

File Number: 0380-EX-PL-2011

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Introduction & Description

The Aerospace Systems Group, Military Systems Division of ATK, located in Dayton, OH (shown Figure 1) is in process of pursuing an FCC license to enable indoor GPS reception research and testing on the performance of various GPS antennas, without the hindrance of external factors, such as inclement weather, to improve overall testing efficiencies, and reduce risk of equipment damage from transportation.



Figure 1 – ATK Dayton Facility

Objectives

ATK Dayton would like to instrument a particular GPS re-radiation system, described herein, to quantify certain performance aspects of GPS antennas being developed within. The equipment concerning this application is a GPS L1/L2 band, including OmniSTAR re-radiating system, GPS Networking, Inc, model L1/L2OHNRRKIT-N/5/ (see Figure 2). ATK plans to place an outdoor receive antenna on the roof of our facility and route the received signals through approximately 75 feet of co-axial cable, through an amplifier, then through another short section of coax to a ceiling mounted passive antenna, which will re-radiate signals inside of a 2nd story room approximately 30' x 45' in size (see Figures 3- 4). This room was chosen because of its isolated interior location, far from the exterior walls of the main building structure. Additionally, the radiated power, measured within 4-5' of the re-radiating antenna will be attenuated such that the incident power after the AUT will be within a range of 80-120dBm (typical GPS satellite signal levels). ATK will use a combination of in-line attenuators to achieve the proper attenuation.

Future Development

The research, design, experimentation, and test occurring at ATK Dayton will greatly benefit advanced military programs, in the field of GPS antennas and sub-systems. Through the use of the proposed GPS re-radiation system, ATK Dayton will be able to more efficiently and accurately collect data to provide advancements to Military GPS users



