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Antenna Registration Question 4: Directional Antenna Information

Straight Path Ventures ("SPV") is developing radios that can support fixed 5G services in the 39 GHz band (38.6 – 40.0 GHz). The research and experimentation project will enable SPV to develop cost-effective fixed broadband solutions in the 39 GHz band. We plan to conduct a series of outdoor experimentations to test and demonstrate the performance of SPV's fixed 5G products, including the Gigarray Access Point (AP) and Gigarray Consumer Premise Equipment (CPE).

The Gigarray AP has the following 2 antenna configurations:

1. Gigarray AP with planar array antenna

   In this configuration, the planar antenna array has overall about 10 degree half power beam width in elevation and about 60 degree half power beam width in azimuth. The antenna array consists of 4 antenna subarrays with 2 antenna subarrays being vertically polarized and the other 2 subarrays being horizontally polarized. The gain of each antenna subarray is about 15 dB. The Gigarray AP can support up to 4 digital MIMO streams within the coverage of the planar antenna array. The pointing direction of the beams can be arbitrary as we can orient the equipment towards different directions for testing purposes. In general, we would like a Gigarray AP to cover about 90 degree of angle in azimuth. We may also put more than 1 Gigarray AP in the same site to achieve 360-degree coverage in the surrounding area.

2. Gigarray AP with phased array antennas

   In this configuration, the phased array antenna consists of 8 subarrays with 4 subarrays being vertically polarized and the other 4 subarrays being horizontally polarized. Each subarrays consists of a set of patch antenna elements that provide about 12 dB antenna gain. The half power beam width of each subarray is around 60 degree in azimuth and 10 degree in elevation. The Gigarray AP can support up to 4 digital MIMO streams. The pointing direction of the beams can be arbitrary as we could orient the equipment in different directions. Additionally, the beam direction can also be steered by applying different phases across the multiple transceiver chains that drives the antenna array.

The Gigarray CPE is equipped with a dish antenna with 6 – 8 inch in diameter. The dish antenna has about 2 ~ 5 degree half power beam width in both azimuth and elevation. The dish antenna provides about 30 ~ 33 dB antenna gain. We plan to support 2 receive streams and 1 transmit streams at the CPE. The 2 receiver streams are cross polarized while the 1 transmit stream is linearly polarized. The pointing direction of the antenna can be arbitrary as we point the equipment towards different directions to align with the strongest path towards the Gigarray AP and for different test scenarios.