

SCTE ISBE CABLE-TEC  
**EXPO**'16

SEPTEMBER 26-29 PHILADELPHIA

# Putting a Box Around Wi-Fi Performance

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ARRIS

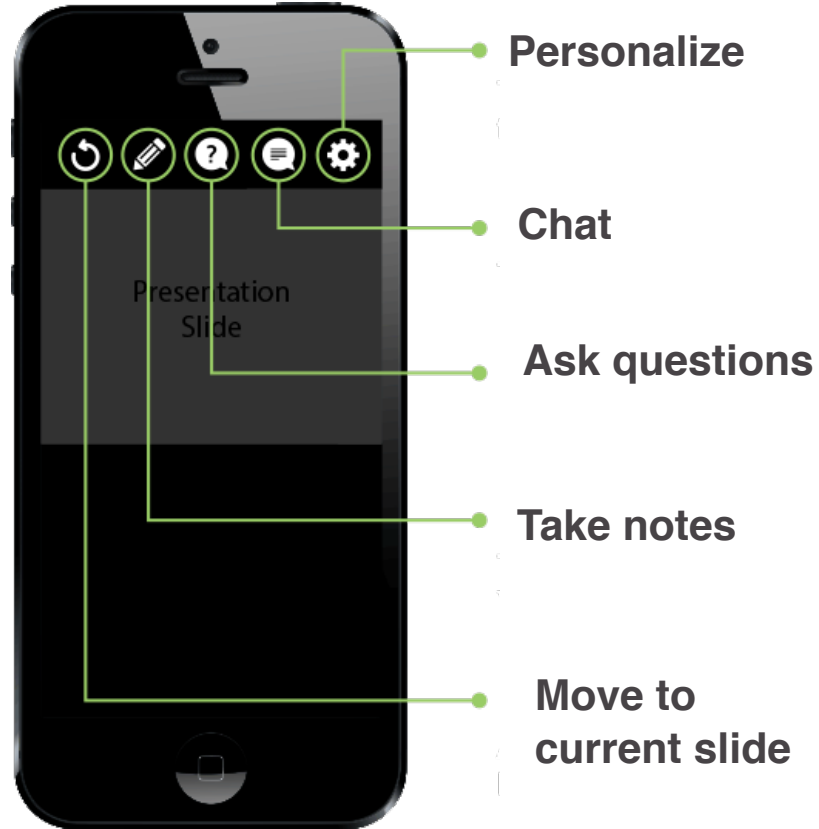


 #CableTecExpo

Essential Knowledge for Cable Professionals™

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# This Session Will Be Interactive!

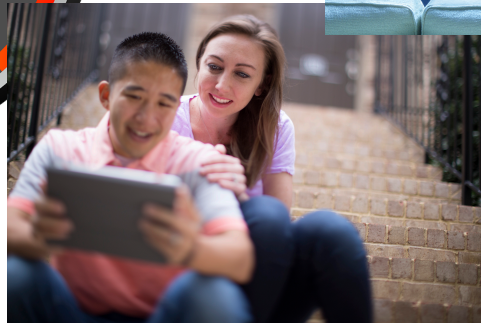


# WHAT IS GOOD WI-FI PERFORMANCE?

Speed Test Results



Wireless Set top Video



Streaming Video on Mobile Devices

Low Latency High Speed Gaming



Wi-Fi Calling



# What drives calls to your call center for Wi-Fi?

A

Video to all Devices

B

Coverage in the Home

C

Speed, Speed, Speed

D

They want it all!

# WHAT GOES INTO WI-FI PERFORMANCE?



## Device Characteristics

- Number of antennas
- Number of radio chains
- National Regulatory Rules
- Wi-Fi Version Supported



## Services

- Voice - low latency
- Video - range of bitrates
- Email - best effort
- Deterministic SLAs



## Environment

- Access Point Location(s)
- Home Construction type
- Home Size
- Neighbor Density
- Interferers

