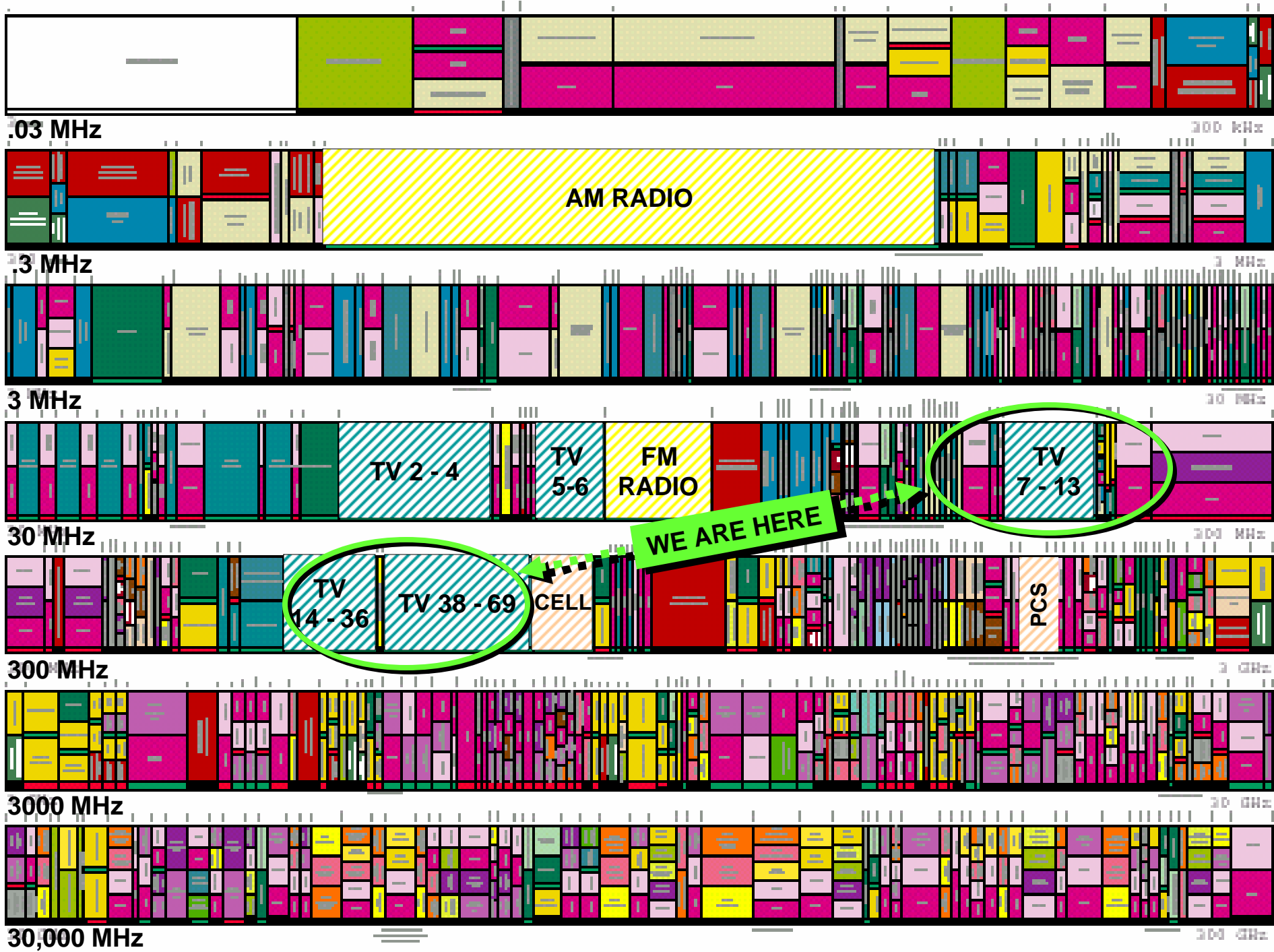


Wireless And White Spaces

Who, What, When, Why, How?

