



# Manufacturing Your Best Wi-Fi

Designing And Validating Your Wireless Network In  
Complex Manufacturing Environment



**Jason Rinaldi**

Global Sales Manager



# If You Think You've Seen The Toughest, Think Again



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- The most challenging parts of warehousing
- High Density
- "Less than perfect" client devices

## What environment are we talking about?

Automotive manufacturing  
(specifically EV)

# What Makes A Complex Environment



- High reflectance
- Moving machinery
- Overlay Networks
- Limited mounting
- 'Limited' Client Devices

# Increased Network Demands

- Roaming VoIP calls on factory floors
- Tons of IoT devices using 2.4GHz
- AGVs
- OTA updates

# New Technologies



- AGVs
- Moving assembly lines
- Smart Tools



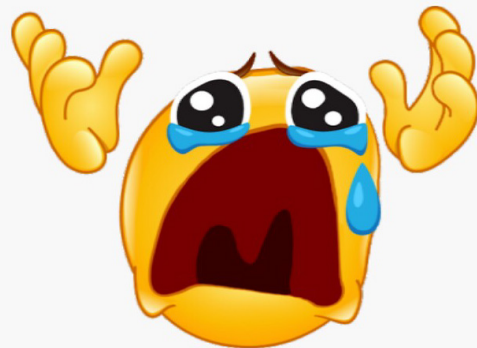
# The Benefits of New Technologies

- Faster production
- Higher precision/quality
- Better analytics



# The Woes of New Technologies

- Noise noise noise
- Network overlays taking dedicated channels
- Mobility challenges