# 5 GHZ BAND POWER/EIRP

## U-NII-1

Chls 36-48

1W Max conducted power for access points

4W EIRP with 6dBi antenna

250 mW Max conducted power for clients

## U-NII-2A

Chls 52-64

250mW Max conducted power for all

1W EIRP with 6dBi antenna for all

## U-NII-2C

Chls 100-144

250mW Max conducted power for all

1W EIRP with 6dBi antenna for all

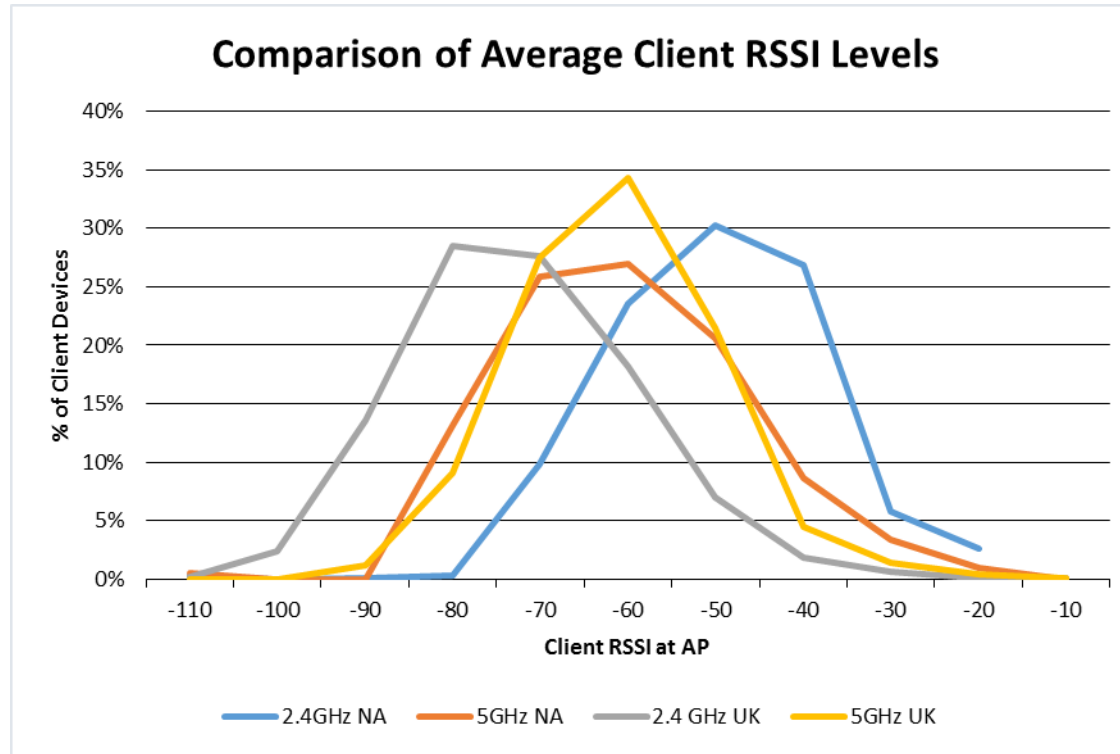
## U-NII-3

Chls 149-165

1W Max conducted power for all

4W EIRP with 6dBi antenna for all

# REAL WORLD EFFECTS OF POWER LIMITS



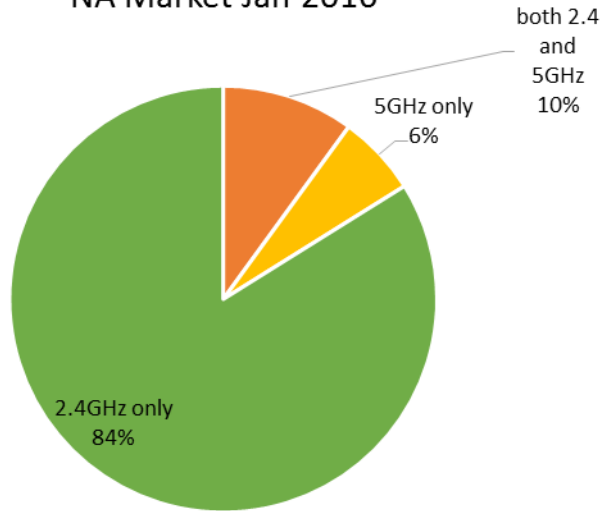
# Thumbs Up / Down

Have you noticed your  
devices at home switch  
radios?