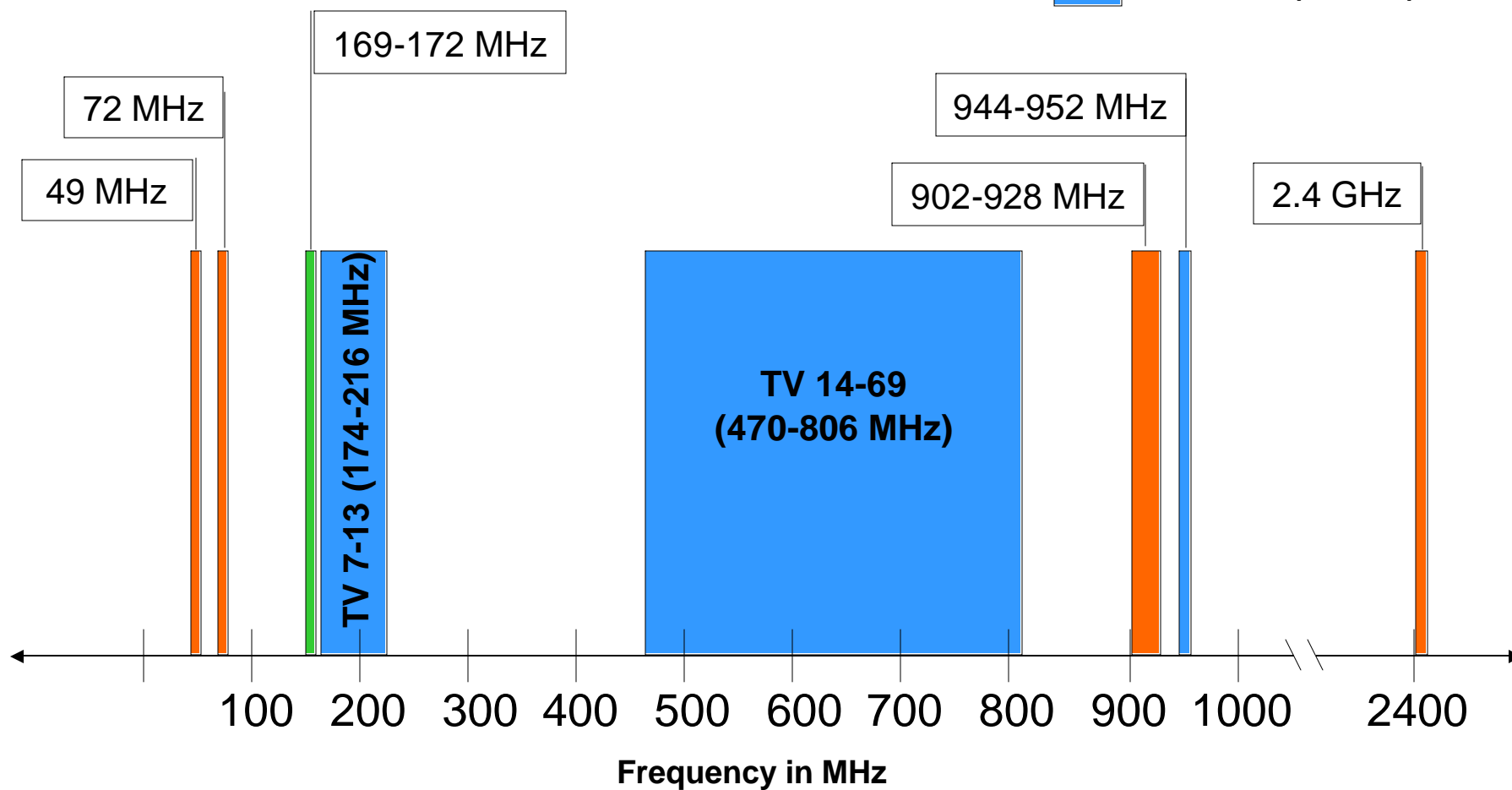
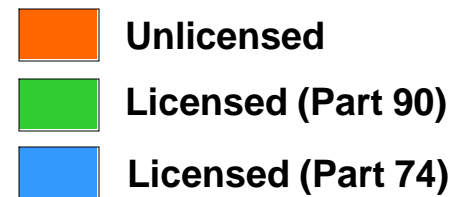
SHURE[®]
LEGENDARY
PERFORMANCE™