# Describing The Initial Network

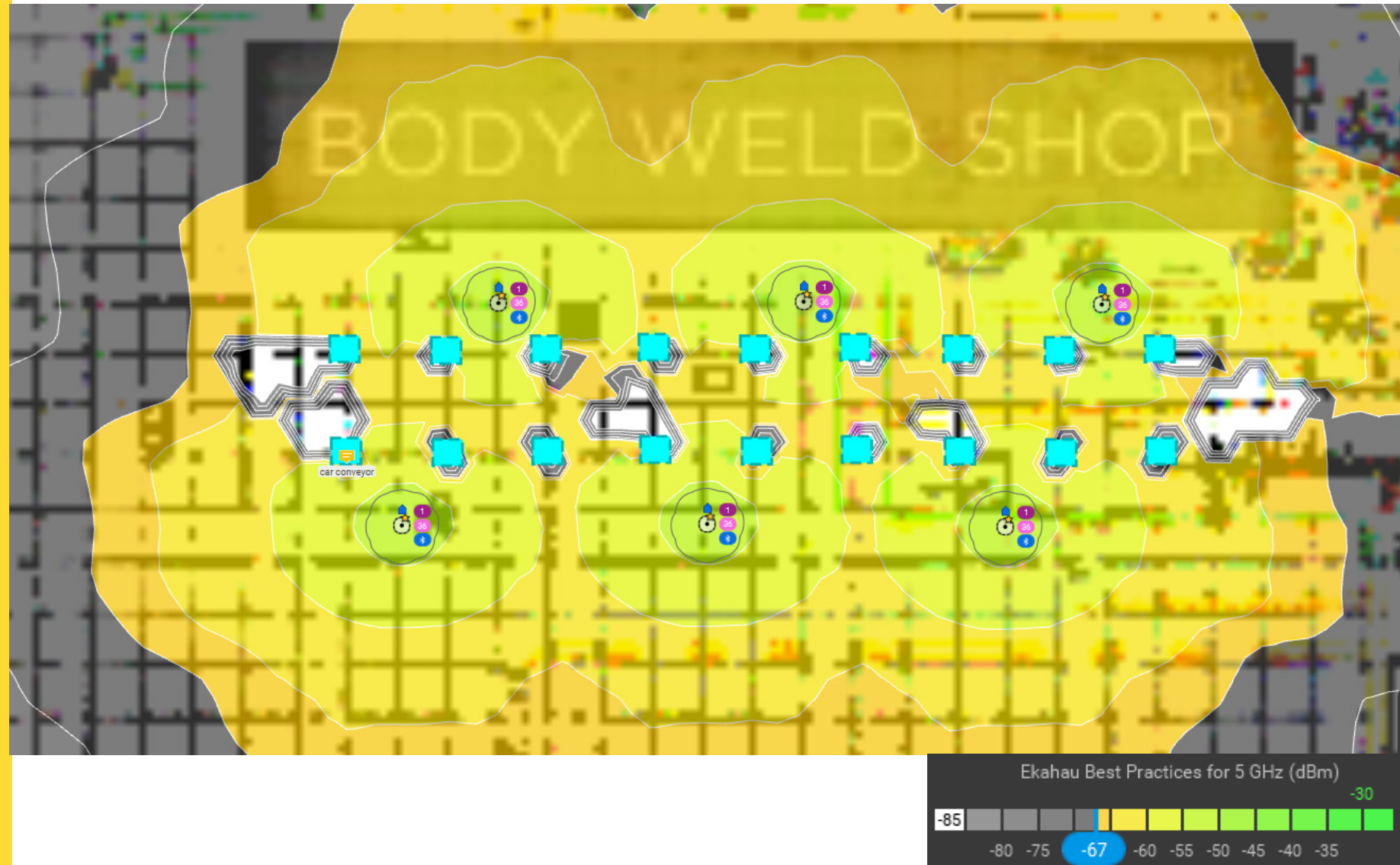
Internal omnis of the AP

Drop mounted via conduit





# What They Expected



# What They Got



# What To Do?

# WWCD?

Directional antenna for higher isolation, with nominal sidelobes to minimize reflectance