Figure 2 – Diagram of GPS Re-Radiation System

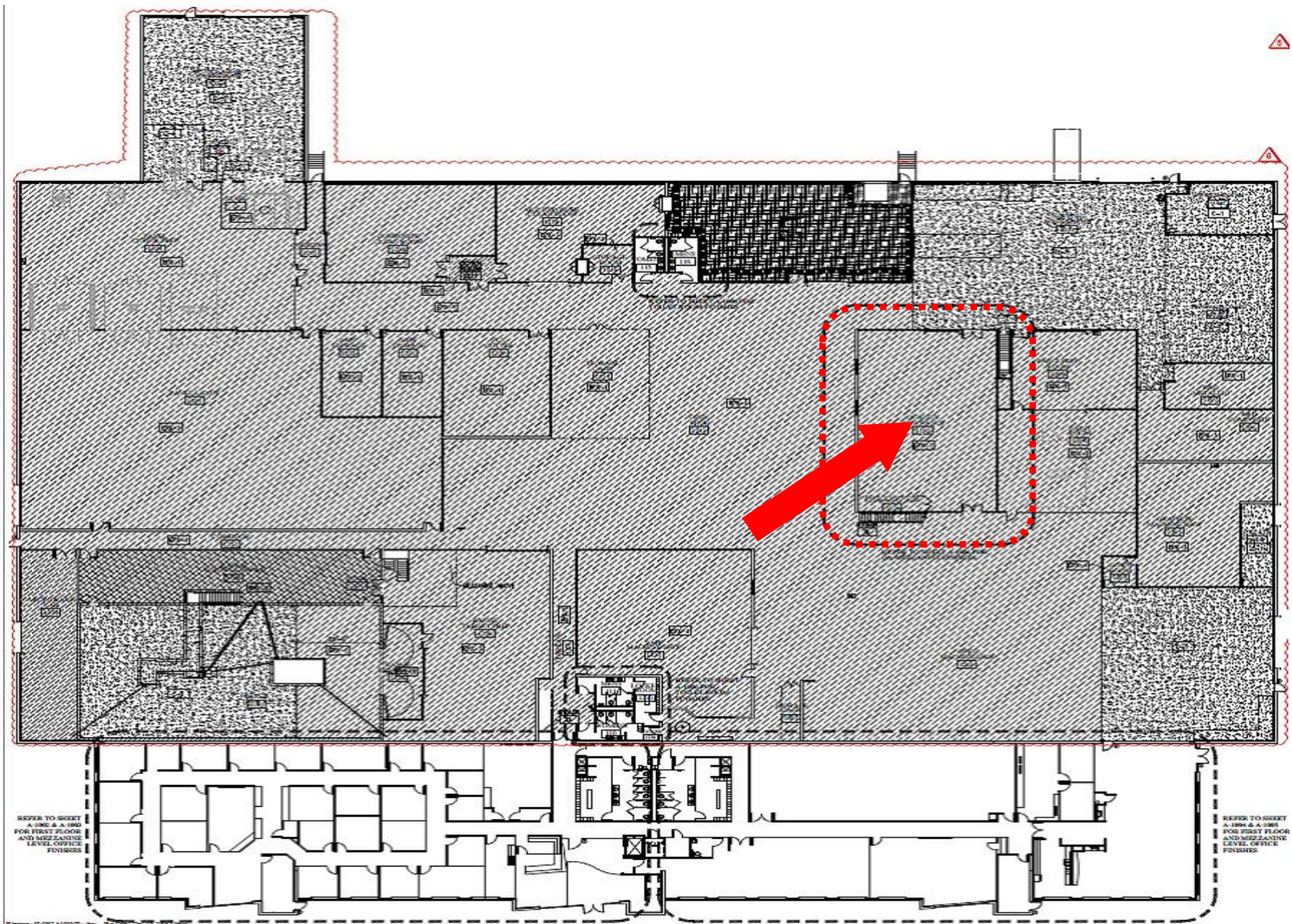


Figure 3 – ATK Dayton Facility, 2nd Floor Mezzanine (Desired Test Area)

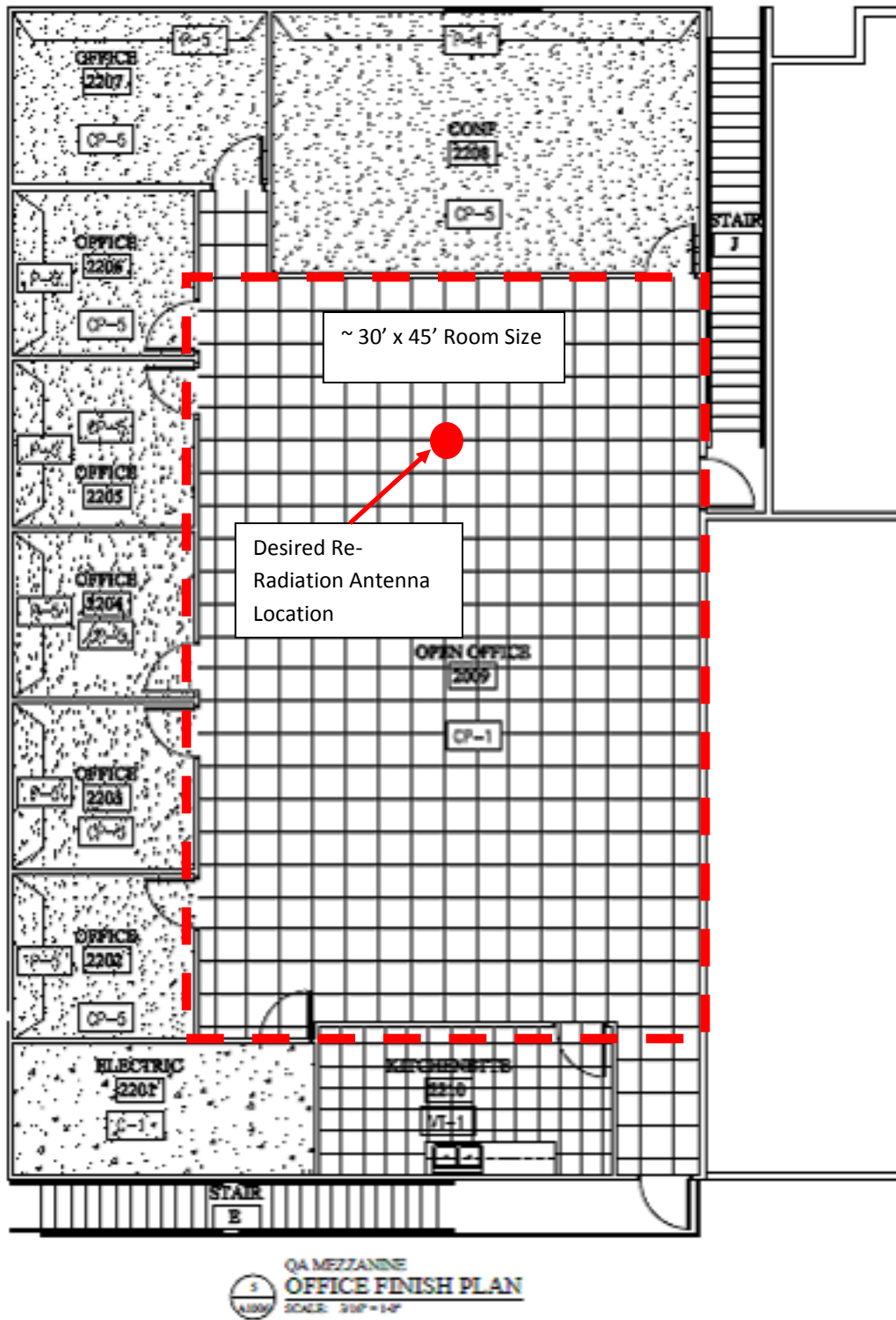


Figure 4 – 2nd Floor Mezzanine, Desired Test Area Details