Calspan
2041 Niagara Falls Blvd.
Niagara Falls , NY 14304

EXHIBIT 2

GPs Re-Radiation System

Description and Signal Level Calculations

The GLI-METRO receives the L1/L2 GPS Signal from an active antenna that is placed on the peak of Calspan hanger roof where it is then amplified for retransmission within the hanger.

The GLI-METRO employs a power control function which measures the output power of the GPS signals from the device and controls the gain based on the user's selection on the input panel. This ensures the necessary radiated power level is achieved within the hanger facility.

The GLI-METRO has an input dynamic range of 30dB, i.e. the input can vary from -115dBm min to -85dBm max. It has an output dynamic range of 20dB i.e., it can transmit from -85dBm to -65dBm provided the input level is within the min and max level as shown above. The GLI-METRO has five buttons on the front panel. The "LVL" buttons control the output power, ERP Signal Level, of the GPS signal at the output connector.

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The following calculations reflect the transmitter located 17.5 feet from the nearest outside wall and an average receive power for L1 and L2 of -130dBm at the roof top antenna. The inside transmitting antenna is mounted directly to the GLI Metro amplifier assembly pointing downward and diagonally across the hanger away from the door opening. The maximum transmitter antenna gain is 3 dBi at the focal point and is reduced at off angles.

The attenuation of the GPS signal while traveling through free space is calculated with the following formula:

FSL = K1 + 20 * LOG(D) + 20*LOG(F)

Where:
K1 = the constant factor (-37.87) for the desired units (feet).
F = the frequency in MHz
D = the slant range distance from the transmitter antenna to 100 feet beyond the nearest exterior wall in feet.
D0 = Transmitter distance to nearest outside wall.

The GPS Re-radiation device transmits at two frequencies: 1575.42 MHz for L1 and 1227.6 MHz for L2. Therefore, the Free Space Path Loss (FSL) equals:

L1, FSL = -37.87 +20*LOG(121.3) +20*LOG(1575.42) = -67.753 dB

L2, FSL = -37.87 +20*LOG(121.3) +20*LOG(1227.6) = -65.59 dB

With the transmitter output signal level adjustment set to -77dBm, the calculated signal 100 feet beyond the nearest exterior wall from the antenna is as follows:

L1 Transmitted Power = -77 dBm = 19.95 pW (ERP) * 1.64 = 32.72 pW (EIRP) = -74.85 dBm/24MHz
At 100 feet = -74.85 -67.76 = -142.61 dBm/24MHz

L2 Transmitted Power = -77 dBm = 19.95 pW (ERP) * 1.64 = 32.72 pW (EIRP) = -74.85 dBm/24MHz
At 100 feet = -74.85 -65.59 = -140.44 dBm/24MHz

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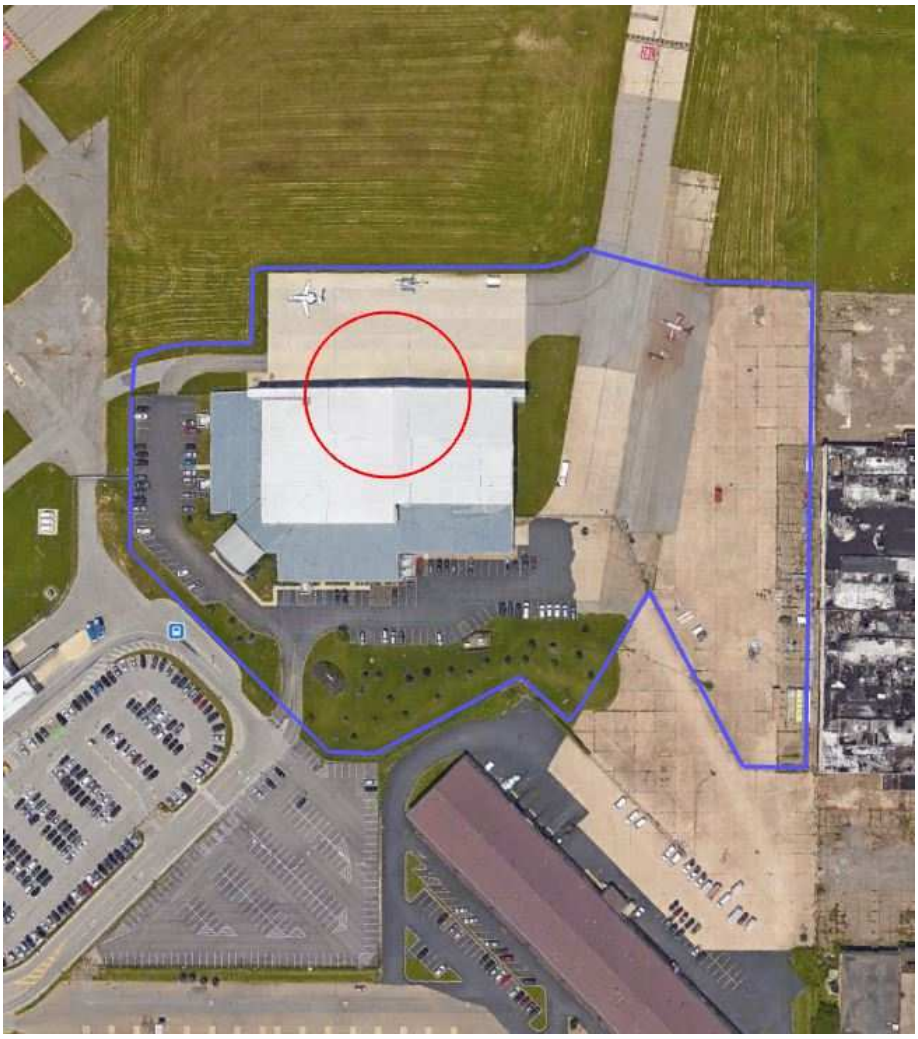
Aerial view of Calspan Hanger on the Niagara Falls International Airport, located at 43-06-08N, 78-56-19W

Calspan Property outline – BLUE line

100 Ft radius from wall adjacent antenna – RED circle



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GPS RE-RADIATE ANTENNA LOCATION

CALSPAN HANGER
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