Mount to columns



# Antenna Solution

## The 90x90°

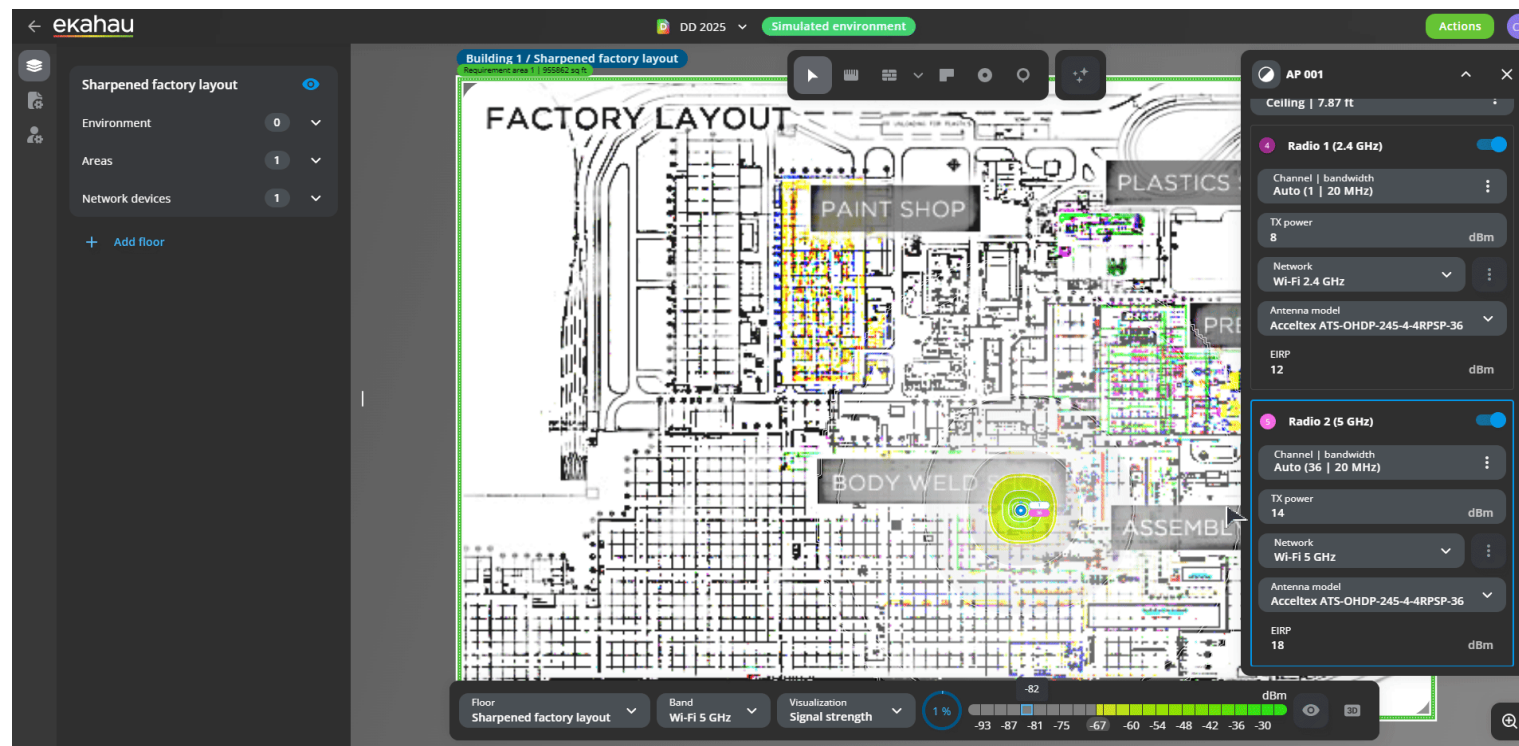


2.4/5 GHZ 4/4 DBI 4 ELEMENT INDOOR/OUTDOOR  
90°/90° HD PATCH ANTENNA WITH RPSMA  
ATS-OHDP-245-4-4RPSP-36



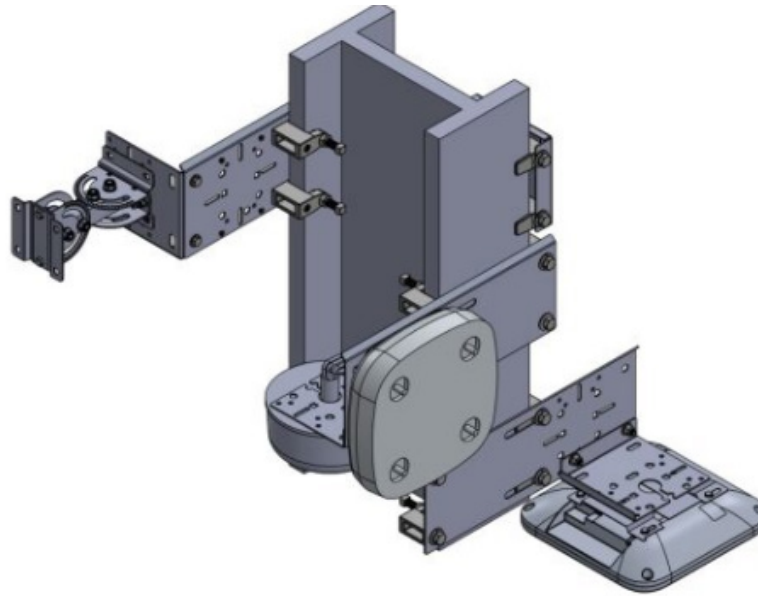
### ELECTRICAL SPECIFICATIONS

Frequency Range: 2.4-2.5/4.9-5.85 GHz  
Gain: 4 / 4 dBi  
Polarization: 2 Horizontal - 2 Vertical  
Horizontal Beamwidth: 90°/90°  
Vertical Beamwidth: 90°/90°  
VSWR: < 2

