Wi-Fi Upgrade

Background

██████████████████ have been experiencing poor Wi-Fi connectivity in many of the offices at the ██████████████████ location.

Goal

To provide excellent Wireless-N 2.4GHz and Wireless-AC 5GHz Wi-Fi coverage in all offices.

Original Wi-Fi coverage

Original Wi-Fi was provided by four Adtran single-band 2.4GHz Wireless-G access points (APs).

The below survey is a predictive 2.4GHz survey to show the coverage problems with the original setup. The access point to the far right of the image was found not to be working, so coverage was worse then shown by this survey.
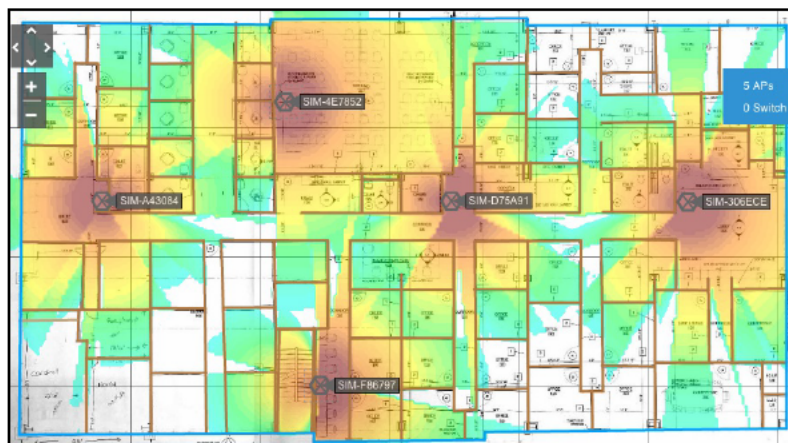
Predictive survey of Adtran APs. Hotter colors are better

Predictive survey

We initially estimated that 12 APs would be required. We then ran a 5GHz predictive survey that showed that 15 APs may be required for consistent 5GHz coverage.
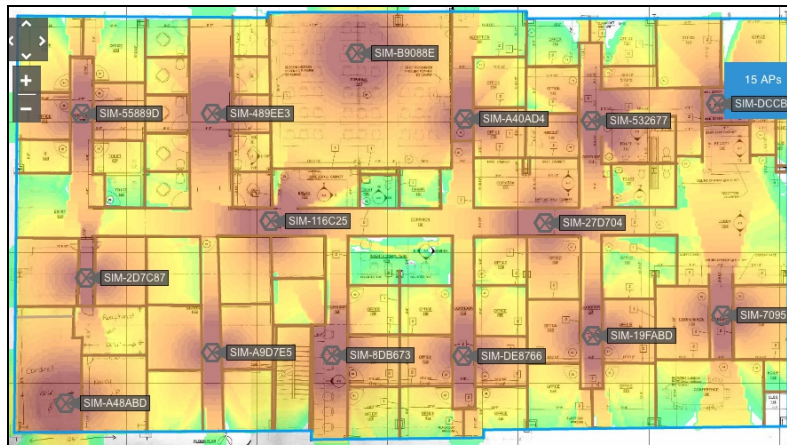
5GHz predictive survey. Hotter colors are better

Pre-installation "AP on a stick" survey

We ordered 15 Ubiquiti Unifi UAP-AC-PRO APs with the expectation that any unused APs would be kept as spares.

We performed an "AP on a stick" survey, where a single UAP-AC-PRO was mounted on a movable tripod and positioned in each AP location from the predictive survey. We then adjusted the location and antenna strength of each AP to ensure adequate coverage in all offices and to define cell boundaries.

We found that we needed 13 APs for full 5GHz coverage, with an extra AP placed in the training room for higher client density for a total of 14 APs.

Installation

We re-used the cable runs to three of the existing APs, then ran 12 new Cat6 cables, 11 for the remaining APs and one spare cable which terminates near the front of the main hallway.

We terminated the new cable runs into an existing Cat6 patch panel in the network closet and tested all cables to ensure correct termination.

We then installed all 14 APS in the drop-ceiling tiles.

