

SHURE 100 YEARS

+ A PEEK INSIDE THE WORLD OF

Super Bowl Frequency Coordination



SHURE **100** YEARS

Today's Agenda

01

Introduction

02

DTV Landscape

03

Spectrum at SB

04

Wireless Mic
Requirements

05

RF Focused
Companies

06

Ref and
Halftime Mics

07

Zoning/War
Games

08

Conclusion

Hello!

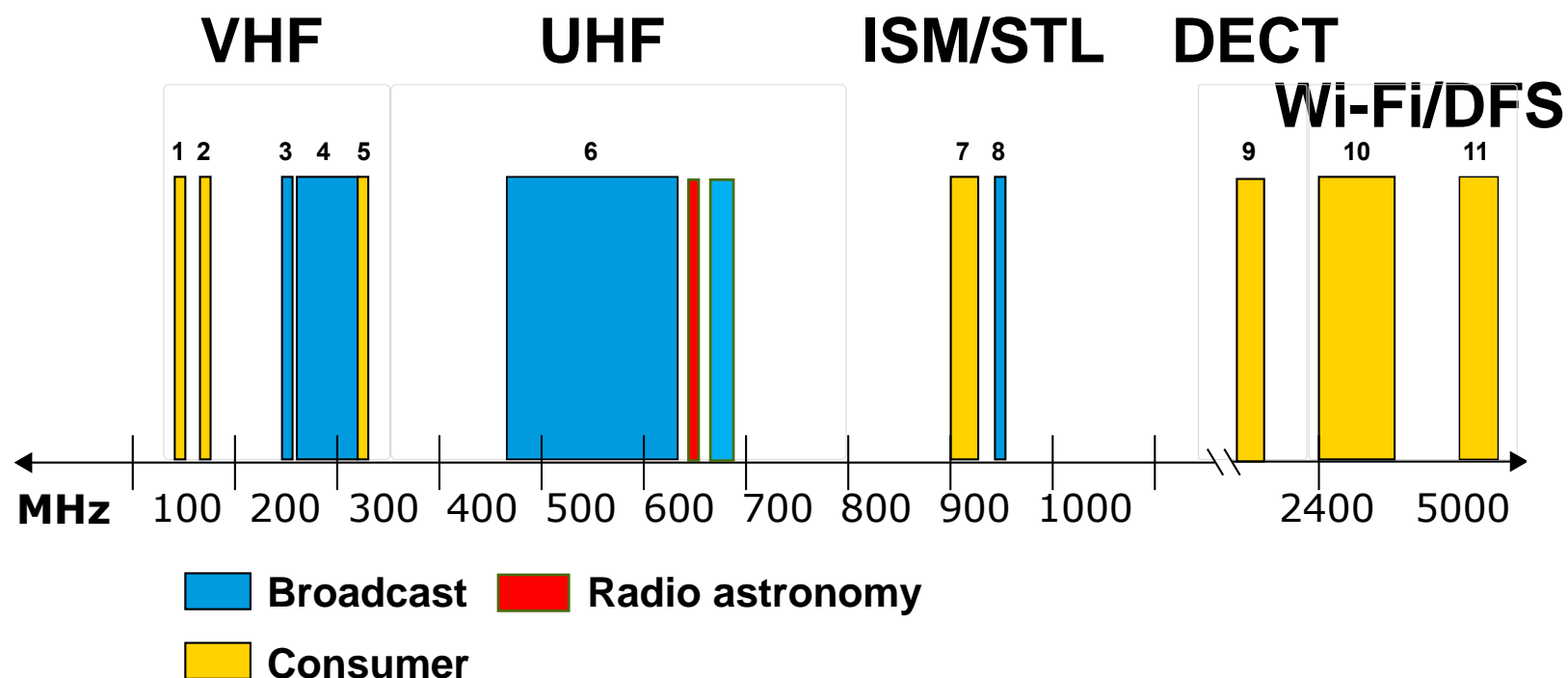