All Spectrum Is Shared

Primary Licensed	Primary Unlicensed
Secondary Licensed	Secondary Unlicensed

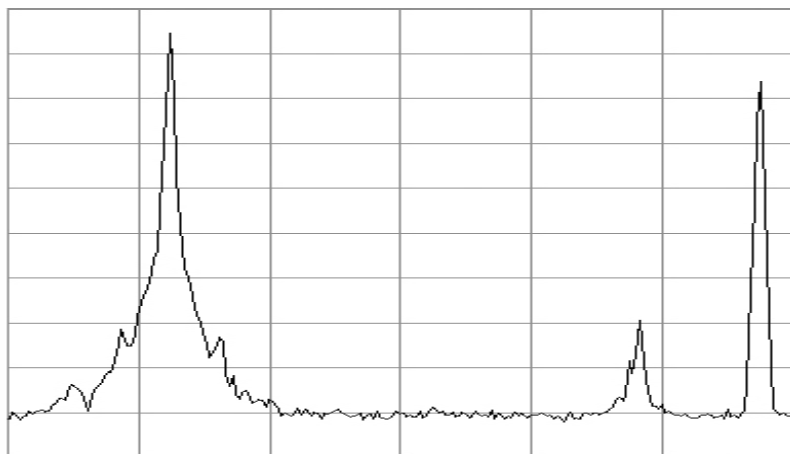
The UHF TV Band Is Best . . .



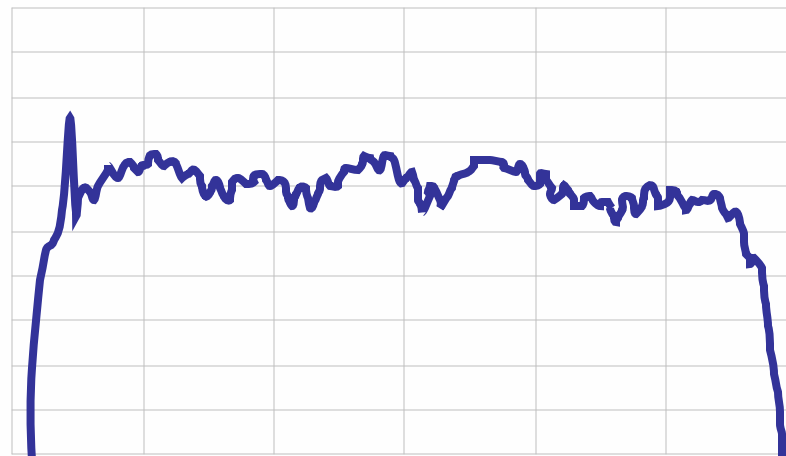
. . . But We Are Not Alone

<p>Primary Licensed</p> <ul style="list-style-type: none">• <i>Class A TV Stations</i>• <i>Low Power TV stations/translators</i>	<p>Primary Unlicensed</p> <ul style="list-style-type: none">• <i>Radio Telescopes (Ch 37 only)</i>
<p>Secondary Licensed</p> <ul style="list-style-type: none">• <i>Wireless Audio & Video Devices</i>• <i>Wireless Medical Telemetry Units</i>• <i>Land Mobile Radios (Ch 14-20 only)</i>	<p>Secondary Unlicensed</p>

Analog & Digital TV Use Spectrum Differently



ANALOG TV



DIGITAL TV

- Analog stations must be spaced apart
- Digital stations can be on adjacent channels