Testing and configuration

We installed an on-premises Ubiquiti Unifi Cloud Key to managed the APs and provide monitoring and remote access.
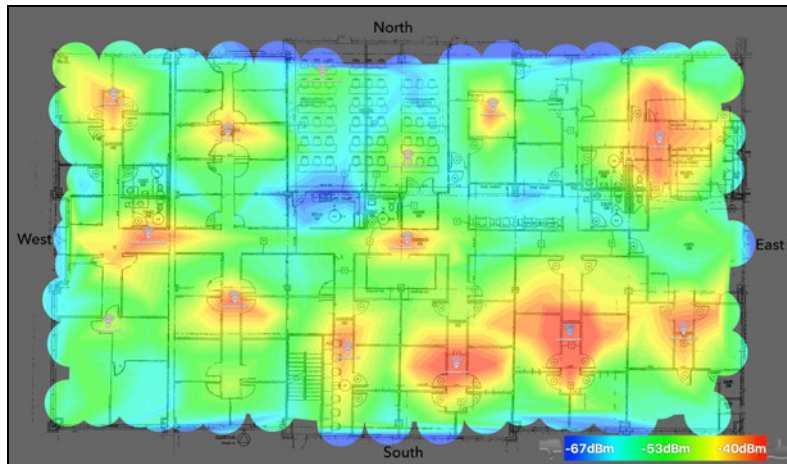
We then performed a final adjustment of antenna power levels for each band on each AP and configured Min-RSSI to encourage client roaming.