Ben Escobedo

Manager, Market
Development

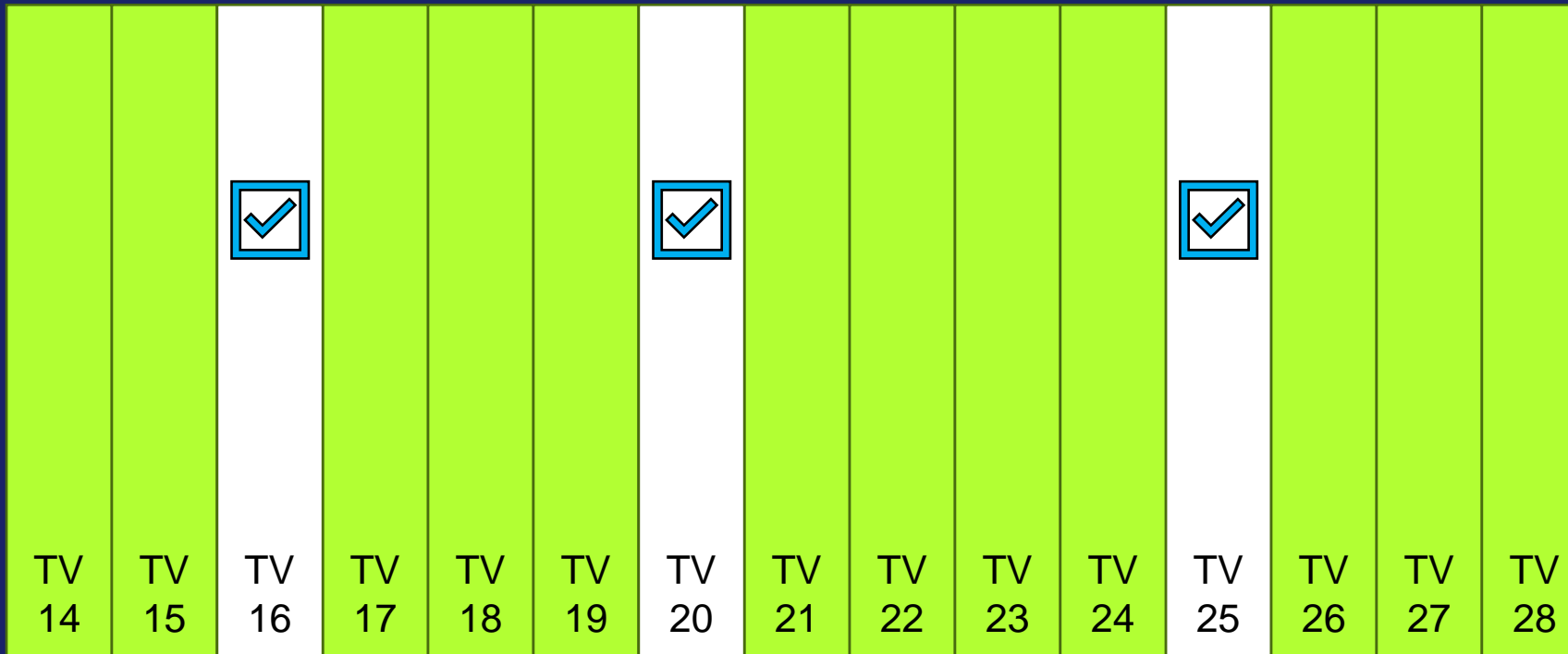
Shure Incorporated

Mic/IEM Operating bands in the U.S.A.



White Spaces

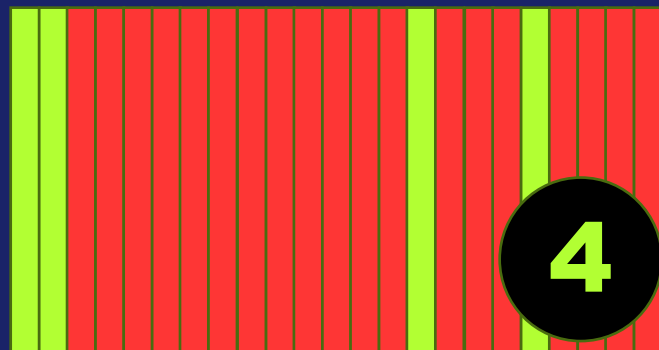
“White space” refers to unused TV channels in the current geolocation
This is where we deploy UHF wireless mics