FCC Is Reorganizing The TV Band



SHURE[®]
LEGENDARY
PERFORMANCE™

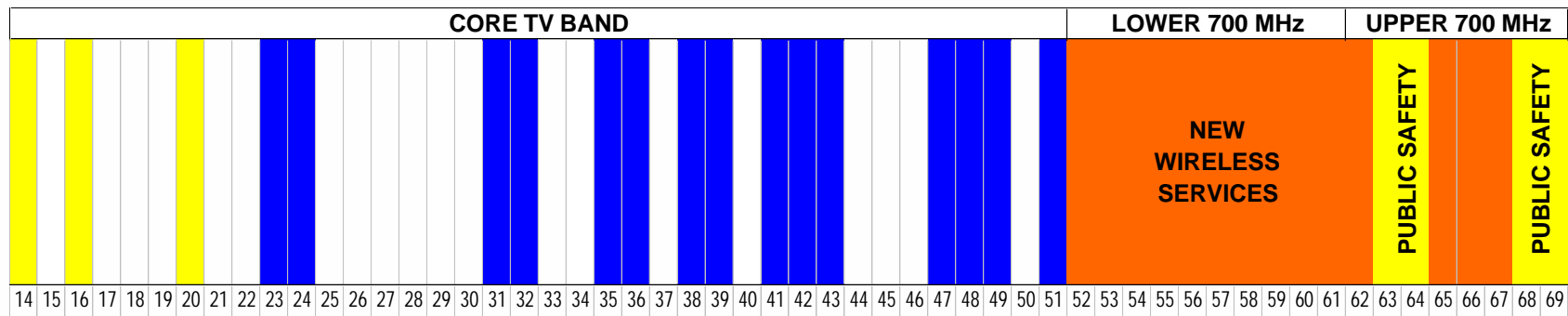
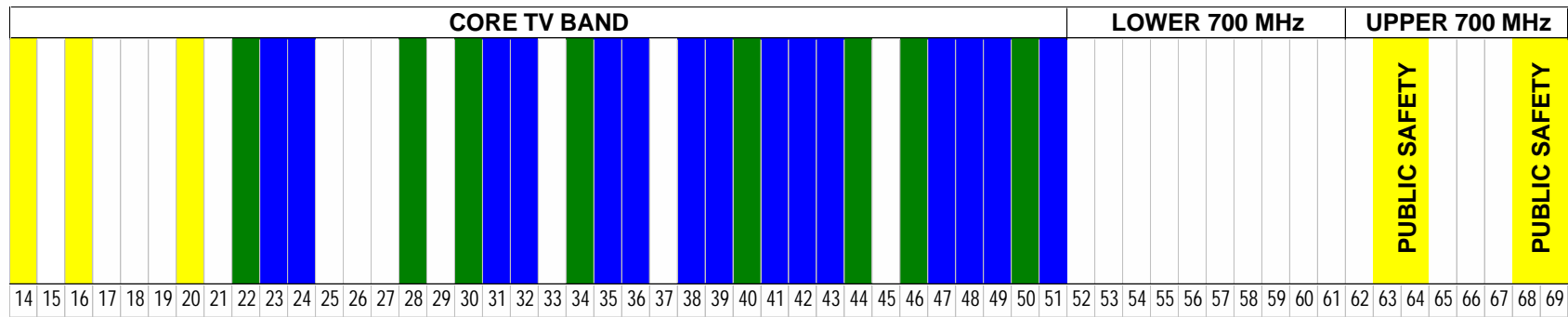
FCC Is Reorganizing The TV Band



