

# Exhibit 3

## GPS Re-Radiator Calculations for SRC Campus

# Satellite Link Budget to Roof Mounted Receive Antenna for Both Facilities

## GPS Satellite Link Budget (Down Link)

### GPS Satellite Downlink Power

Frequency L1	1575.42MHz	Frequency L2	1227.6MHz
Stalellite Transmitter power	25Watts	Stalellite Transmitter power	25Watts
	13.98dBW		13.98dBW
RF Losses in transmitter path	1.25dB	RF Losses in transmitter path	1.25dB
Antenna Gain (Isotropic)	13.5dBi	Antenna Gain (Isotropic)	13.5dBi
<b>Satellite Effective Radiated Power</b>	<b>26.23dBW</b>	<b>Satellite Effective Radiated Power</b>	<b>26.23dBW</b>

### Propagation Losses

Frequency L1	1575.42MHz	Frequency L1	1227.6MHz
	1.58E+09Hz		1.23E+09Hz
Distance from Satellite to Earth	2.52E+07Meters	Distance from Satellite to Earth	2.52E+07Meters
	2.52E+04Kilometers		2.52E+04Kilometers
Atmospheric and polarization loss	0.05dB	Atmospheric and polarization loss	0.05dB
Speed of Light	3.00E+08M/Sec	Speed of Light	3.00E+08M/Sec
Wavelength (C/F)	1.90E-01Meters	Wavelength	2.44E-01Meters
Free Space Pathloss	184.43dB	Pathloss	182.26dB
<b>Received Power on Earth</b>	<b>-158.25dBW</b>	<b>Received Power on Earth</b>	<b>-156.08dBW</b>
	<b>-128.25dBm</b>		<b>-126.08dBm</b>

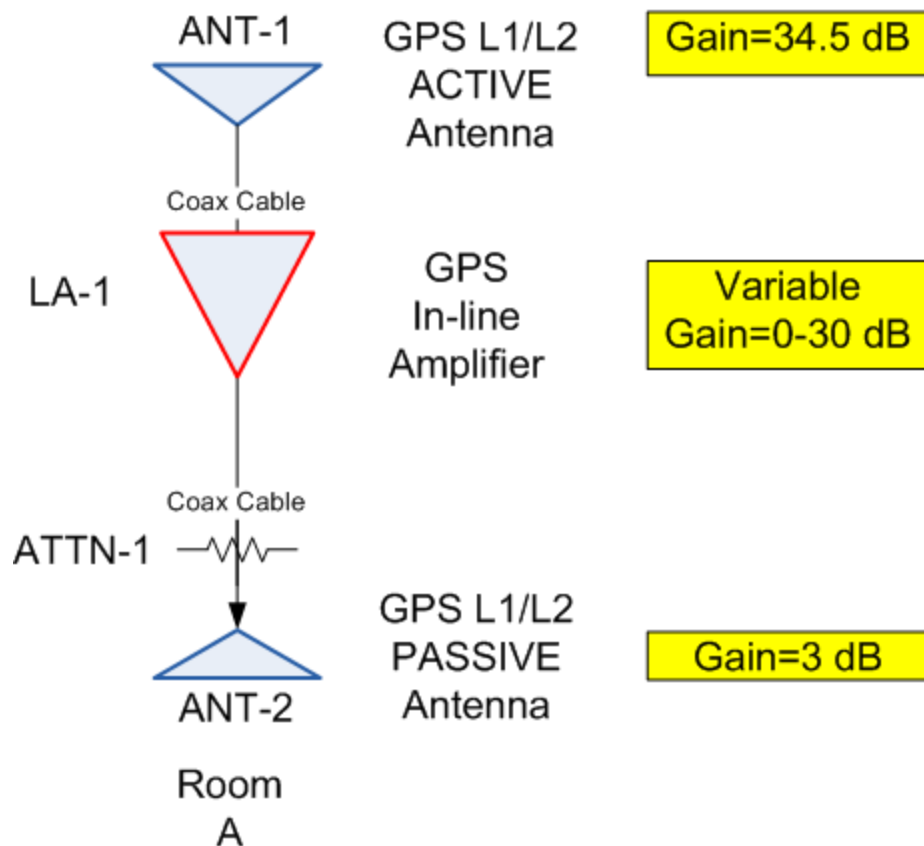
### Power At Receive Antenna on Earth

<b>Received Power on Earth</b>	<b>-158.25dBW</b>	<b>Received Power on Earth</b>	<b>-156.08dBW</b>
	<b>-128.25dBm</b>		<b>-126.08dBm</b>

