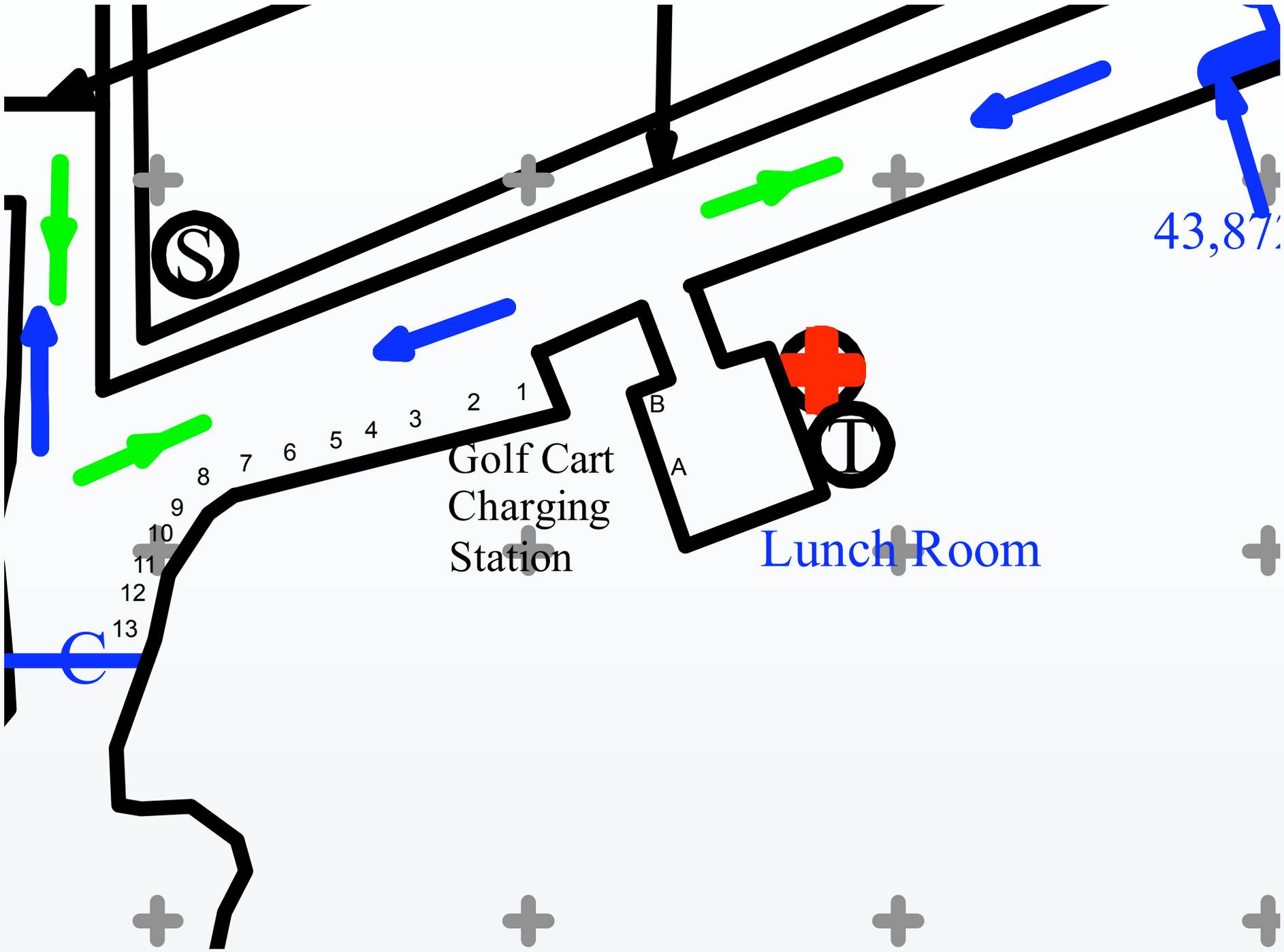
Hockley Watermelon Pit First Look

Ryan

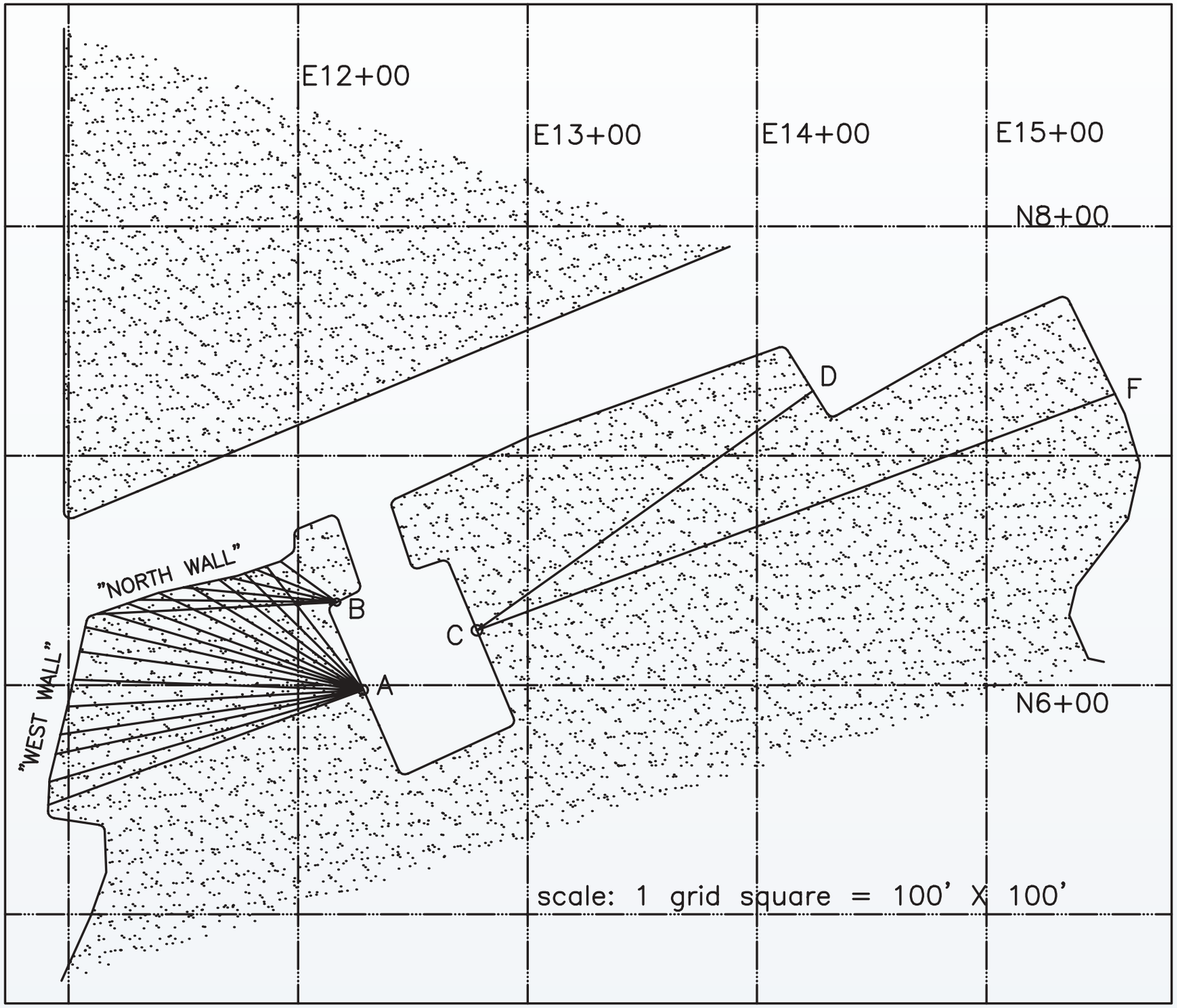
Antenna Positions



A & B were the two transmitter positions.
1-13 were the receiver positions.

From 2002 Paper

- The locations of the walls don't appear to be very accurately represented.