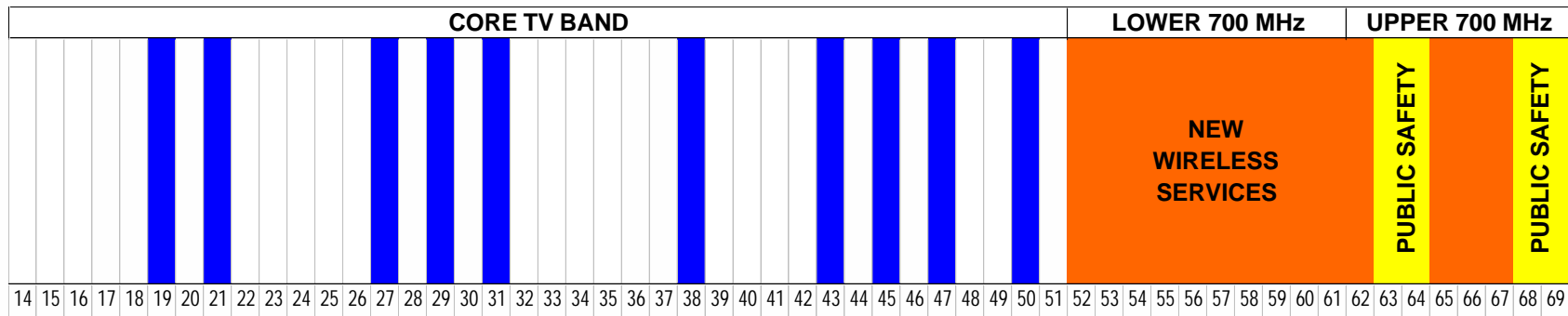
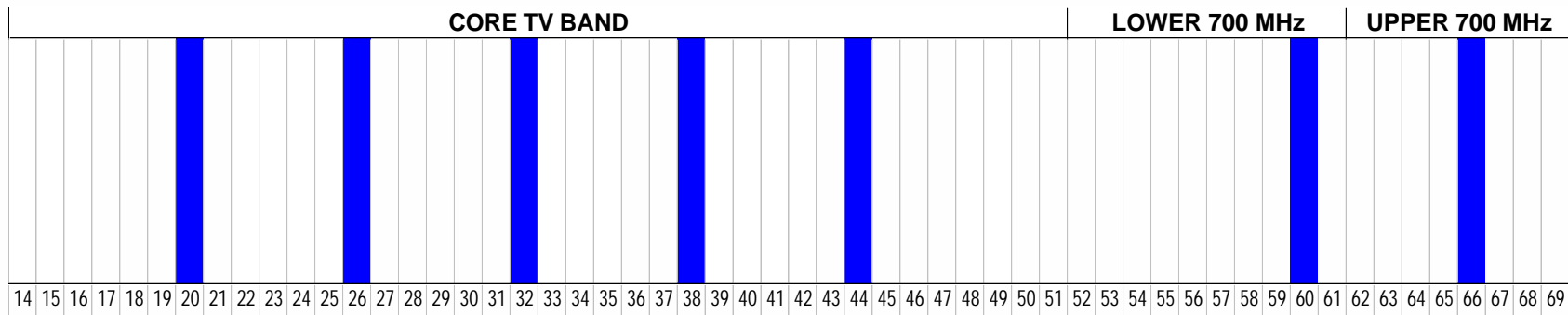
**Public
Safety**

SHURE[®]
LEGENDARY
PERFORMANCE™

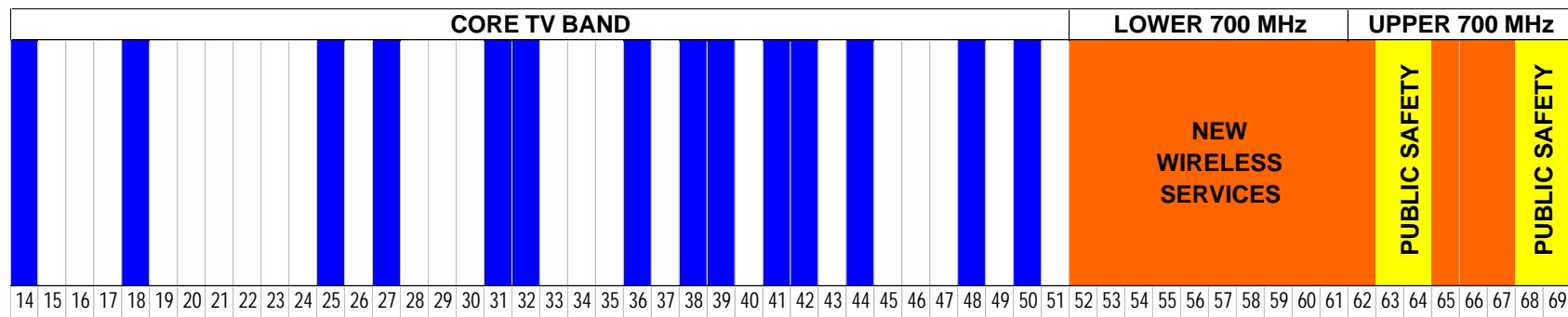
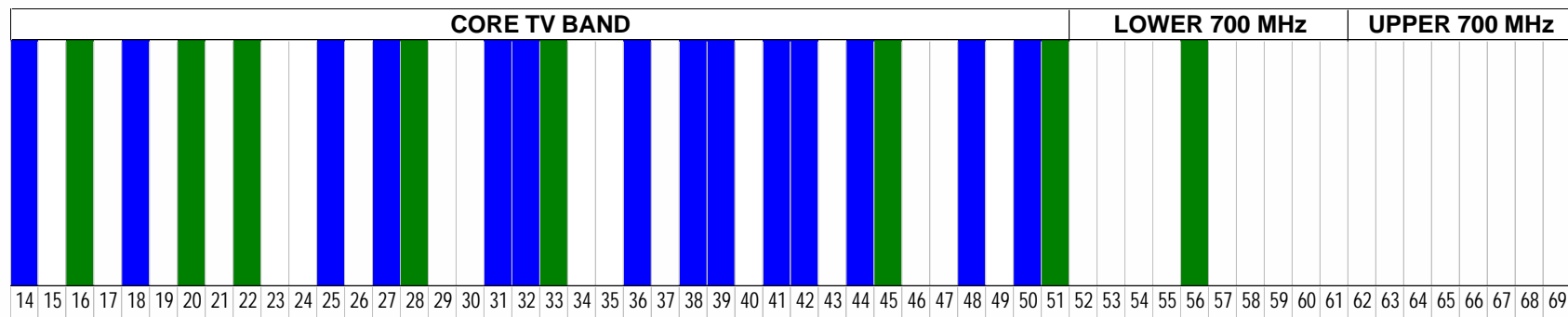
Hollywood, CA