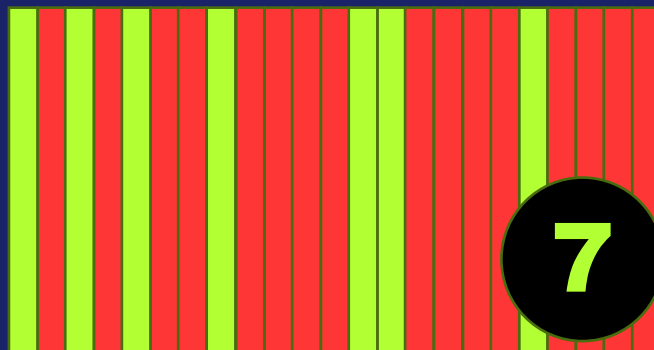
TV channel widths:

US = 6 MHz wide | Europe = 8 MHz wide

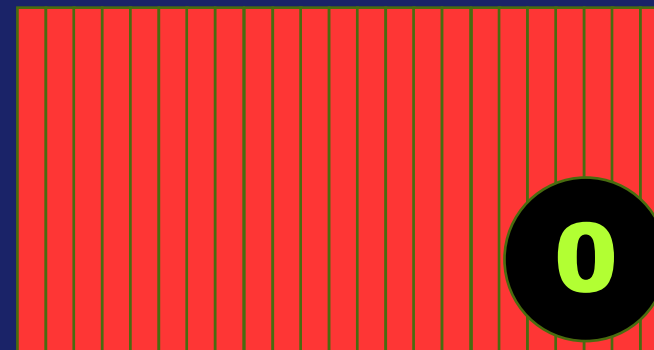
SB Vacant DTV Channels < 608 MHz



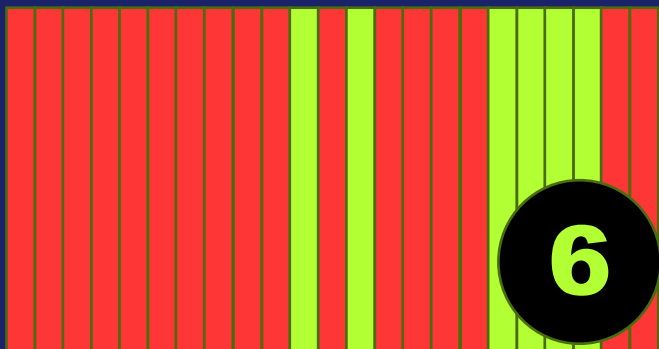
2021 - Tampa, FL



2022 - Inglewood, CA



2023 - Glendale, AZ



2024 - Las Vegas, NV



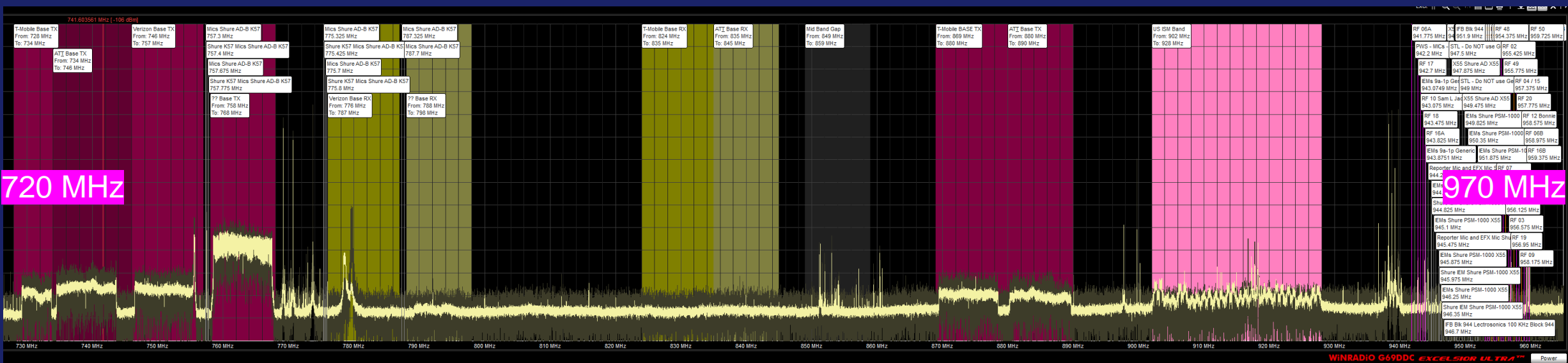
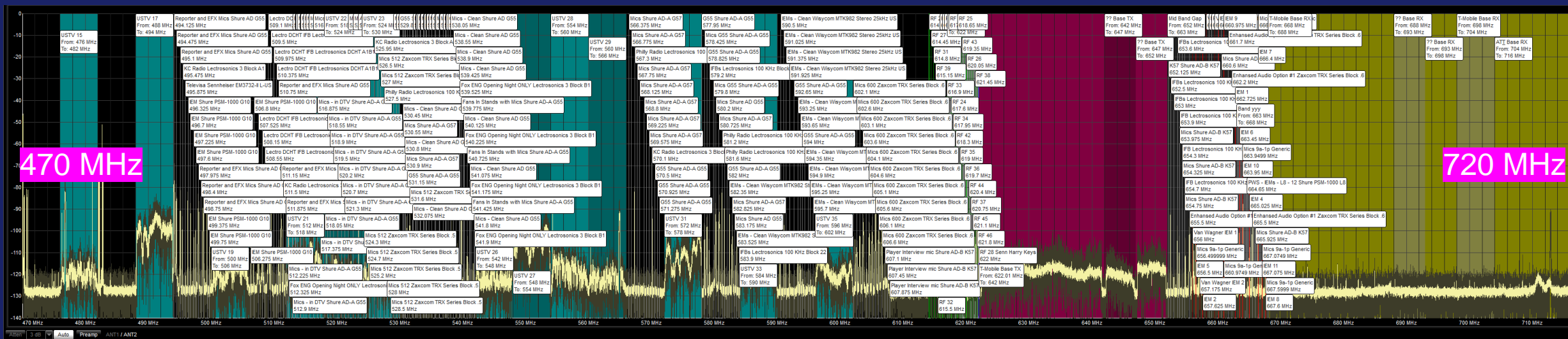
2025 - New Orleans, LA



2026 - Santa Clara, CA

(Data as of March 2025, Including LPTV Digital)

Spectrum Scan



Courtesy of Steve Caldwell using WinRadio

STAs for SB LIX



There were a total of 12 STAs (*only two were <1GHz for mics/IEM/IFB*)

- CP Communications has season long 600 & 700MHz guard bands and lower 700MHz blocks D & E (716-722 MHz, 782-728 MHz)
- Overall 614-698 MHz for Halftime and Ref Mics
- LMR high power PL's in T-band; channels 14 & 16.

Other STAs were >1GHz for cameras, video return, data and additional PCS bands G & H for Riedel Bolero comms.

Wireless Mic Requirements



Reliability

Highest requirements.
No Dropouts.



Lowest Latency

In Ear Monitoring (IEM)
Live Performance



Transmission Range

Solid coverage



Sound Quality

High fidelity



Remote Control

Shure ShowLink™
Make changes on fly



Software Command

Shure Wireless
Workbench 7

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Shure Axient Digital



- **Approximately 85% of SB Wireless Mic Usage**
- **17ch in STD mode, 47ch in HD mode per 6 MHz**
- **Low latency (1.9ms/2.9ms)**
- **Quadiversity RF for Reliability**

RF Focused Companies @ SB



- RF Expertise
- Expert Personnel
- Frequency Coordination
- STA's
- Client support
- Comm Systems



- FOX Compound Wireless
- RF over Fiber (RFoF)