# Data for Components Comprising SRC GPS Re-radiator Design from GPSSource

Description	Part Number	Parameter	Value	Units
<b>Building 4 Configuration</b>				
ANTENNA 2.6" GPS L1/L2 ACTIVE, Pole Mount, NF	L1L2-2GA-PM-NF	Gain L1	34.5	dB
		Gain L2	34.5	dB
GPS In-line Amplifier with Mount, 30dB Variable Gain, Power 110/5, NF, NM	A11-M-V-P110/5-NF-NM	Gain L1	30	dB
		Gain L2	30	dB
ANTENNA 2.6" GPS L1/L2 PASSIVE, NF	L1L2-2GP-NF	Gain L1	3	dB
		Gain L2	3	dB
<b>Running Ridge Road Configuration</b>				
ANTENNA 2.6" GPS L1/L2 ACTIVE, Pole Mount, NF	L1L2-2GA-PM-NF	Gain L1	34.5	dB
		Gain L2	34.5	dB
GPS In-line Amplifier Mini Housing, Variable Gain 0-30dB	A11M-V-NF	Gain L1	30	dB
		Gain L2	30	dB
GPS Splitter 4 Outputs, Amplified 21dB, Power 110/5, NF	S14-A-P110/5-NF	Gain L1	22	dB
		Gain L2	22	dB
ANTENNA 2.6" GPS L1/L2 PASSIVE, NF	L1L2-2GP-NF	Gain L1	3	dB
		Gain L2	3	dB

# Block Diagram of GPS Re-Radiating System for Building 4



# Link Budget Calculations for Building 4 Room A

## Power At Receive Antenna on Earth

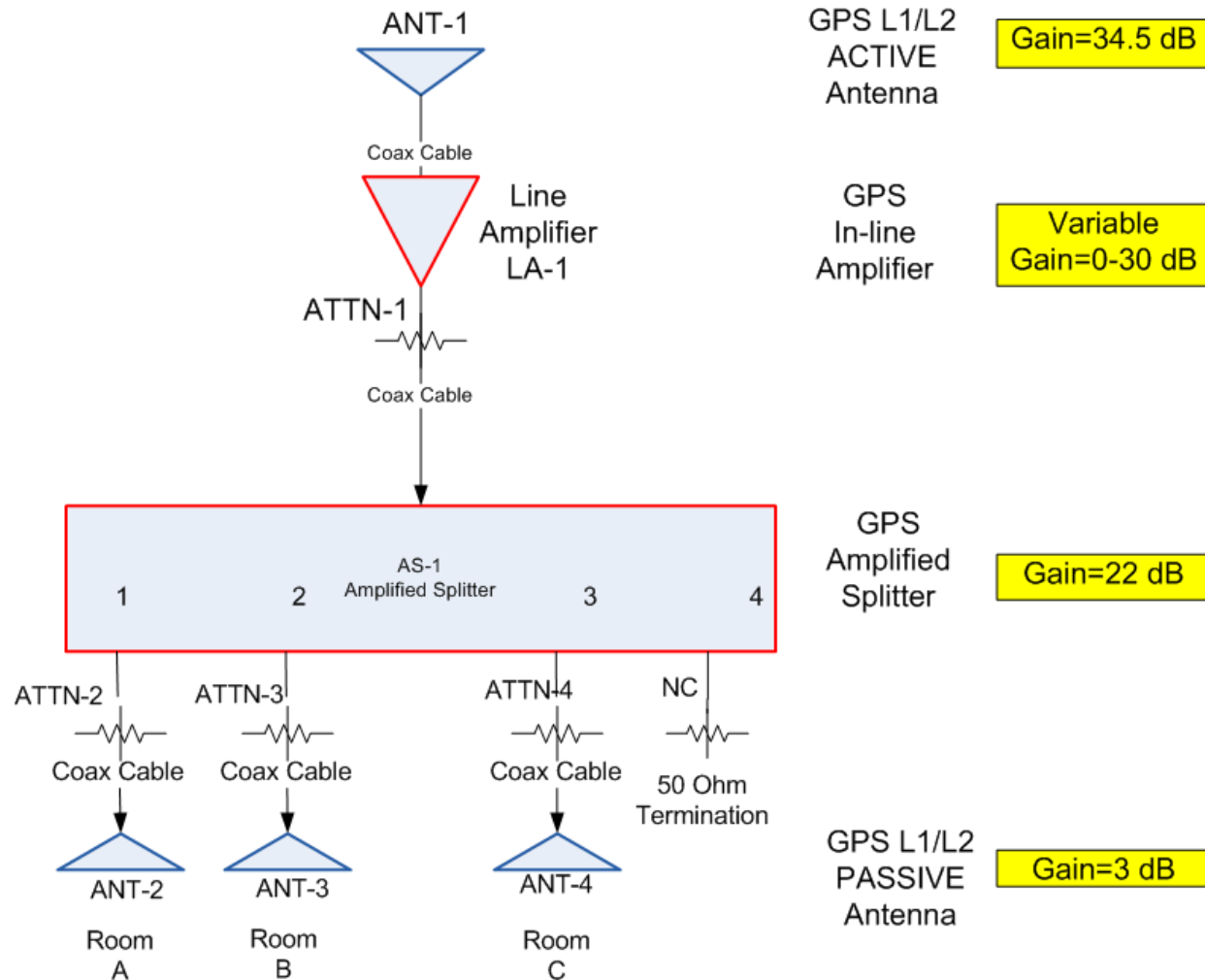
Received Power on Earth	-158.25 dBW	Received Power on Earth	-156.08 dBW
	-128.25 dBm		-126.08 dBm