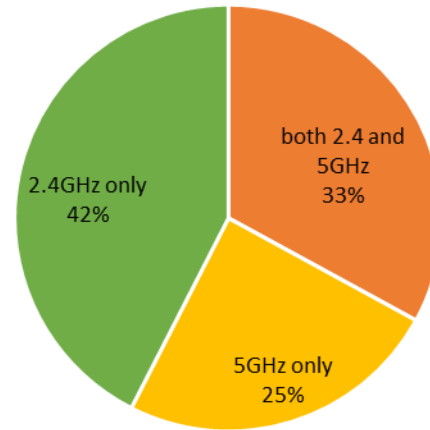


# CLIENT USAGE EFFECTS

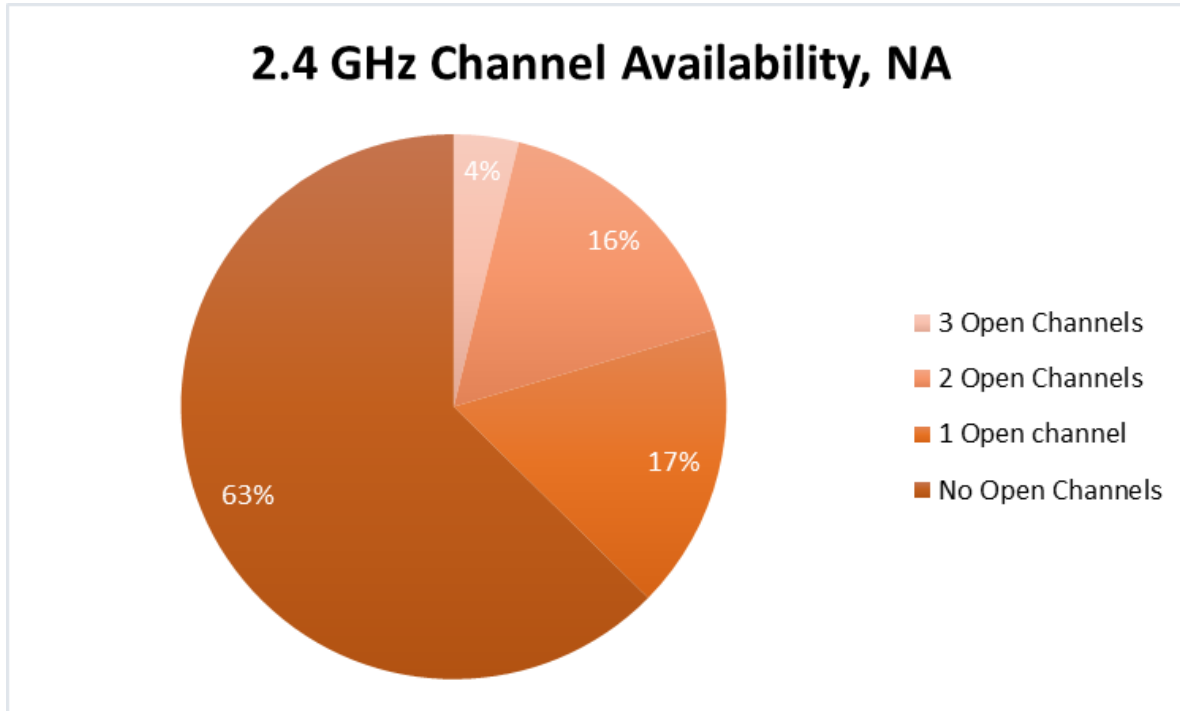
Sample Distribution of Client Devices  
NA Market Jan 2016