Final survey

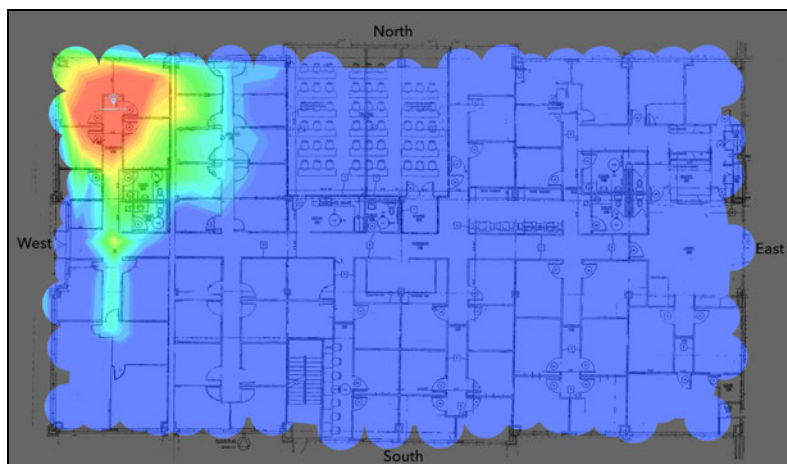Finally, we performed a final survey to ensure complete coverage, map cell boundaries, and tune channels.
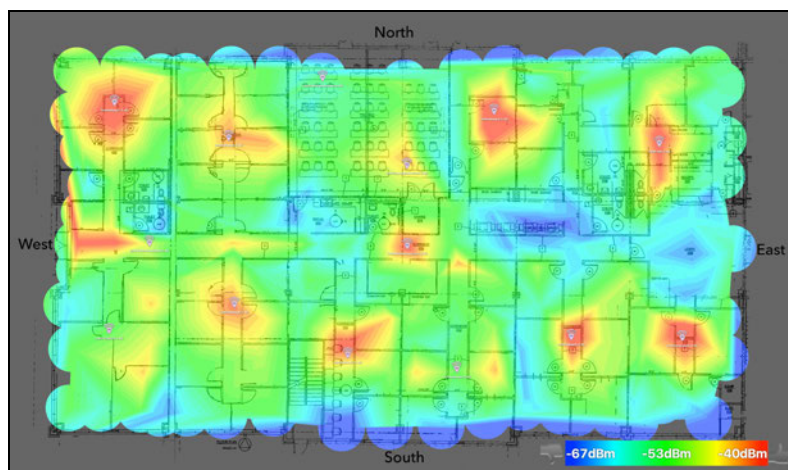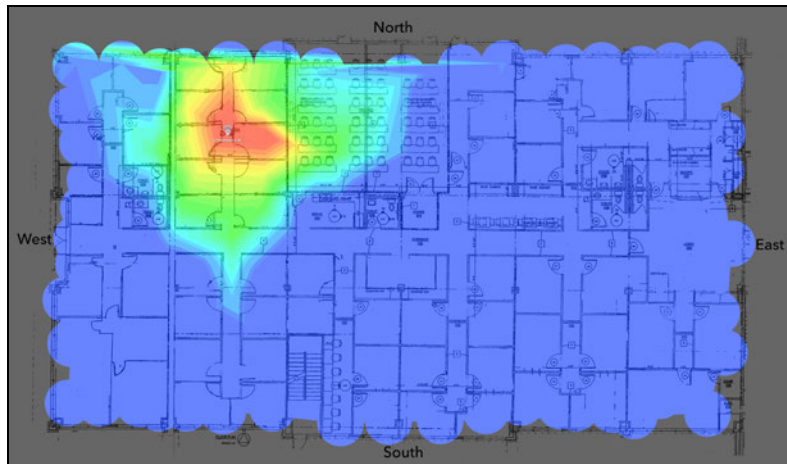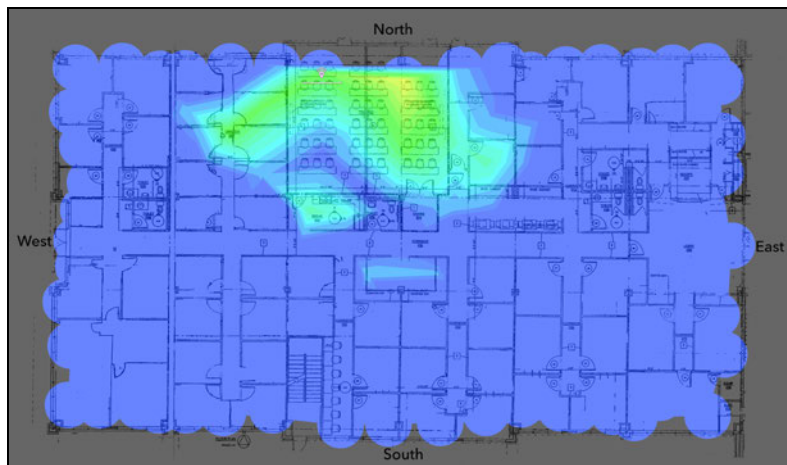

