GuRu Wireless, Inc.

GuRu Wireless, Inc.
File Number 0553-EX-CN-2026
RF Safety Supplement

Addressing RF Safety Concerns:

To ensure operator safety, the set up for testing the transmitter incorporates shielding walls around the antenna array to prevent unwanted side emissions of RF radiation. The transmitter array is positioned more than 5 feet above the ground, with additional 2-feet shielding walls extending above the transmitter array to ensure that no individual near the system will be exposed to RF levels exceeding safe Maximum Permissible Exposure (MPE) limits. Further, operational guidelines require personnel to maintain at least 10 feet of ground distance from the transmitter during operation.

In GuRu's Beam Wireless Power Transfer, the goal is to create a high-power flux density in a small volume where the intended receiver is located. This creates a very different power density in space than in usual telecom antennas. This is shown in Figure 1:

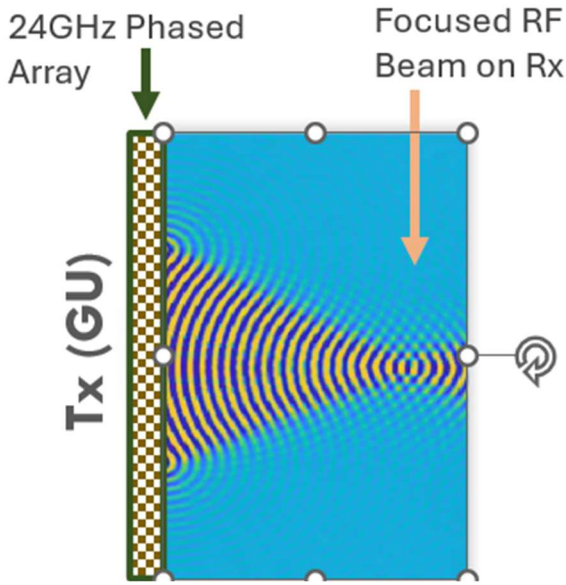

Figure 1: Focusing wave Beamforming in NFC. The beam-steering in NFC is like a "spotlight" emitting light with a spherical wavefront.

To assess system implications in urban environments, we conducted simulation studies to identify RF hot spots around and above the transmitter, determining the necessary clearance from the RF beam to comply with the 1 mW/cm² MPE limit.

During testing, the transmitter will be emitting the beam straight up (90°± 2°) to power the UAV hovering above it.

Figure 2 illustrates a conceptual diagram of the focused RF beam and its sidelobes. The antenna has a physical size of 1.5 m x 2.0 m. It is surrounded by a rectangular solid metal sheet wall that extends 2ft. above the antenna array. This wall greatly attenuates any emissions at an elevation angle of less than 15 degrees. So, even in the event of operator error, there is no danger of high exposures at lower elevation angles. The simulation results show that at higher elevation angles the radius exceeding MPE limit is less than 6 m away from the center of the array, defining the surrounding keep out zone for building structures.

The highest RF intensity occurs at the antenna's focal point at 100 ft above the transmitter due to constructive interference and RF intensity diminishing rapidly with distance. The focal spot diameter in space is less than 0.4 m² and positioned away from personnel, eliminating harmful RF exposure risks.

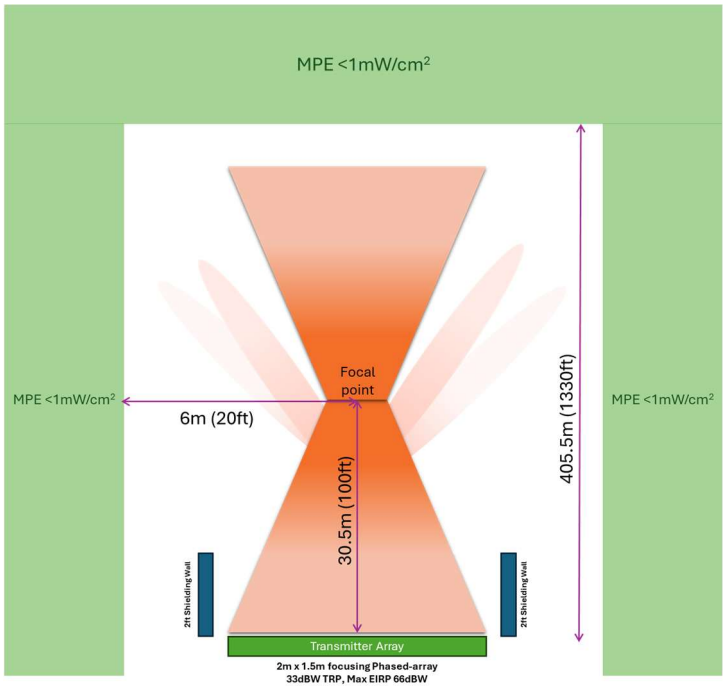

Figure 2. WPT transmitter and designated clearance zone.

