100 foot free-space calculations (from radiation point)

South Morrill (receive antenna 1): -128 dBm

Link budget calculations (South Morrill, receive antenna 1)

Roof antenna gain: 38 dB
Roof antenna cable (lmr-400, 20 ft.) loss (5.1 dB / 100 ft.): 1.0 dB
s-14 repeater amplifier gain: 21 dB
total subsystem gain: 58.0 dB

Antenna a branch:
Repeater antenna cable (lmr-400, 130 ft.) loss (5.1 dB / 100 ft.): 6.6 dB
a-11 repeater amplifier gain: 13.7 dB
repeater antenna gain: 3 dB
total system gain: 68 dB
average receive power of L1 GPS signals in North America: -130 dBm
effective radiated power (average receive power + total system gain): -62 dBm

Antenna b branch:
Repeater antenna cable (lmr-400, 130 ft.) loss (5.1 dB / 100 ft.): 6.6 dB
a-11 repeater amplifier gain: 13.7 dB
repeater antenna gain: 3 dB
total system gain: 68 dB
average receive power of L1 GPS signals in North America: -130 dBm
effective radiated power (average receive power + total system gain): -62 dBm

Antenna c branch:
Repeater antenna cable (lmr-400, 20 ft.) loss (5.1 dB / 100 ft.): 1.0 dB
a-11 repeater amplifier gain: 8.0 dB
repeater antenna gain: 3 dB
total system gain: 68 dB
average receive power of L1 GPS signals in North America: -130 dBm
effective radiated power (average receive power + total system gain): -62 dBm

100 foot free-space calculations (from radiation point)

South Morrill (receive antenna 2): -128 dBm

Link budget calculations (South Morrill, receive antenna 2)

Roof antenna gain: 38 dB
Roof antenna cable (lmr-400, 20 ft.) loss (5.1 dB / 100 ft.): 1.0 dB
s-14 repeater amplifier gain: 21 dB
total subsystem gain: 58.0 dB

Antenna a branch:
Repeater antenna cable (lmr-400, 130 ft.) loss (5.1 dB / 100 ft.): 6.6 dB
a-11 repeater amplifier gain: 13.7 dB
repeater antenna gain: 3 dB
total system gain: 68 dB
average receive power of L1 GPS signals in North America: -130 dBm
effective radiated power (average receive power + total system gain): -62 dBm

Antenna b branch:
Repeater antenna cable (lmr-400, 130 ft.) loss (5.1 dB / 100 ft.): 6.6 dB
a-11 repeater amplifier gain: 13.7 dB
repeater antenna gain: 3 dB
total system gain: 68 dB
average receive power of L1 GPS signals in North America: -130 dBm
effective radiated power (average receive power + total system gain): -62 dBm

Antenna c branch:
Repeater antenna cable (lmr-400, 20 ft.) loss (5.1 dB / 100 ft.): 1.0 dB
a-11 repeater amplifier gain: 8.0 dB
repeater antenna gain: 3 dB
total system gain: 68 dB
average receive power of L1 GPS signals in North America: -130 dBm
effective radiated power (average receive power + total system gain): -62 dBm