2.4GHz coverage map

5GHz coverage map

2.4GHz Individual

Hallway 1
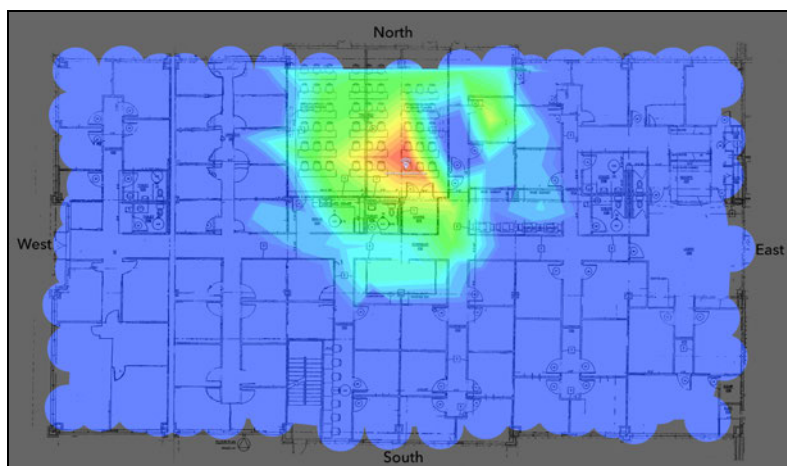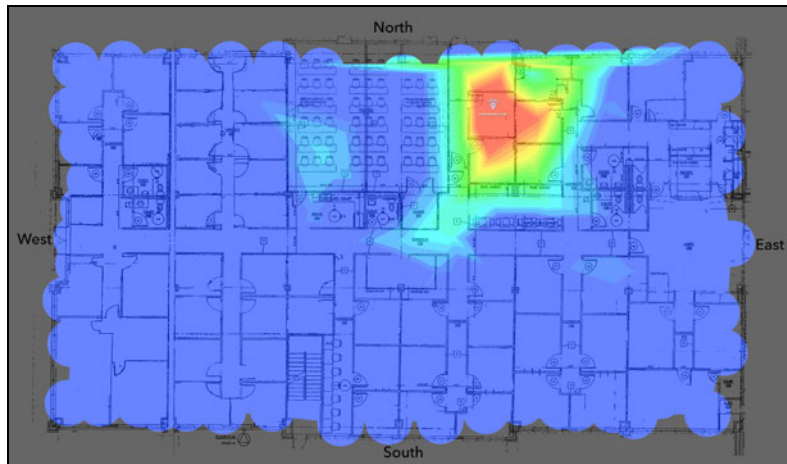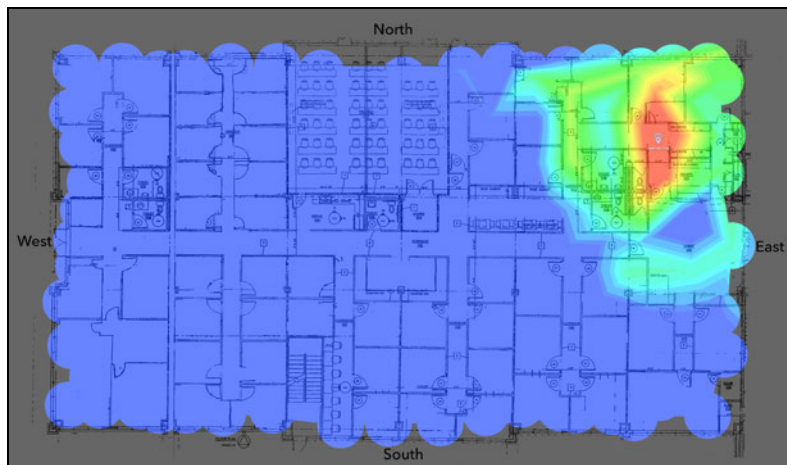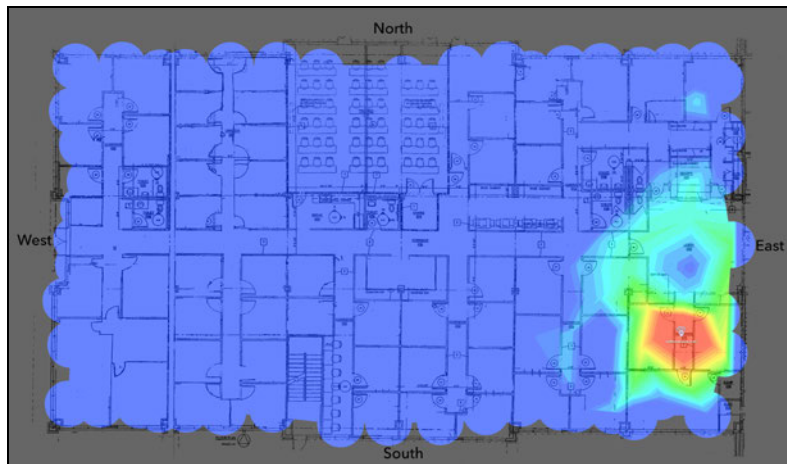
Hallway 2

