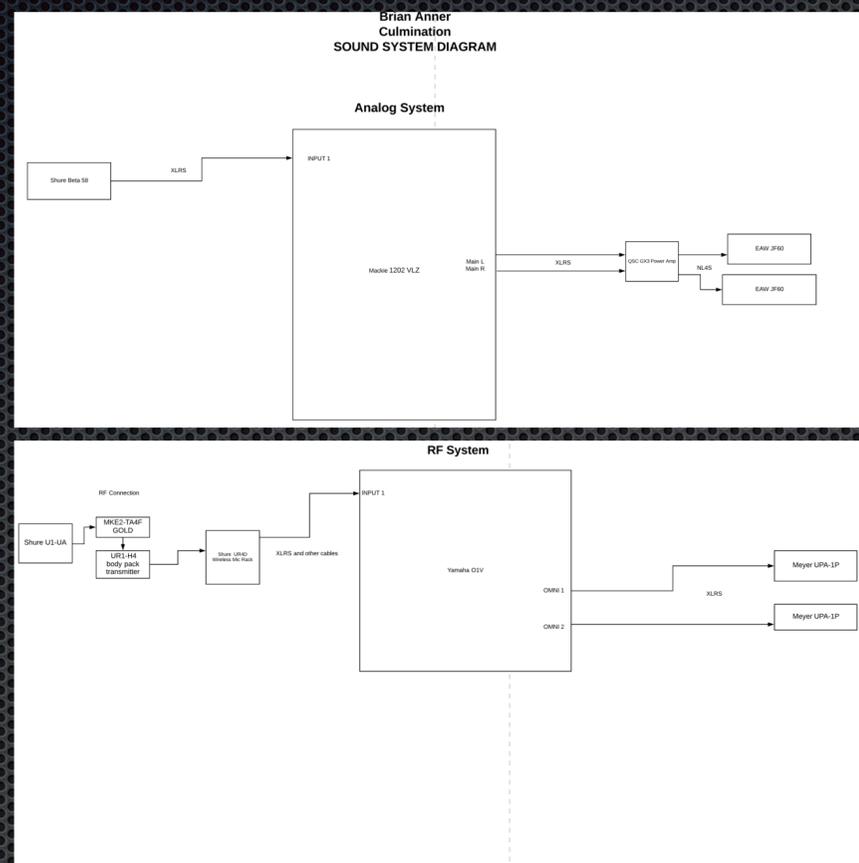
Materials and Methods

- 1.System Layout
- 2.Equipment List
- 3.Testing Procedure
4. Written down results of each system
- 5, Video of the experiment

Hypothesis

The hypothesis of the project is that RF Mics will be much more advanced and have more capabilities than a standard microphone including differences in sound quality and frequency response. However, each mic will sound similar. The differences I hypothesize is the RF mic will have a better high end frequency response and the Analog will have a better low end frequency response.

Sound System Layout



Results

The first test as the listener I got it wrong and we had EQ'd each mic. My hypothesis was correct on the second test that we did with no EQ. The RF Mic had a much brighter higher end frequency response and has a more efficient set up with less cabling. The Analog mic had a much lower end frequency response and It took a bit longer with the set up.

Conclusions

Overall, each system has their place in the entertainment sphere. RF systems have a much easier setup, less cable usage and has more adaptability, which is better for a big production show or Film/TV. While the analog has its place in a much more small scale show or event. For example, a church gathering or a community event. However, there is nothing wrong with using both in conjunction with each other on either size and scale of the show or event.

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