



100 foot free-space calculations (from radiation point):

penthouse -148.69 dbm;
 lab -137.69 dbm;
 diesel shop -137.34 dbm;
 service track -137.34 dbm;
 settegast -137.34 dbm;

link budget calculations (penthouse):

roof antenna gain: 38.0 db
 roof antenna cable (rg-8) loss (9 db/ 100 ft): 9.0 db
 lightning arrestor: 0.1 db
 s-12 repeater amplifier gain: 0.0 db
 a-11 repeater amplifier gain: 20.0 db
 repeater antenna cable loss (9 db/ 100 ft): 4.5 db
 repeater antenna gain: 3 db
 total system gain: 47.4 db
 average receive power of 11 gps signals in north america: -130 dbm
 effective radiated power (average receive power + total system gain): -82.6 dbm

link budget calculations (lab):

roof antenna gain: 38 db
 roof antenna cable (rg-8) loss (9 db/ 100 ft): 9.0 db
 lightning arrestor: 0.1 db
 fiber optic link gain: 3.0 db
 s-12 repeater amplifier gain: 20 db
 repeater antenna cable loss (9 db/ 100 ft): 4.5 db
 a-11 repeater amplifier gain: 8.0 db
 repeater antenna gain: 3 db
 total system gain: 59.4 db
 average receive power of 11 gps signals in north america: -130 dbm
 effective radiated power (average receive power + total system gain): -71.6 dbm.

link budget calculations (fort worth diesel shop):

roof antenna gain: 38.0 db
 roof antenna cable (lmr-400, 30 ft) loss (5.1 db/ 100 ft): 1.53 db
 lightning arrestor: 0.1 db
 s-12 splitter gain: 20.0 db
 total subsystem gain: 56.37
 antenna a branch:



a-11 repeater amplifier gain: 2.95 db
 repeater antenna cable (lmr-400, 70 ft) loss (5.1 db/ 100 ft): 3.57 db
 repeater antenna gain: 3 db
 total subsystem gain: 2.38
 total system gain: 58.75 db
 average receive power of l1 gps signals in north america: -130 dbm
 effective radiated power (average receive power + total system gain): -71.25 dbm.

antenna b branch:

a-11 repeater amplifier gain: 1.93 db
 repeater antenna cable (lmr-400, 50 ft) loss (5.1 db/ 100 ft): 2.55 db
 repeater antenna gain: 3 db
 total subsystem gain: 2.38
 total system gain: 58.75 db
 average receive power of l1 gps signals in north america: -130 dbm
 effective radiated power (average receive power + total system gain): -71.25 dbm.

link budget calculations (fort worth service track):

roof antenna gain: 38.0 db
 roof antenna cable (lmr-400, 80 ft) loss (5.1 db/ 100 ft): 4.08 db
 lightning arrestor: 0.1 db
 s-12 splitter gain: 20.0 db
 total subsystem gain: 53.82

antenna a branch:

a-11 repeater amplifier gain: 3.205 db
 repeater antenna cable (lmr-400, 25 ft) loss (5.1 db/ 100 ft): 1.275 db
 repeater antenna gain: 3 db
 total subsystem gain: 4.93
 total system gain: 58.75 db
 average receive power of l1 gps signals in north america: -130 dbm
 effective radiated power (average receive power + total system gain): -71.25 dbm.

antenna b branch:

a-11 repeater amplifier gain: 3.205 db
 repeater antenna cable (lmr-400, 25 ft) loss (5.1 db/ 100 ft): 1.275 db
 repeater antenna gain: 3 db



total subsystem gain: 4.93
total system gain: 58.75 db
average receive power of l1 gps signals in north america: -130 dbm
effective radiated power (average receive power + total system gain): -71.25 dbm.

link budget calculations Houston (settegast):

roof antenna gain: 38.0 db;
roof antenna cable (rg-8) loss (9 db/ 100 ft): 9.0 db;
lightning arrestor: 0.1 db;
s-12 repeater amplifier gain: 20.0 db;
a-11 repeater amplifier gain: 6.85 db;
repeater antenna gain: 3 db;
total system gain: 58.75 db.

average receive power of l1 gps signals in north america: -130 dbm.
effective radiated power (average receive power + total system gain): -71.25 dbm.