Training Room Rear

Training Room Front

Hallway 3

Front
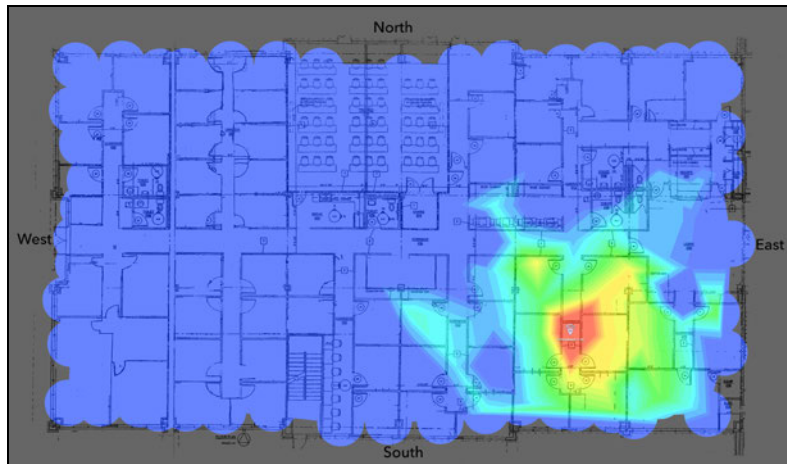
Conference Rooms
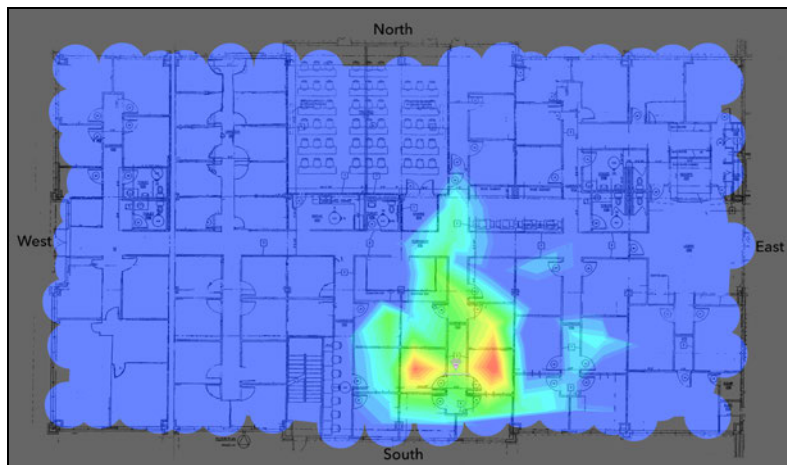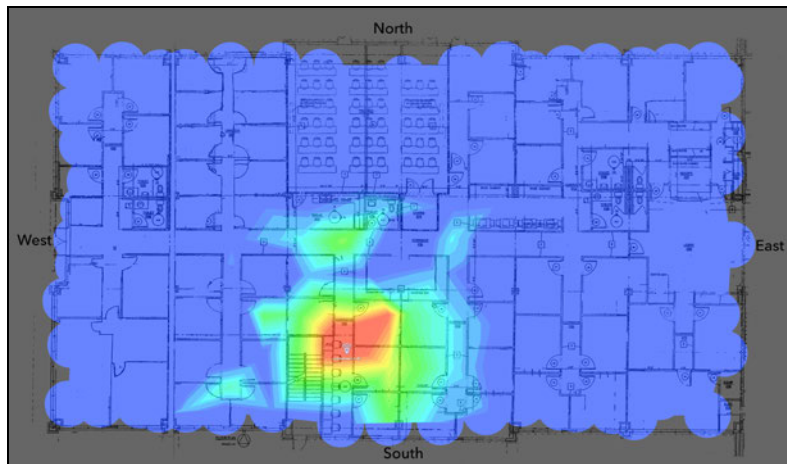
Hallway 5
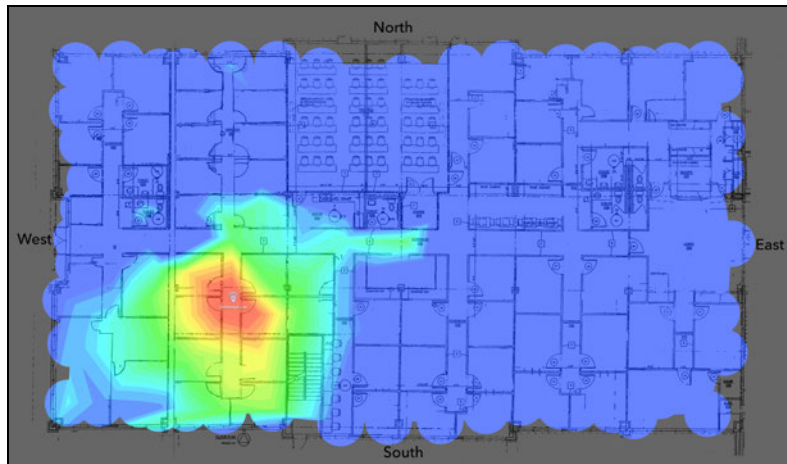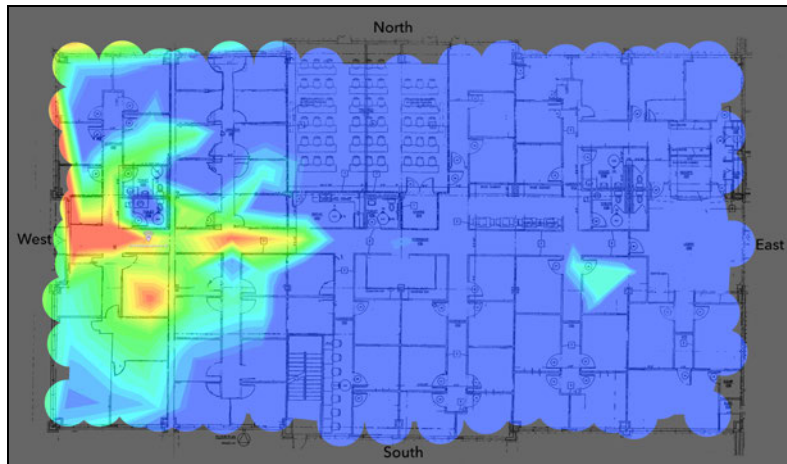