Chicago



Seattle



-  Analog TV
-  DTV
-  Advanced Wireless Services
-  Public Safety Communications



“White Spaces” Will Be Used To Deliver Wireless Internet

Fixed

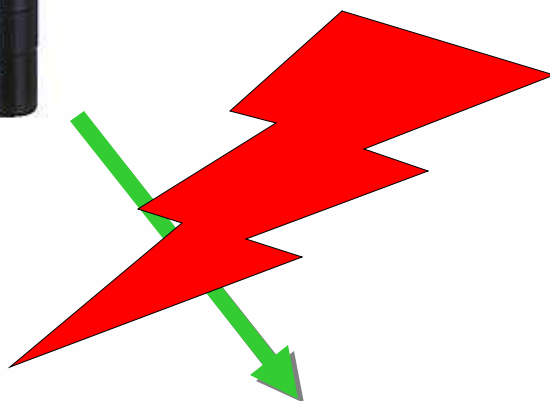


Personal/Portable



SHURE[®]
LEGENDARY
PERFORMANCE™

New Devices Could Interfere With DTV And Wireless Mics



SHURE[®]
LEGENDARY
PERFORMANCE™

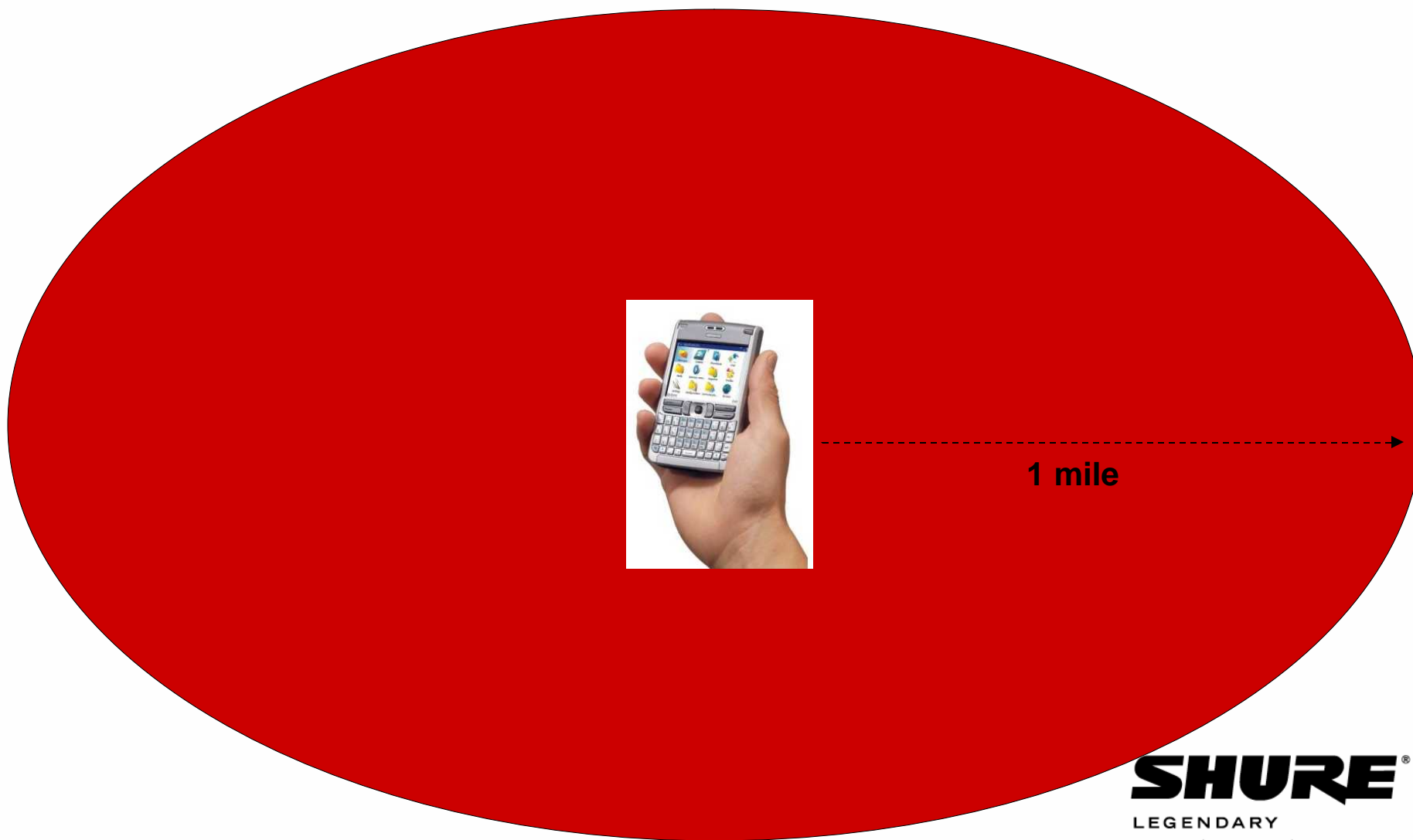