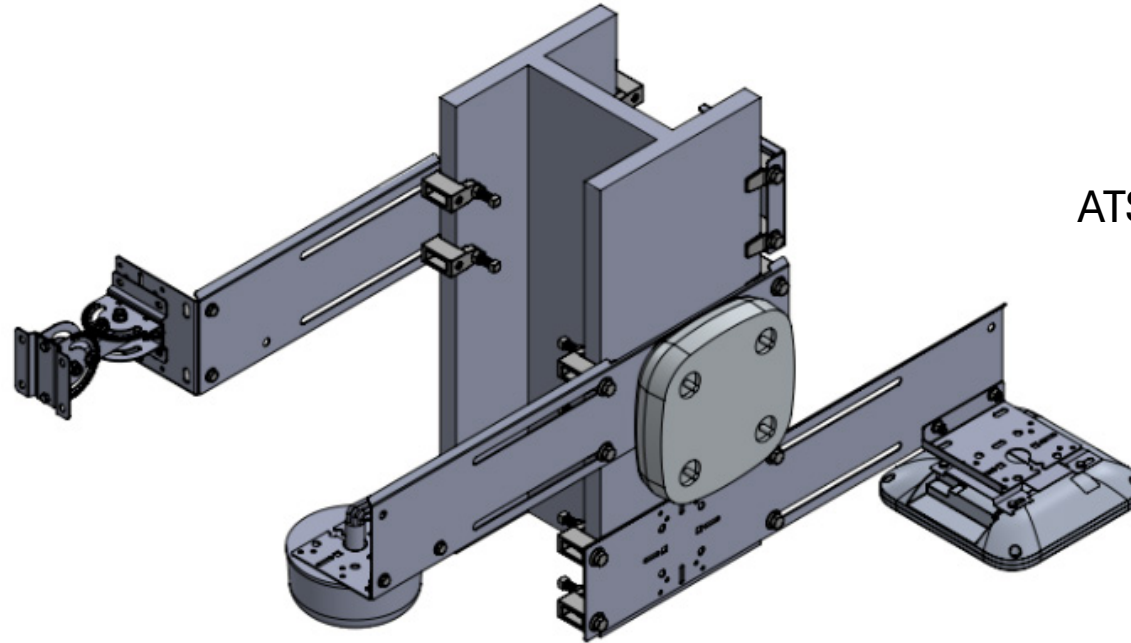




# Custom Mount

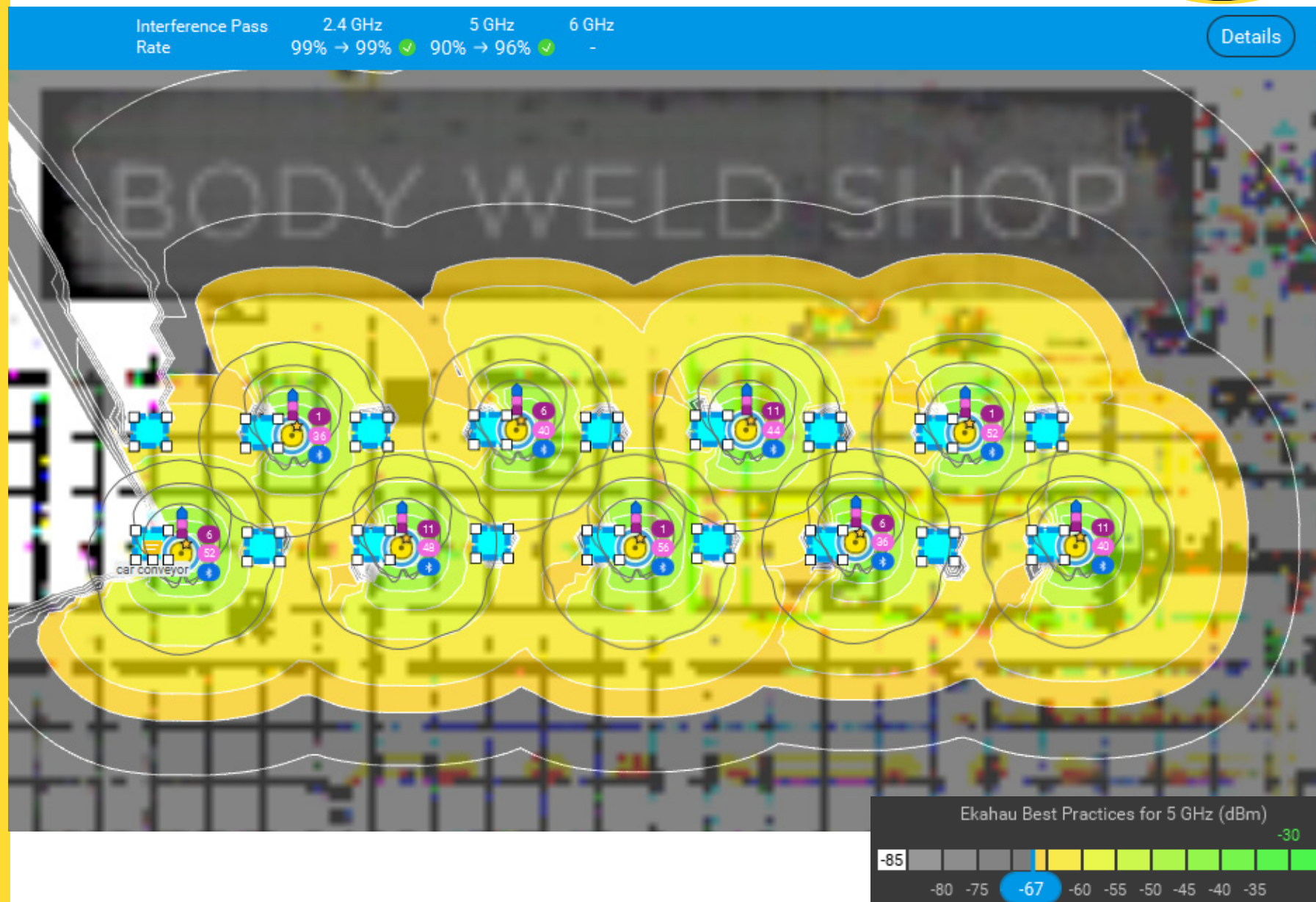