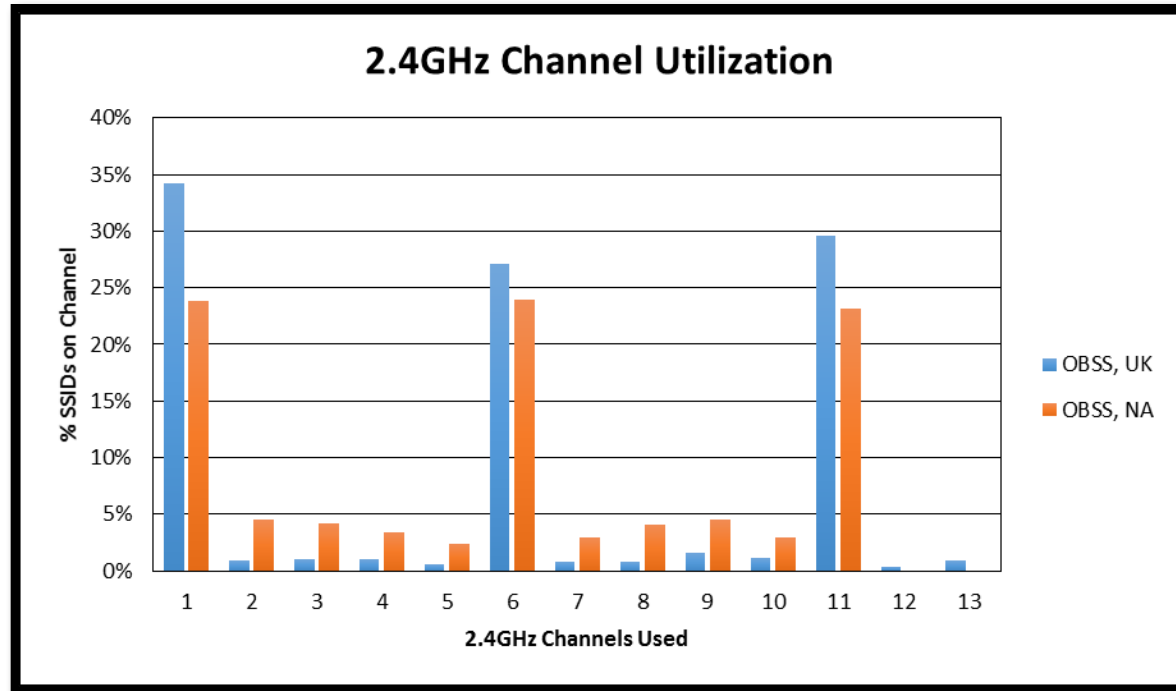
Sample Distribution of Client Devices  
UK Market Jan 2016