The White Space Debate

	White Space Coalition	Microphone Interests Coalition
Voices	Microsoft	MSTV, Shure
Lead Legislator	Rep. Inslee (WA)	Rep. Rush (IL)
Argument	"Spectrum sensing works"	"Prove it"

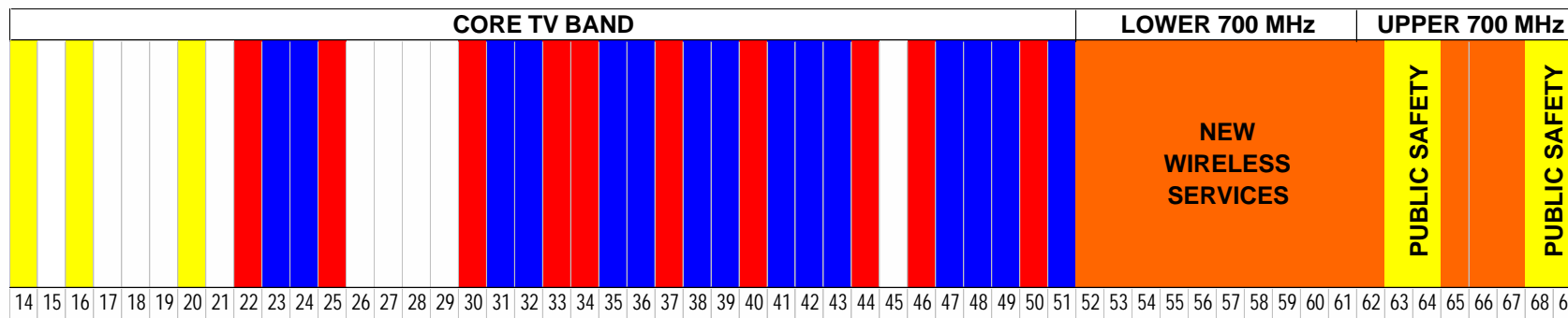
Possible Solutions

- Spectrum Sensing
- Leave Some TV Channels Open
- Move Wireless Mics to Other Spectrum
- Invent a "Smart" Wireless Mic