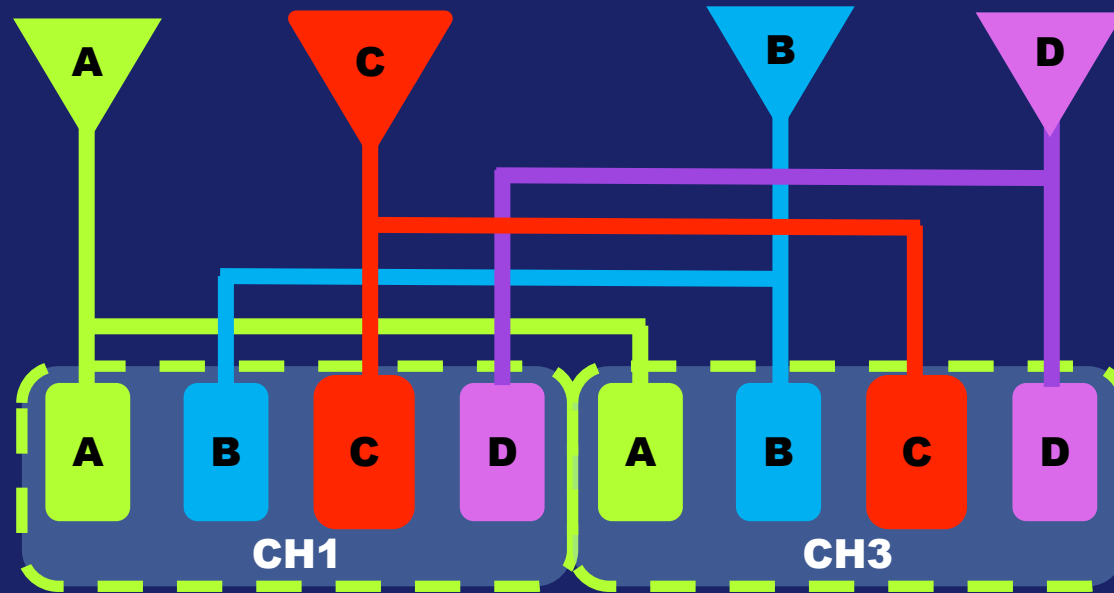
- Equipment provider for Ref Mics/Halftime Show
- ATK is longstanding provider of SB equipment
- RFoF for Field Ref Mics
- Expert Personnel