ATS-MNT-IBM-ANAP-MD

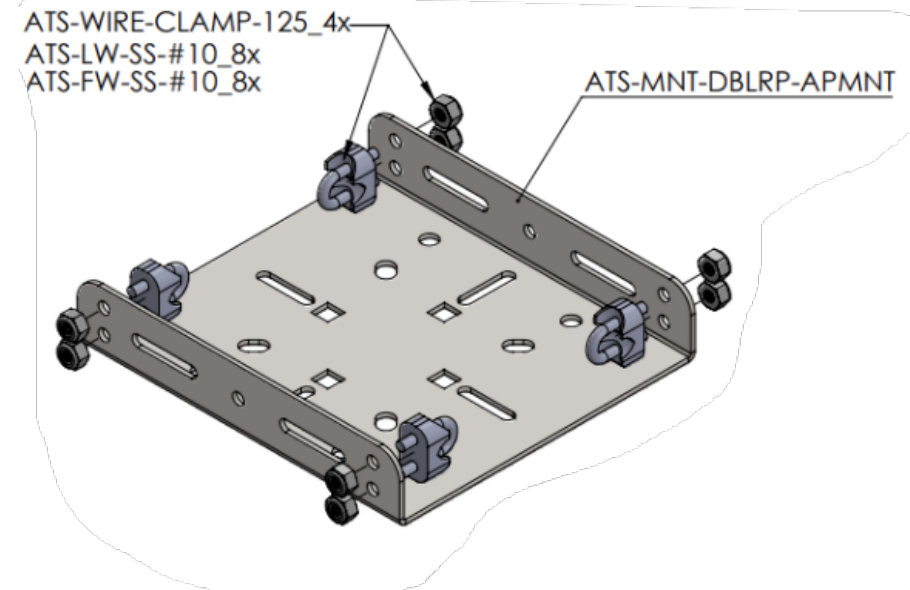
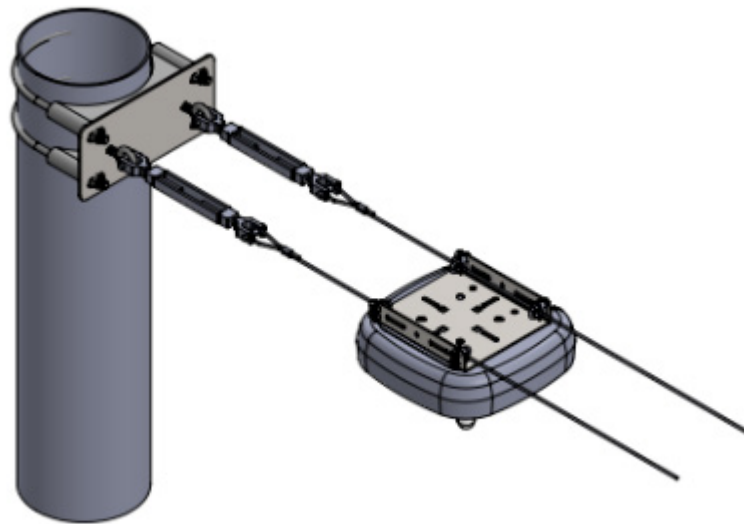


