

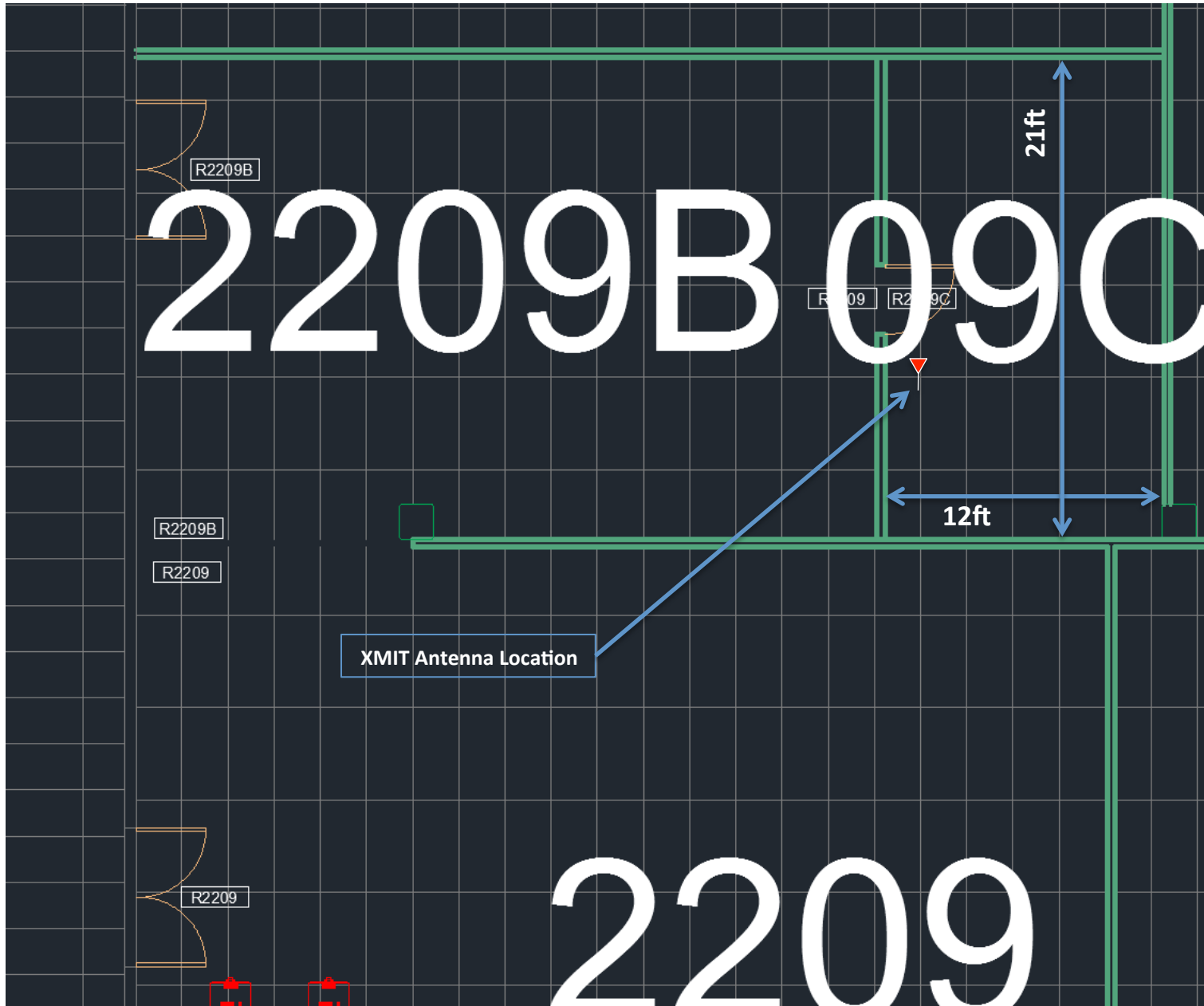
Rossevelt R2209C
GPS L1/L2 Band
Indoor Repeater Site

Building Layout For 100ft
Radius RF Exposure

Omni Directional Antenna
Ceiling Mounted Pointing
Downward: Hemispherical
Pattern – Highest Gain Is
at the Zenith as shown by
the Red Circle.