## Indoor Link Budget (Receive antenna to Re-radiating Antenna)

### Location: Room A

Frequency L1	1575.42 MHz	Frequency L2	1227.6 MHz
ANT-1 Antenna Receive Gain	34.5 dBic	ANT-1 Antenna Receive Gain	34.5 dBic
RF Cable Loss (from Receive Antenna to Amplifier Input)	1 dB	RF Cable Loss (from Receive Antenna to Amplifier Input)	1 dB
LA-1 Line Amplifier Gain	30 dB	LA-1 Line Amplifier Gain	30 dB
RF Cable Loss (from Amplifier to Passive Antenna)	0 dB	RF Cable Loss (from Amplifier to Passive Antenna)	0 dB
Additional Attenuation	17 dB	Additional Attenuation	17 dB
RF Power at input to Re-radiating antenna	-81.75 dBm	RF Power at input to Re-radiating antenna	-79.58 dBm
ANT-2 Passive Re-Radiating Antenna Gain	3 dB	ANT-2 Passive Re-Radiating Antenna Gain	3.00 dB
<b>Re-radiated ERP Indoors</b>	<b>-78.75 dBm</b>	<b>Re-radiated ERP Indoors</b>	<b>-76.58 dBm</b>
	<b>13.35 pW</b>		<b>21.98 pW</b>
Pathloss Target Distance	100 ft	Pathloss Target Distance	100.00 ft
	30.480 meters		30.48 meters
Pathloss at 100 ft	66.08 dB	Pathloss at 100 ft	63.91 dB
<b>RF Power Level at 100 ft from antenna</b>	<b>-144.82 dBm</b>	<b>RF Power Level at 100 ft from antenna</b>	<b>-140.49 dBm</b>
<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>	<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>

# Block Diagram of GPS Re-Radiating System for Campbell Building



# Link Budget Calculations for Campbell Building Room A

## Power At Receive Antenna on Earth

Received Power on Earth	-158.25 dBW	Received Power on Earth	-156.08 dBW
	-128.25 dBm		-126.08 dBm

## Indoor Link Budget (Receive antenna to Re-radiating Antenna)

### Location: Campbell Facility Room A

Frequency L1	1575.42 MHz	Frequency L2	1227.6 MHz
ANT-1 Antenna Receive Gain	34.5 dBic	Antenna Receive Gain	34.5 dBic
RF Cable Loss (from Receive Antenna to Amplifier Input)	2 dB	RF Cable Loss (from Receive Antenna to Amplifier Input)	2 dB
LA-1 Line Amplifier Gain (Variable 0 - 30 dBm)	27 dB	Line Amplifier Gain	27 dB
RF Cable Loss (from Amplifier to Amplified Splitter Input)	2 dB	RF Cable Loss (from Amplifier to Amplified Splitter Input)	2 dB
AS-1 Amplified Splitter Port 1 Gain	22 dB	Amplified Splitter Port 1 Gain	22 dB
RF Cable Loss (from Amplifier to Passive Antenna)	3 dB	RF Cable Loss (from Amplifier to Passive Antenna)	3 dB
Additional Attenuation	30 dB	Additional Attenuation	30 dB
RF Power at input to Re-radiating antenna	-81.75 dBm	RF Power at input to Re-radiating antenna	-79.58 dBm
ANT-2 Passive Re-Radiating Antenna Gain	3 dB	ANT-2 Passive Re-Radiating Antenna Gain	3 dB
<b>Re-radiated ERP Indoors</b>	<b>-78.75 dBm</b>	<b>Re-radiated ERP Indoors</b>	<b>-76.58 dBm</b>
	<b>13.35 pW</b>		<b>21.98 pW</b>
Pathloss Target Distance	100 ft	Pathloss Target Distance	100 ft
	30.480 meters		30.48 meters
Pathloss at 100 ft	66.08 dB	Pathloss at 100 ft	63.91 dB
<b>RF Power Level at 100 ft from antenna</b>	<b>-144.82 dBm</b>	<b>RF Power Level at 100 ft from antenna</b>	<b>-140.49 dBm</b>
<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>	<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>