SHURE 100 YEARS

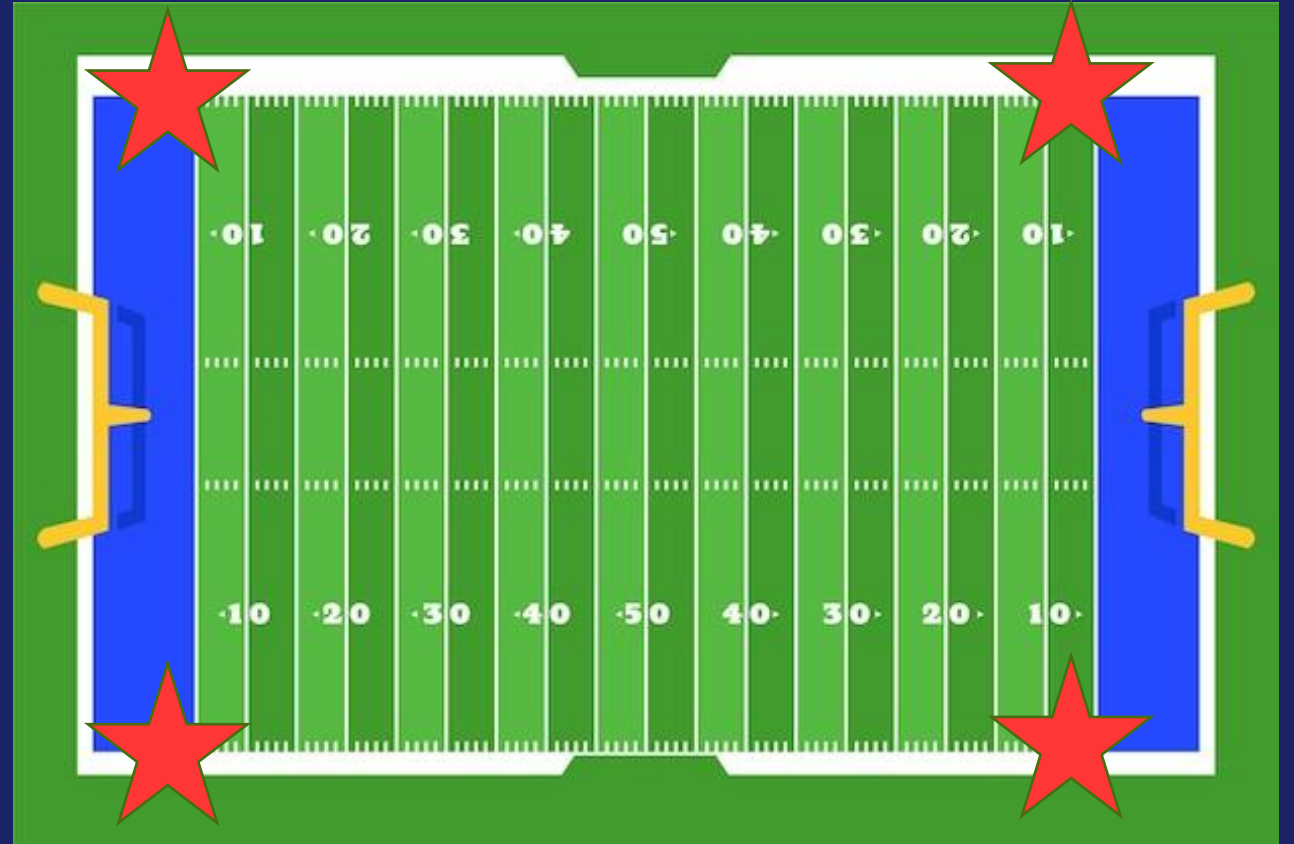
Ref + Halftime Show



Shure Quadiversity – Axient Digital



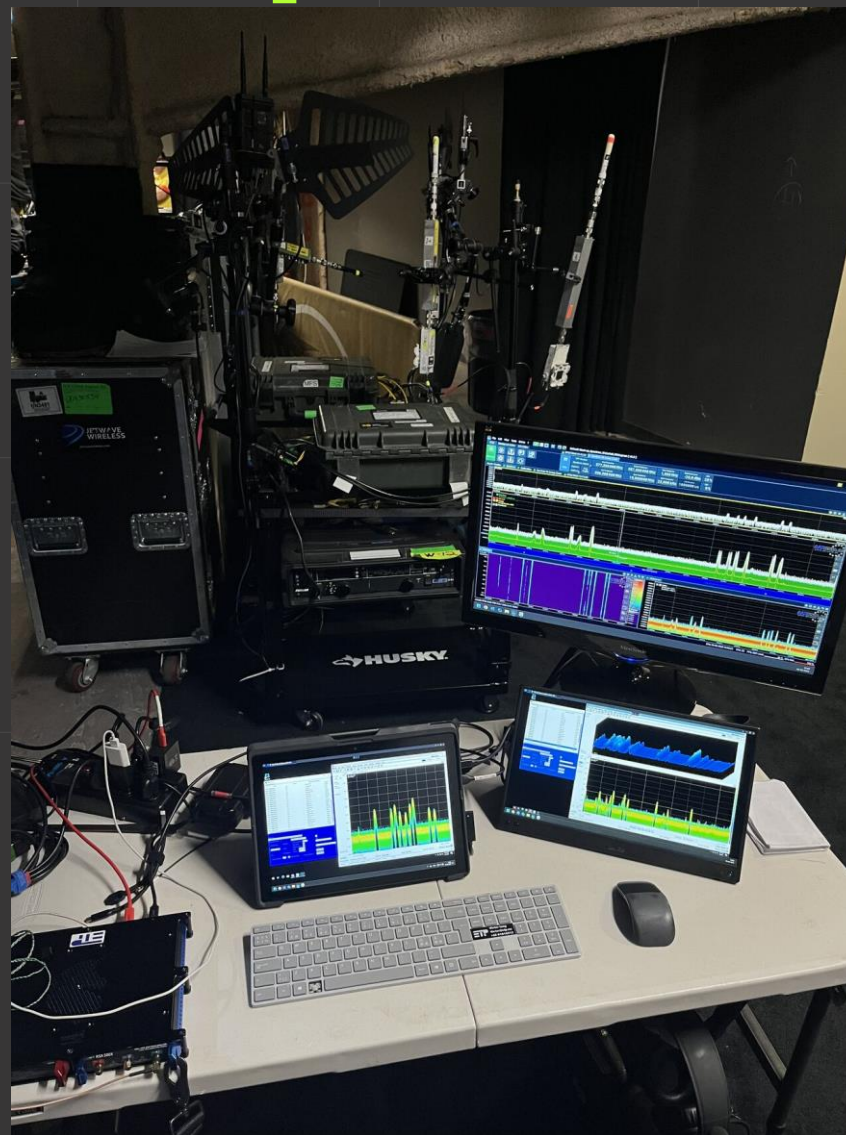
Ref + Halftime Show



**Shure Quadiversity
Antenna Positions (Ref)**

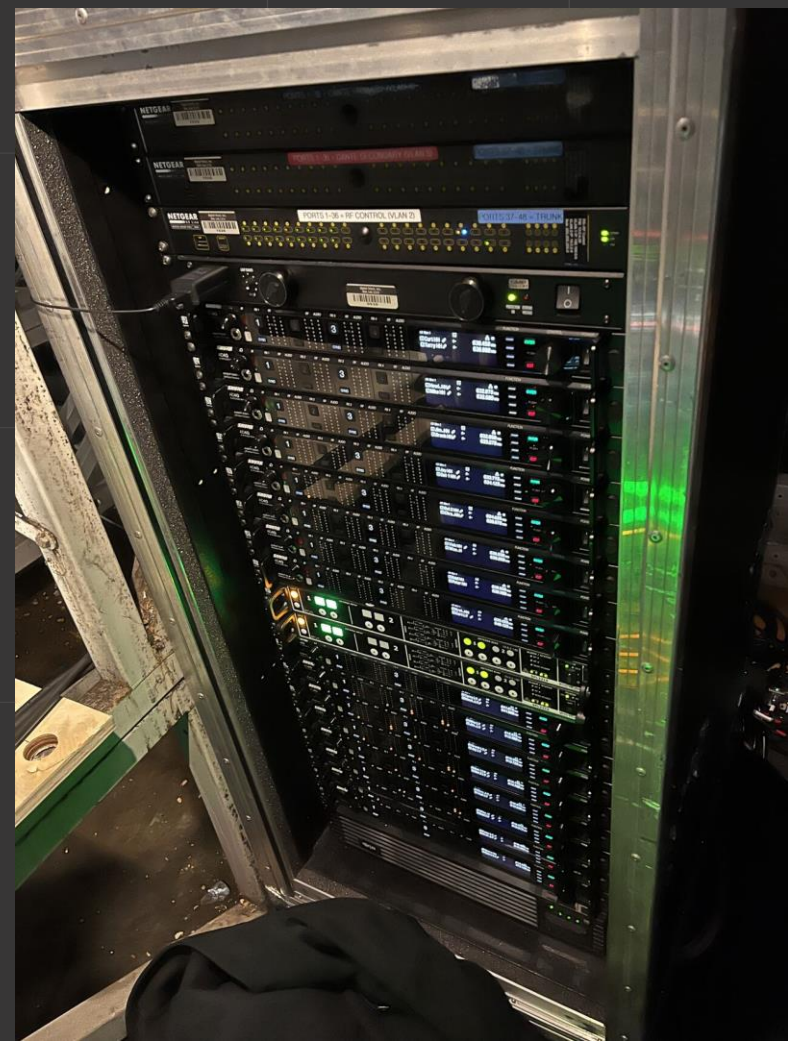
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FOX Sports Compound



FOX Sports Compound

- RF over Fiber antenna matrix for field, locker rooms, press areas, seats
- Dark Fiber connection to Bourbon Street remote production
- Mics and IFBs
- Shure Axient Digital in HD Mode



Zoning

- Clearwing
- Entertainment
- ESPN International
- ESPN NFL Countdown
- Purple Carpet
- Fox Deportes
- Fox Game
- Fox Studio
- LTN RTL
- NFL Films
- NFL Network (Inside and Out)
- OBTW
- Others
- Radio
- Telemundo
- Televisa/AVS

War Games



- All wireless must be powered on and transmitting during this scheduled time
- Goal is to ensure worst-case scenario and determine if there are any issues
- Using directional antennas and spectrum analyzers, personnel identify rogue RF transmissions and address them

Conclusion

Super Bowl is one of the largest RF events in the world and only made possible by carefully coordinated use of the available spectrum by the best professionals in the world.

The success of this annual production in the toughest RF environments heavily relies on professionals using reliable and spectrally efficient equipment.

THANKS!

Questions?