Hallway 6
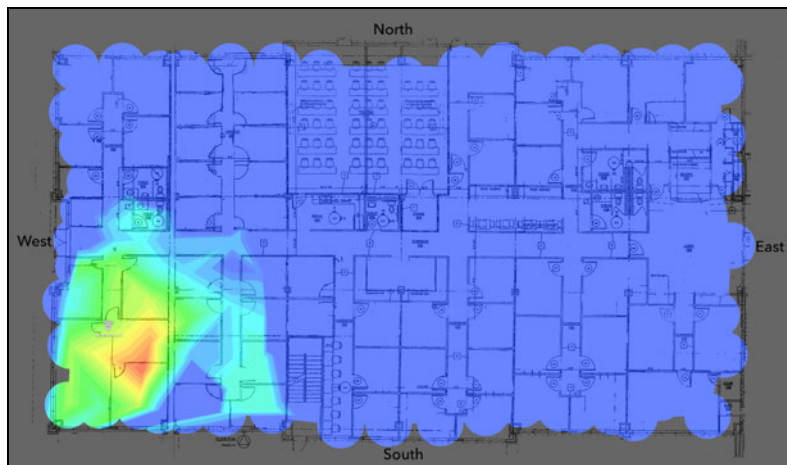
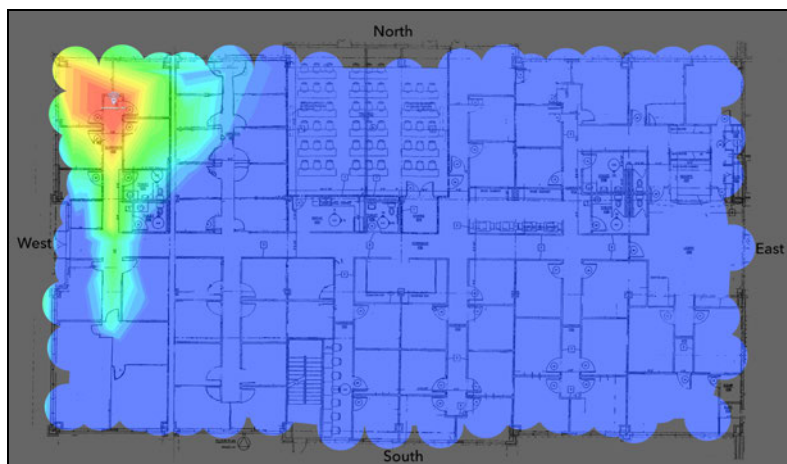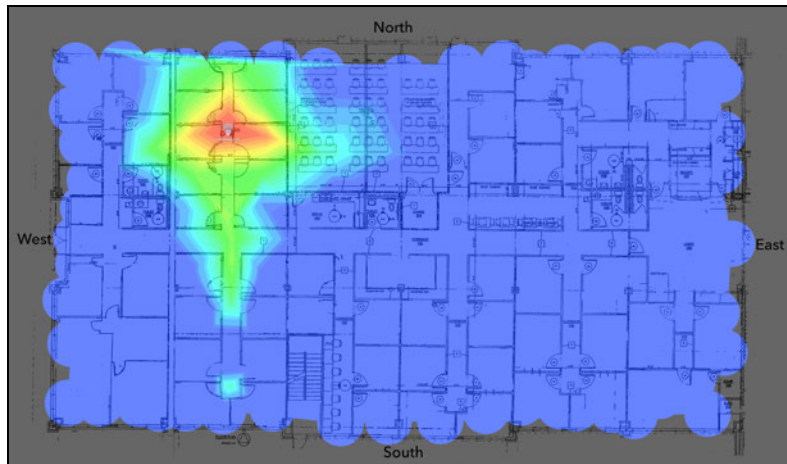**Hallway 7**
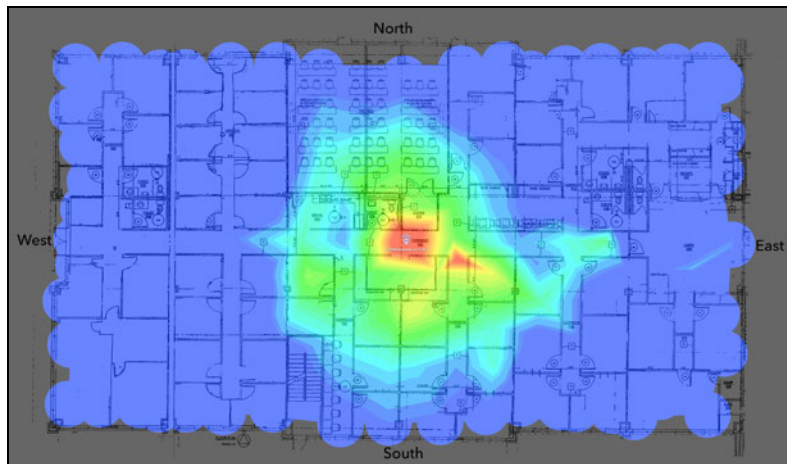
Hallway 8