# Link Budget Calculations for Campbell Building Room B

## Power At Receive Antenna on Earth

Received Power on Earth	-158.25 dBW	Received Power on Earth	-156.08 dBW
	-128.25 dBm		-126.08 dBm

## Indoor Link Budget (Receive antenna to Re-radiating Antenna)

### Location: Campbell Facility Room B

Frequency L1	1575.42 MHz	Frequency L2	1227.6 MHz
ANT-1 Antenna Receive Gain	34.5 dBic	Antenna Receive Gain	34.5 dBic
RF Cable Loss (from Receive Antenna to Amplifier Input)	2 dB	RF Cable Loss (from Receive Antenna to Amplifier Input)	2 dB
LA-1 Line Amplifier Gain	27 dB	Line Amplifier Gain	27 dB
RF Cable Loss (from Amplifier to Amplified Splitter Input)	2 dB	RF Cable Loss (from Amplifier to Amplified Splitter Input)	2 dB
AS-1 Amplified Splitter Port 2 Gain	22 dB	Amplified Splitter Port 2 Gain	22 dB
RF Cable Loss (from Amplifier to Passive Antenna)	3 dB	RF Cable Loss (from Amplifier to Passive Antenna)	3 dB
Additional Attenuation	30 dB	Additional Attenuation	30 dB
RF Power at input to Re-radiating antenna	-81.75 dBm	RF Power at input to Re-radiating antenna	-79.58 dBm
ANT-3 Passive Re-Radiating Antenna Gain	3 dB	ANT-3 Passive Re-Radiating Antenna Gain	3 dB
<b>Re-radiated ERP Indoors</b>	<b>-78.75 dBm</b>	<b>Re-radiated ERP Indoors</b>	<b>-76.58 dBm</b>
	<b>13.35 pW</b>		<b>21.98 pW</b>
Pathloss Target Distance	100 ft	Pathloss Target Distance	100 ft
	30.480 meters		30.480 meters
Pathloss at 100 ft	66.08 dB	Pathloss at 100 ft	63.91 dB
<b>RF Power Level at 100 ft from antenna</b>	<b>-144.82 dBm</b>	<b>RF Power Level at 100 ft from antenna</b>	<b>-140.49 dBm</b>
<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>	<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>



# Link Budget Calculations for Campbell Building Room C

## Power At Receive Antenna on Earth

Received Power on Earth	-158.25 dBW	Received Power on Earth	-156.08 dBW
	-128.25 dBm		-126.08 dBm

## Indoor Link Budget (Receive antenna to Re-radiating Antenna)

### Location: Campbel Facility Room C

Frequency L1	1575.42 MHz	Frequency L2	1227.6 MHz
ANT-1 Antenna Receive Gain	34.5 dBic	Antenna Receive Gain	34.5 dBic
RF Cable Loss (from Receive Antenna to Amplifier Input)	2 dB	RF Cable Loss (from Receive Antenna to Amplifier Input)	2 dB
LA-1 Line Amplifier Gain	27 dB	Line Amplifier Gain	27 dB
RF Cable Loss (from Amplifier to Amplified Splitter Input)	2 dB	RF Cable Loss (from Amplifier to Amplified Splitter Input)	2 dB
AS-1 Amplified Splitter Port 3 Gain	22 dB	Amplified Splitter Port 3 Gain	22 dB
RF Cable Loss (from Amplifier to Passive Antenna)	3 dB	RF Cable Loss (from Amplifier to Passive Antenna)	3 dB
Aditonal Attenuation	30 dB	Aditonal Attenuation	30 dB
RF Power at input to Re-radiating antenna	-81.75 dBm	RF Power at input to Re-radiating antenna	-79.58 dBm
ANT-4 Passive Re-Radiating Antenna Gain	3 dB	ANT-4 Passive Re-Radiating Antenna Gain	3 dB
<b>Re-radiated ERP Indoors</b>	<b>-78.75 dBm</b>	<b>Re-radiated ERP Indoors</b>	<b>-76.58 dBm</b>
	<b>13.35 pW</b>		<b>21.98 pW</b>
Pathloss Target Distance	100 ft	Pathloss Target Distance	100 ft
	30.480 meters		30.480 meters
Pathloss at 100 ft	66.08 dB	Pathloss at 100 ft	63.91 dB
<b>RF Power Level at 100 ft from antenna</b>	<b>-144.82 dBm</b>	<b>RF Power Level at 100 ft from antenna</b>	<b>-140.49 dBm</b>
<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>	<b>Required RF Power Level at 100 ft</b>	<b>-140 dBm/24 MHz</b>