There are high power densities above the antenna in the path to the intended receive antenna. Array simulations were performed to quantify RF intensities around the transmitter, demonstrating that RF levels above the 1 mW/cm² MPE limit occur only in a limited area around the beam. Figure 3 indicates the required lateral clearance distance from the transmitter when it is generating a beam focused at 100 feet vertically up without the metal shielding walls. At ground level, RF intensity falls below MPE level at 1.5 m distance from the transmitter, while it can grow to a maximum radius of 6m at the focal point, which is 30m above the array. The GuRu staff will be able to observe these areas of high MPE potential and will stop the experiment if there is any risk of human exposure.

The necessary lateral clearance stays relatively constant above the focal point and less than 4 m radius. The beam power falls below 1mW/cm² at around 405 m height and no lateral clearance is required above this elevation.

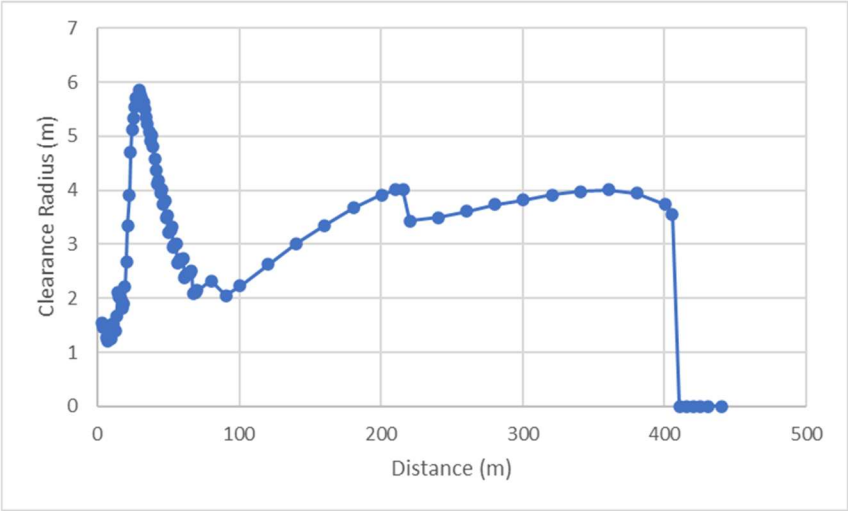

Figure 3. Radial clearance distance required for RF beam focused at 30.5m.

The maximum clearance requirement occurs at the focal point, where RF intensity peaks. Figure 4 shows the RF beam's cross-section at the focal point, confirming RF intensity above the MPE limit is confined to a small area. To ensure operational safety, GuRu will provide operational guidelines to all personnel requiring that the transmitter be placed at least 20ft from any structure and that personnel must maintain a minimum ground distance of 10 feet during system operation.

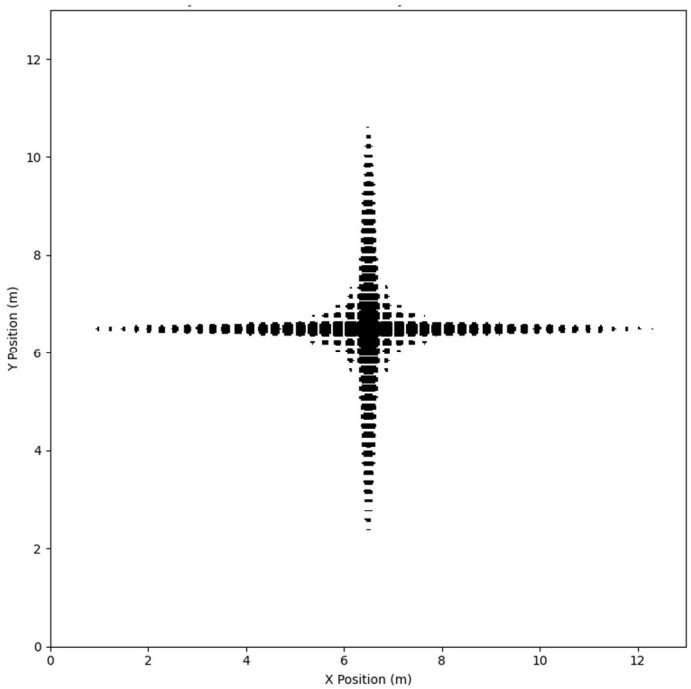

Figure 4. RF beam cross section at 100ft above the transmitter (focal point). Only the hotspots exceeding MPE limit of 1mW/cm² are shown.

Conclusion:

Through careful design and simulations, potential RF safety risks associated with the transmitter system have been effectively mitigated. The implementation of shielding measures and adherence to clear operational guidelines ensure compliance with safety standards, protecting both personnel and the general public from harmful RF exposure.