

FCC FORM 442 - EXHIBIT
GPS Re-Radiation System to support Missile production and Flight test.

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GPS L1/L2 (1575.42 MHz/1227.6 MHz)
Emission 24M0G1D
Power at antenna is 1×10^{-16} watts or 0.0001 picowatts
Reference: WC2XSA by GPS Networking, Inc.

Raytheon Missile Systems uses a GPS Re-Radiation (Re-Rad) system to bring GPS signals into the labs for missile production in support of multiple Government contracts. GPS signals levels are so low that common buildings do not allow the signal to enter into lab space. Raytheon buildings which are mostly metal in construction attenuate the GPS signal even more. The Re-Rad system allows the signal to be received inside of the Raytheon lab space. This signal is used to verify GPS receiver performance during missile production.

The Re-Rad system receives the GPS signals from an active GPS antenna that is on the roof of the building. The GPS signal is then run via coax into the lab where it is connected to a series of attenuators and then a GPS antenna which radiates the signal into the lab space. The signal level inside the lab space has to be the same level as it is on the outside of the building which is approximately -160 dBW. The antennas in the labs are very directional and it is aimed directly down toward the floor. The antenna provides a small reception area which is about 28 feet in radius. Anywhere outside of the area the GPS signal cannot be received.

A GPS receiver was used to make sure that the signal does not radiate outside of the building. This measurement showed the signal did not radiate outside the building.

Our systems were purchased from GPS Networking, Inc in Pueblo Colorado (Reference WC2XSA).

	Lat	Long	Alt (m)
Hanger	N32 06' 24"	W110 56' 16"	782
Bldg 805	N32 06' 33"	W110 56' 39"	779
Bldg M09	N32 08' 18"	W110 55' 17"	796
Bldg 9020	N32 05' 31"	W110 48' 24"	889