Friis Transmission Formula

- Ratio of power transmitted to received is:

$$\frac{P_{R_x}}{P_{T_x}} = \frac{A_{T_x} A_{R_x}}{\lambda^2 R^2}$$

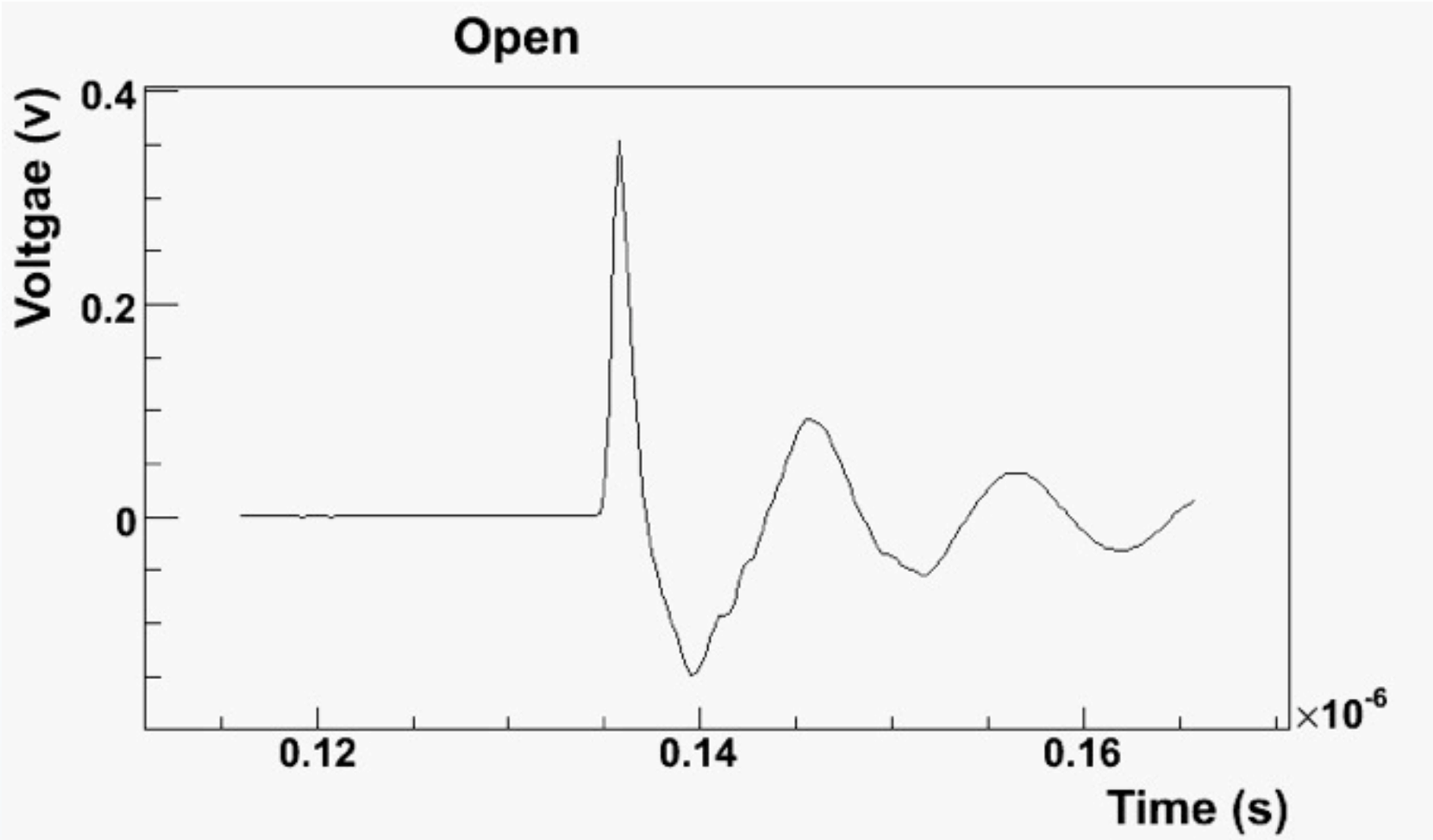
$$\frac{V_{R_x}}{V_{T_x}} R = \frac{A}{\lambda}.$$