Solutions: Spectrum Sensing



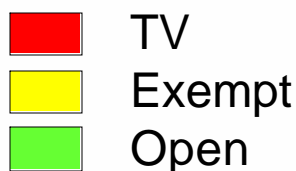
Solutions: Leave Adjacent Channels Open



Solutions: Leave Some TV Channels Open

- Prohibit new devices in “adjacent” TV channels
- Rural areas may need additional channels
 - Fewer stations = fewer adjacent channels
 - Need 2 VHF channels & 6 UHF channels per market
- Still not enough for very large events

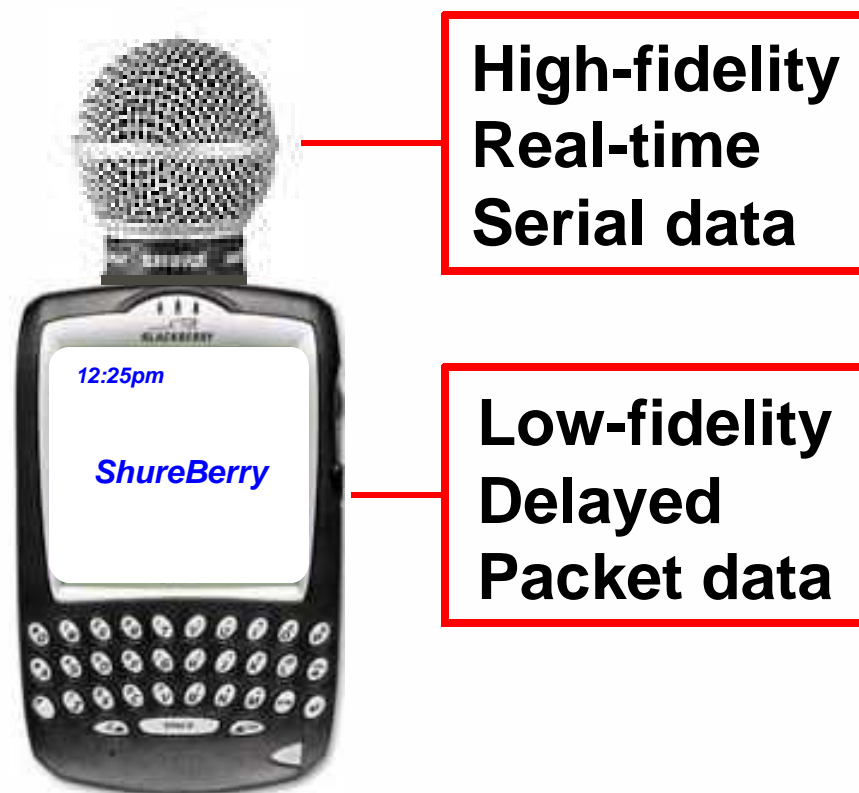
City	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
Chicago	Open	Open	Open	Open	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	
Los Angeles	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV
New York	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV



Solutions: Move Wireless Mics To Other Spectrum

	902-928 MHz	2.4 GHz	5.8 GHz	944-952 MHz	TV 14-20
<i>How Many Mics?</i>	?	?	?	6-10	?
<i>Drawback</i>	Consumer products	Consumer products; body absorption	Consumer products; body absorption	Only 8 MHz	Some Public Safety

Solutions: Invent A Smarter Wireless Mic



White Spaces Timeline



To-Do List For Shure Users

- Now
 - UA-band users should avoid TV 68 and 69
 - UB-band users should avoid TV 51 and 54
 - All users need to know how local TV channels will change
- Later
 - UB-band users should consider retiring systems

What We Want

- Open, real-world testing that proves spectrum sensing will work
- Adequate time to develop new products and policies that serve customer needs
- A letter to your U.S. Representatives and Senators

SHURE[®]

SHURE[®]
LEGENDARY
PERFORMANCE™