ATS-MNT-IBM-ANAP-XLG

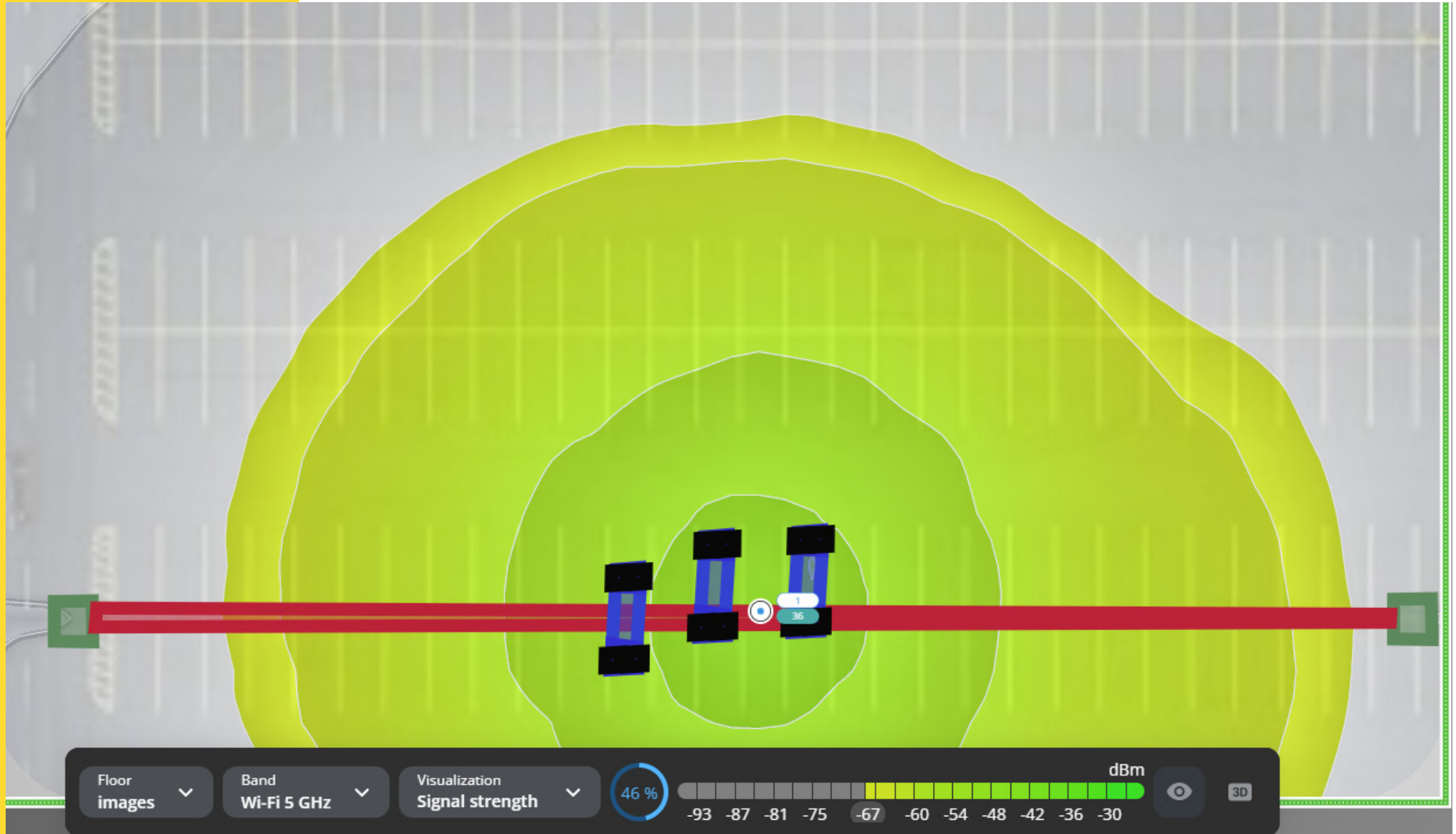
# Post Install



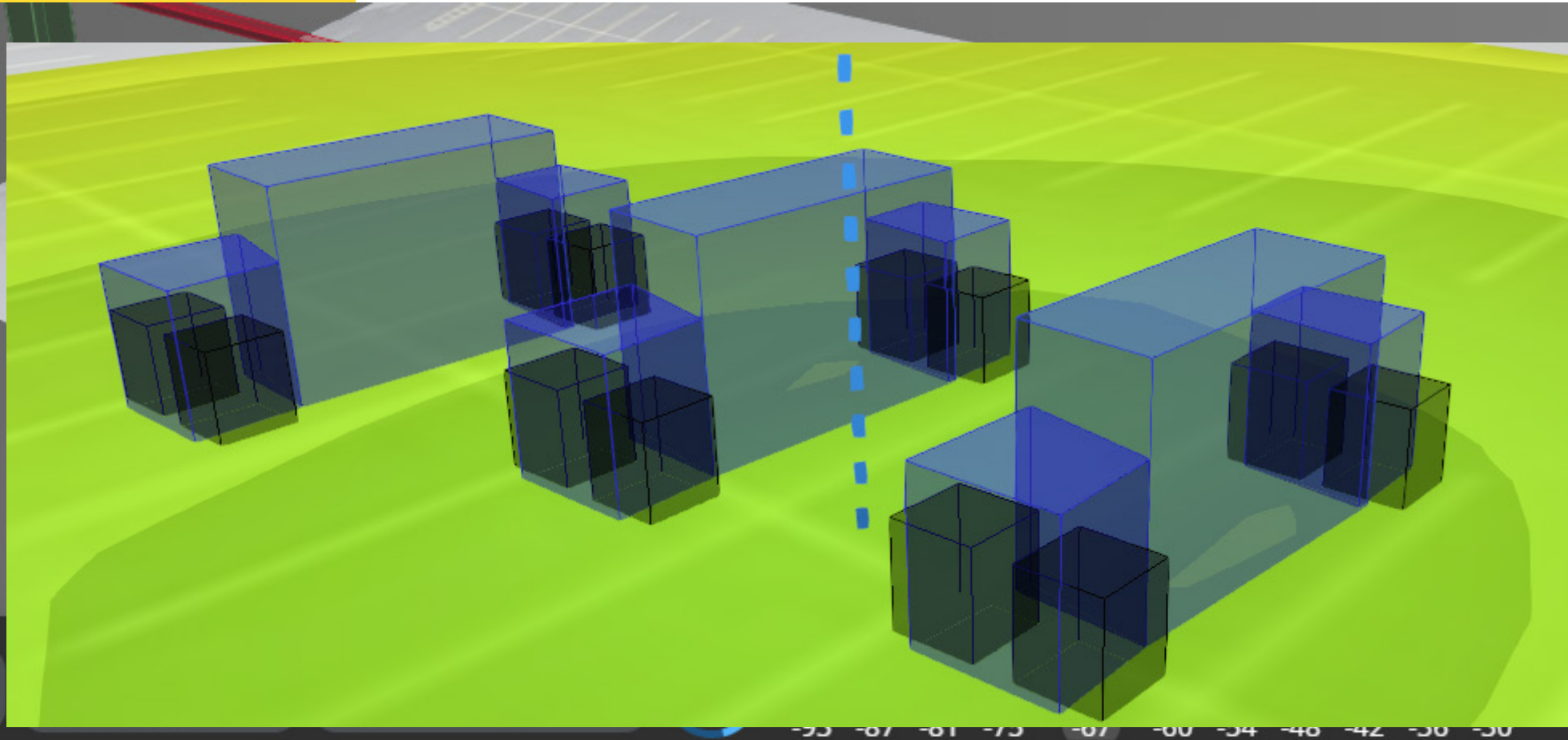
# OTA Yards











# What It Fixed



**Noise** – Controlled cells minimize noise in total environment and hear less interference themselves

**Overlay Networks** – Improved channel reuse even with fewer channels

**Limited Mounting** – Custom mount to fit their needs

**'Limited' Client Devices** – Don't give the clients the option to roam and closer/better line of sight to them

**High reflectance** – Directionality and lower gain to minimize

# Takeaways

Off the shelf solutions aren't the best fits in the complex environments

Having a custom solution can save a ton of headache and solve many problems

An accurate survey tool with a spectrum analyzer is a must

-with love from CB <3

# Thank You



AccelTex



X



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