- For half-wave dipole $A=0.13*\lambda^2$

$$\frac{V_{R_x}}{V_{T_x}} R = 0.13\lambda$$

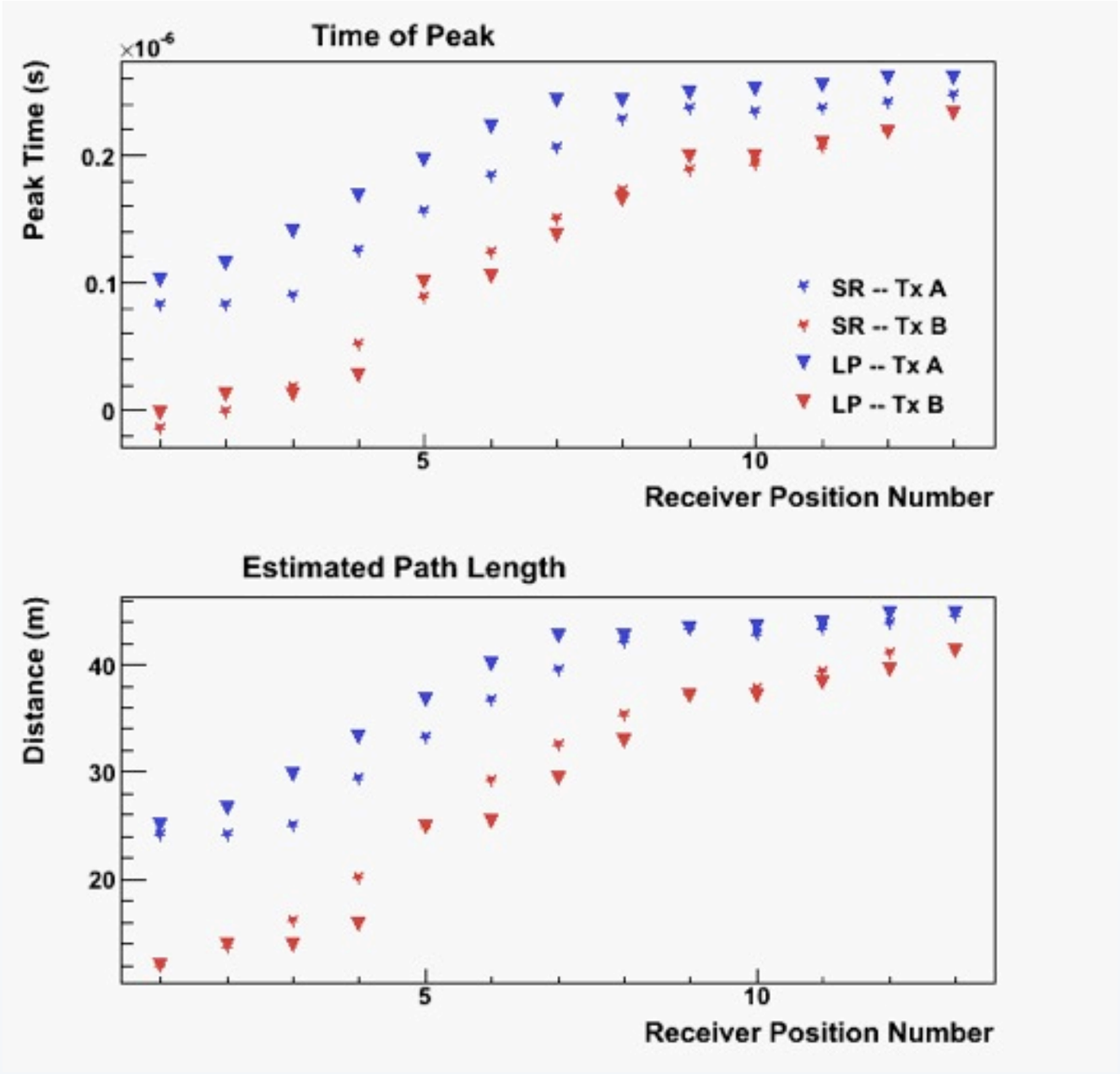
Calculate V_tx

- Start with open



- Peak-to-Peak/2 =0.2513V
- 30dB atten + 20dB coupler + cable = 50.9dB
- V_tx = 88.5 V

Estimate Path Lengths



- Know:
  - n=2.4ish
  - shortest length is 12m
- Estimate
  - Path length based on time.

Fig 5 Comparison

- Compare with Figure 5 of 2002 Hockley paper
  - Order of magnitude off in scale.