Hallway 9

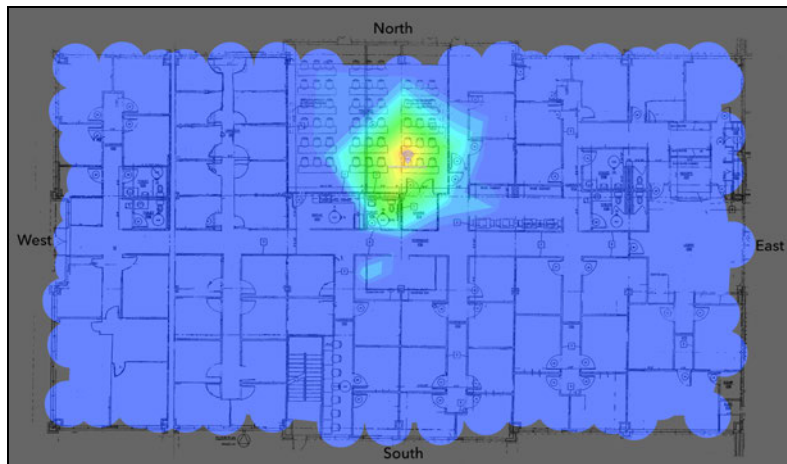**Main Hallway Front**
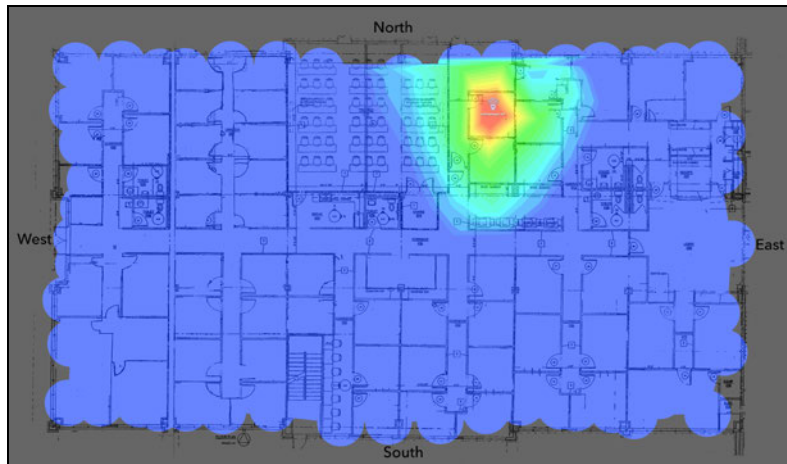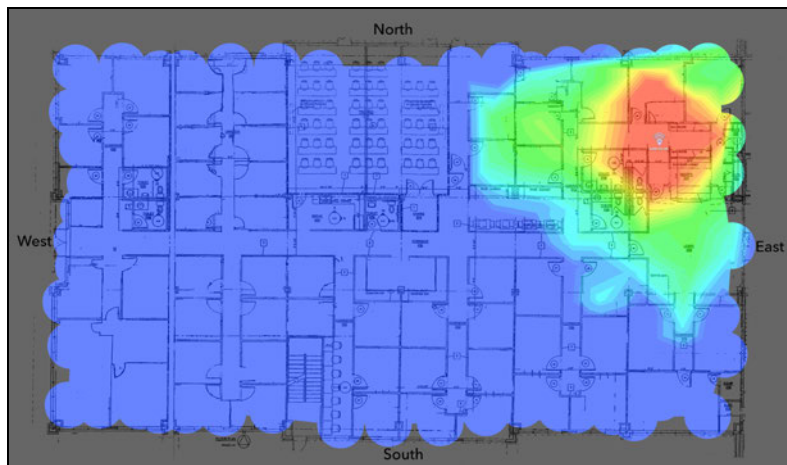
Main Hallway Rear