# CHANNEL AVAILABILITY



# ANOTHER WAY OF LOOKING AT USAGE



# Will APs on the overlapping channels cause problems?

A

No problem

B

Yes, problems

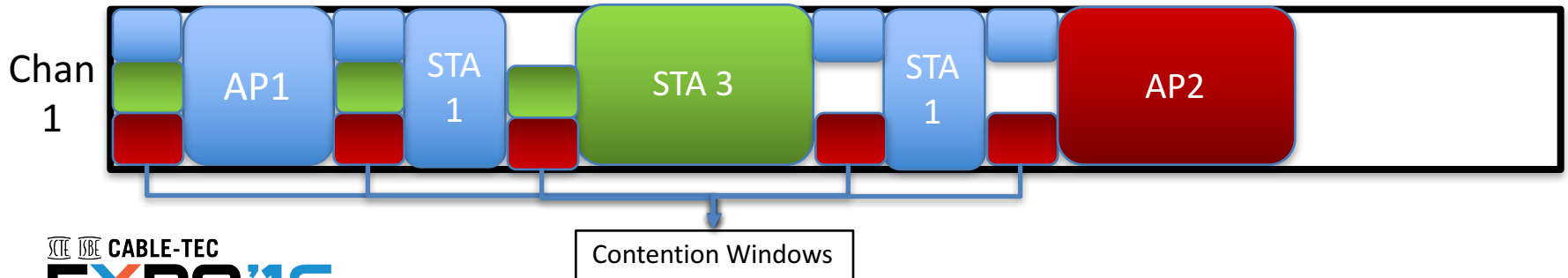
C

It depends

# WHY CAN APS IN THE OVERLAPPING CHANNELS CAUSE PROBLEMS?

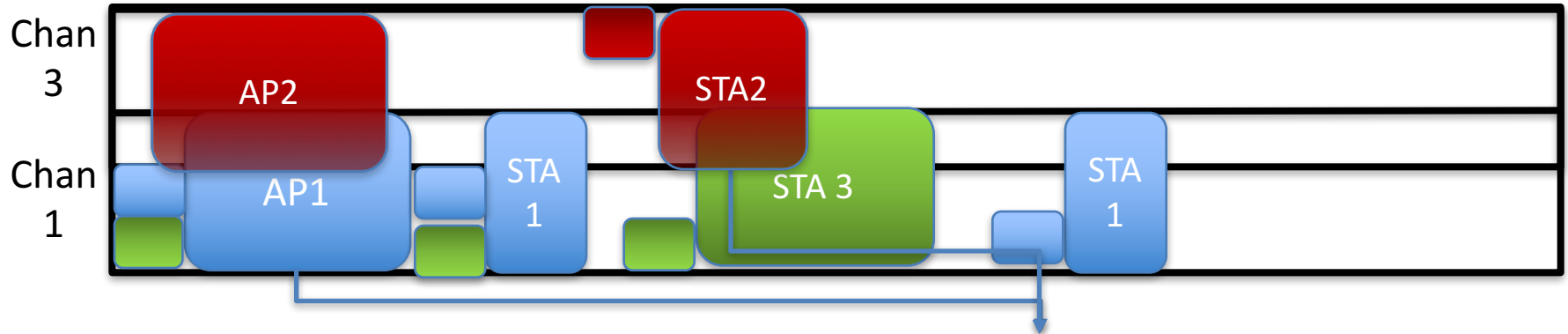
When everyone listens to the same channel, all the contention windows line up and transmission don't interfere with each other.

Every station waits its turn, then tries to seize the air for its transmissions.



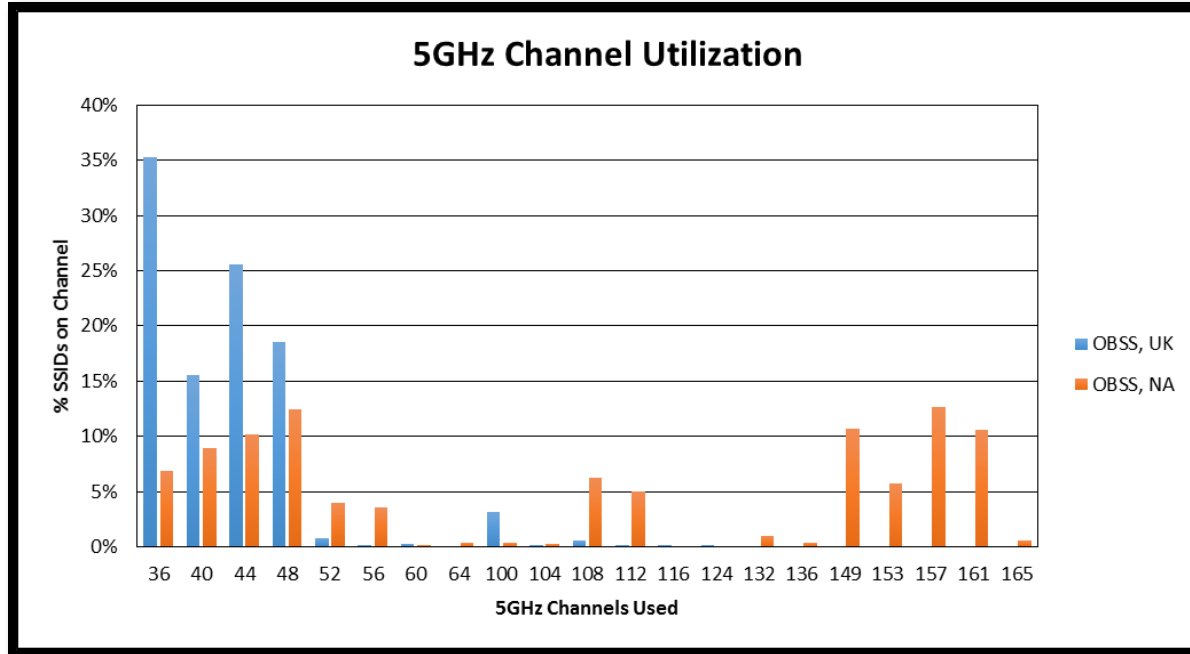
# WHY CAN APs IN THE OVERLAPPING CHANNELS CAUSE PROBLEM?

When one AP and its stations can't hear the other APs and stations, then the two groups of stations interfere with each other



Noise from other transmission lowers bit rates and/or increases error rates

# DO I HAVE ANY GOOD NEWS? YES! 5GHz IS STILL LOOKING GOOD



# Thumbs Up / Down

Did the interactive questions  
make the presentation better?





# THANKS!



# QUESTION & ANSWER

TAP THE QUESTION MARK ICON  
TO SUBMIT A QUESTION



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