Understanding our Wireless World

Your guide to a successful sports broadcast season

by

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SBE frequency coordination chair
An RF “channel” is like a blank sheet of paper. The channel itself is not that special... depends on what you do with it.

If you gave me a blank sheet of paper and said “draw something”, you may get something...
E = M \text{SEA}\text{SQUARE}

E = EMCEE^2

E = MC^2

...like this!

I cannot draw. This is what you may get.

But if you give this same sheet of paper to a friend of mine, you may get...
...this!

It’s the same sheet of paper. It’s the same pencil.

It just depends on how you use it.
Channel uses

• IFB
• Camera Data
• Broadcast Audio
• Operational Communications
Where Do We Get Wireless Mic Channels?

- Reuse existing TV channels

Currently available wireless microphone equipment reuses TV channels not currently in use in your area.
1 Television Channel

Or 10 wireless microphones
You may remember the typical line of TV channels. Channel 2 through 13 represent the VHF band and 14 thru 83 represent the UHF band.
A map such as this one by Shure helps you choose available channels in your area to avoid conflict with broadcast TV stations on the air.
Over-the-air broadcast channels

This is a sample of the Tampa, Florida TV usage. Each full power TV station is represented by a green box. We have stations on channels 3, 8, 10, 13, 16 and so on.
Then we consider the TV channels the FCC has re-assigned for “non-TV” use. Your cell phone may be operating in one of these gray boxes!
Add low power TV channels

We will add blue boxes to represent Tampa Bay Area low power TV stations. As you can see, the available wireless mic channels are less and less. BUT WAIT!
Add digital television channels

Everyone with a green box (analog TV) gets a red box (digital TV). Not many white boxes left for wireless mic use.
Removing all the occupied boxes, here are the available channels for wireless. Since most currently available equipment operates on UHF, we will remove the VHF boxes.
What is left for wireless use

Still looks like a lot of room! Right? Nope. Let’s look at a chart published by Lectrosonics to tune their wireless devices.
Notice that a single wireless mic can only tune about 5 TV channels... not the entire TV band. Let’s enlarge the bottom chart.
As you can see by the shading, 5 TV channels are in this chart. Let’s pick a channel.
There! The green box is your channel. The "other people" can use the remaining 255 channels. WRONG! Your "center frequency" may be the green box, but your "bandwidth" is wider.
Your bandwidth (in yellow) now takes up far more than one box. Let’s compare this chart to our first charts of TV usage. The red box here---
Block 21 Wireless Microphone

---is the same as the red box here. Oops. Looks like we can only operate in a single TV channel in this market. This reduces your choices to 10 or less.
Who do I contact?

- Manufacturer?
- Stadium/arena?
- Local TV Stations?
- Local radio stations?
- Local cable systems?

How do you find out who to contact to see which channels are available in any US market?
The Society of Broadcast Engineers, Inc.

SBE-EAS Conference at NAB 2002
Streamed Audio
To Subscribe to SBE-EAS Remailer Click Here

PENNINGTON RE-ELECTED PRESIDENT
Press Release

BOOK ON SEPTEMBER 11 TO BENEFIT WTC ENGINEERS' FAMILIES

DONATIONS STILL NEEDED FOR WTC DISASTER RELIEF FUND

This site makes extensive use of Adobe Acrobat files. Click here to download the FREE Adobe Acrobat Reader

- 2001-2002 SBE Committee Chairmen
- 2001-2002 Chapter Liaison Assignments
- SBE Radio Chief Operator's Handbook
- Other SBE Publications Available
Frequency Coordination

CLICK HERE for the current list of Frequency Coordinators, including telephone numbers and email addresses.

CLICK HERE for wireless microphone channel assistance.

Click here for an Introduction

MAPS

<table>
<thead>
<tr>
<th>Alabama</th>
<th>Maine</th>
<th>Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>Maryland</td>
<td>Pennsylvania</td>
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<tr>
<td>Arkansas</td>
<td>Massachusetts</td>
<td>Puerto Rico</td>
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<tr>
<td>California</td>
<td>Michigan</td>
<td>Rhode Island</td>
</tr>
<tr>
<td>Colorado</td>
<td>Minnesota</td>
<td>South Carolina</td>
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</tbody>
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This is the coordinator list for the entire USA divided by state then city. It will give you names and contact numbers for each TV market.
SBE Coordination Program

• Started in 1982
• Over 200 coordinators
• Over 18,000 users!
• Volunteer program
SBE coordinators are NOT the Police!
NFL users of wireless

- NFL Coach-to-Coach
- NFL Coach-to-Quarterback
- NFL Coach-to-Referee
- NFL Replay Booth-to-Referee
- NFL Green Hat
- NFL Team operations
- Food, Traffic, Security, Tickets, Cheerleaders, Stadium AV...
Typical NFL Gameday

- 142 Local B’cst
- 64 Coach’s
- 33 Network TV
- 33 Network Radio
- 27 NFL
- 17 Local Team
- 14 Stadium Operations
- 12 Visiting Radio
- 10 Visiting TV
- 10 Stadium AV
- 10 Food Service
- 9 Security
- 8 Film Crews
- 4 CQB
- 3 Cleanup
How the NFL cured the problem
Synergistic Success!

SBE + NFL
These signs are posted in each NFL stadium in areas the media occupies.
Exempt from Coordination

- Cellular Telephones & PCS
- Family Radio Service
- Amateur Radio
- Trunking Systems

These items are “pre-coordinated” by their nature or (in the case of Family Radio Service) cannot be coordinated.
Double check of assigned frequency to be sure!
Brightly colored tags marked “cleared” units
CONGRATULATIONS!
Now you understand our Wireless World
Have a successful sports broadcast season!