5GHz Individual

Hallway 1

Hallway 2

Training Room Rear

Training Room Front

Hallway 3

Front
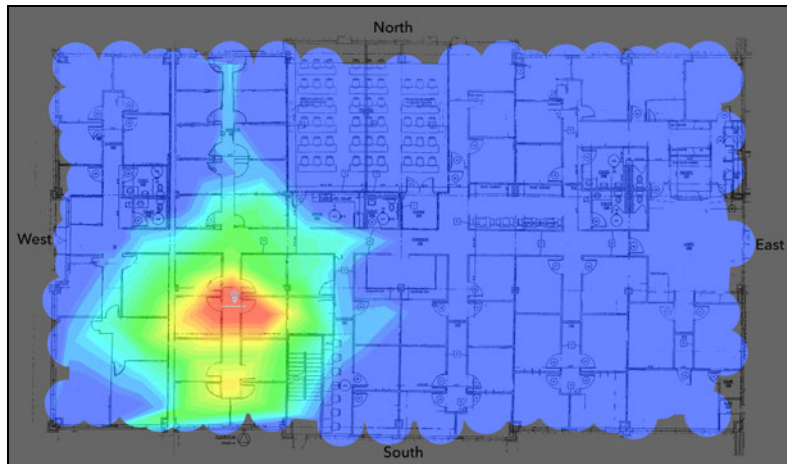

Conference Rooms
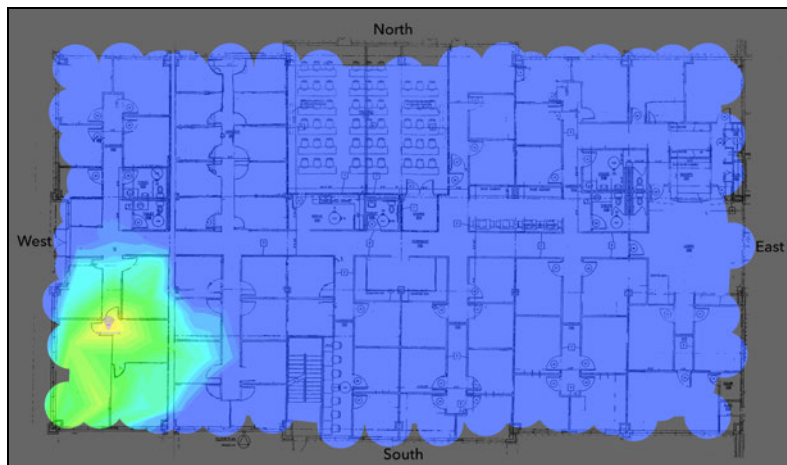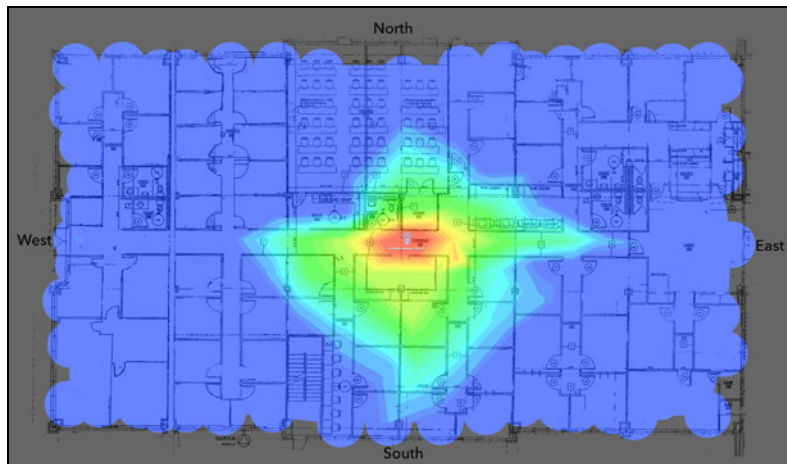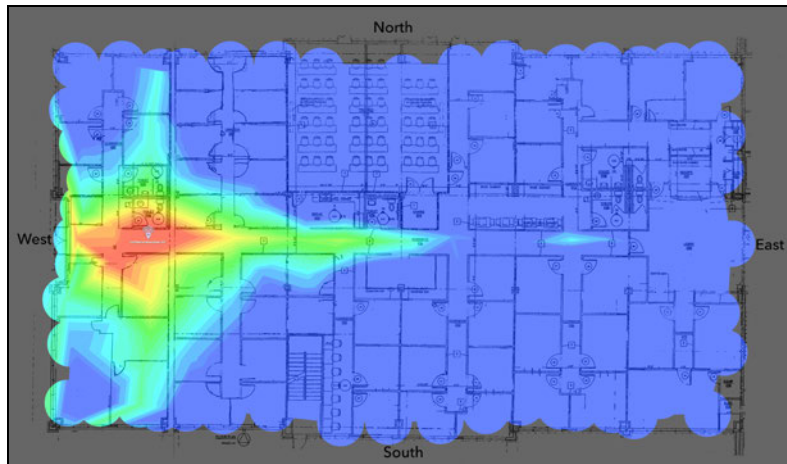
Hallway 5

Hallway 6

Hallway 7

Hallway 8

Hallway 9

Main Hallway Front

Main Hallway Rear