XMIT Antenna Location





RF COMPONENTS:

(1) Repeater; Brand GPS Source: Model GLI-METRO
L1/L2 Filtered with ERP Control, Oscillation Detect, Antenna Alarm Monitoring, RS232, Power 110/6.8, N-female, Power "ON/OFF"

(1) Transmit Antenna: Fixed Base – Omni Directional (facing downward)
Room R2209C: Antcom; **p/n-3G1215P-XN-4**
L1 Gain: +.4dB @ Zenith
L2 Gain: +1.5dB @ Zenith
Location: 33deg. 27' 36" N 111deg. 54' 19.41" W

(1) Receive Antenna: Fixed Base
Roof above R2219A: Antcom; **p/n-3G1215A-XN-1**
LNA Gain: +33dB max
Location: 33deg. 27' 37.88" N 111deg. 54' 19.91" W

RF Calculations:

Repeater Pre-Amplifier Input Power: Atmospheric Variable from -130dBm to -95dBm

Pre-Amplifier Output to Repeater Input Power: Atmospheric Variable from -110dBm to -75dBm

Repeater Output:
L1-Band: Regulated at -67dBm
L2-Band: Regulated at -69dBm

Total Line Loss from Repeater to XMIT Antenna: -5dB

L1-Band XMIT Antenna Feed Point RF Input Power: -72dBm
L2-Band XMIT Antenna Feed Point RF Input Power: -74dBm

SEE NEXT PAGE FOR CALCULATIONS



| Component | Signal Level | Manufacturer | Part Number | Notes |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------|-----------------------|--------------------------------|
| Repeater Regulated Output | -67 dBm | GPS Received Signal | | -110 to -149 dBm (-130dBm typ) |
| Cable Loss | -5 dB | GLI-METRO Auto Regulated at -67dBm | | |
| GPS Transmit Power | -72 dBm | Line Loss from Repeater to Tx Antenna | | |
| Repeater Antenna Gain | 0.4 dB | L1-Band XMT Antenna RF Input Power | | |
| Ptmax | -71.6 | Antcom 3G1215P-XN-4 | | |
| Path Loss @ 48.3m | -70.1 dB | Path Loss = 20 Log F (MHz) + 20 Log d (m) - 27.55 | | |
| EIRP @ 48.3m from Bldg | -141.7 dBm/24 MHz | 1575.42 MHz | Frequency L1 | |
| | | 30 m | Outside Bldg | |
| | | 18.3 m | Antenna to Bldg Walls | |
| | | 48.3 m | Total Distance | |
| $P_R (EIRP) = P_{t_{max}} - 20\log f - 20\log (30 + d) + 27.55 = -71.6 - 63.95 - 33.68 + 27.55 = \mathbf{-141.7 \text{ dBm/24 MHz}}$ | | | | |

| Component | Signal Level | Manufacturer | Part Number | Notes |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------|-----------------------|--------------------------------|
| Repeater Regulated Output | -69 dBm | GPS Received Signal | | -110 to -149 dBm (-130dBm typ) |
| Cable Loss | -5 dB | GLI-METRO Auto Regulated at -67dBm | | |
| GPS Transmit Power | -74 dBm | Line Loss from Repeater to Tx Antenna | | |
| Repeater Antenna Gain | 1.5 dB | L2-Band XMT Antenna RF Input Power | | |
| Ptmax | -72.5 | Antcom 3G1215P-XN-4 | | |
| Path Loss @ 48.3m | -68.3 dB | Path Loss = 20 Log F (MHz) + 20 Log d (m) - 27.55 | | |
| EIRP @ 48.3m from Bldg | -140.8 dBm/24 MHz | 1277.6 MHz | Frequency L2 | |
| | | 30 m | Outside Bldg | |
| | | 18.3 m | Antenna to Bldg Walls | |
| | | 48.3 m | Total Distance | |
| $P_R (EIRP) = P_{t_{max}} - 20\log f - 20\log (30 + d) + 27.55 = -71.6 - 63.95 - 33.68 + 27.55 = \mathbf{-142.6 \text{ dBm/24 MHz}}$ | | | | |