LOCKHEED MARTIN

EXHIBIT 2
GPS SIGNAL LEVEL CALCULATIONS

LOCKHEED MARTIN AERONAUTICS COMPANY

Palmdale, CA.

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SYSTEM 11
LMAC PLANT 10
BUILDING 601
ADVANCED DEVELOPMENT LABS
IDENTIFIERS: 601T6

The following calculations are for System 11 transmit identifier 601T6. All transmitter locations are equal distance from the nearest exterior wall. Calculations are based upon an average re-transmitted receive power for L1 and L2 of -130 dBm at the unit under test.

The attenuation of the GPS signal while traveling through free space is calculated with the following formula:

FSL = K1 + 20*LOG (D) + 20*LOG (F)
Where:
K1 = the constant factor (-37.87) for the desired units (feet),
F = the frequency in MHz; and
D = the slant range distance from the transmitter antenna to 100 feet beyond the nearest exterior wall in feet.

The GPS Re-radiation device transmits at two frequencies: 1575.42 MHz for L1 and 1227.6 MHz for L2.

Therefore, the Free Space Path Loss (FSL) equals:

1. For L1: FSL = -37.87 + 20*LOG(120.9) + 20*LOG(1575.42) = 67.7 dB

2. For L2: FSL = -37.87 + 20*LOG(120.9) + 20*LOG(1227.6) = 65.6 dB

The calculated signal at 100 feet beyond the nearest exterior wall from the transmit antenna is as follows:

1. L1 Transmitted Power = 3.0 picowatts EIRP = -85.2 dBm/24 MHz
At 100 feet = -85.2 - 67.7 = **-152.9 dBm/24 MHz**

2. L2 Transmitted Power = 2.5 picowatts EIRP = -86.0 dBm/24 MHz
At 100 feet = -86.0 - 65.6 = **-151.6 dBm/24 MHz**

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SYSTEM 11
LMAC PLANT 10
BUILDING 601 EAST
ADVANCED DEVELOPMENT HANGAR AREA
IDENTIFIERS: 601T3

The following calculations are for System 11 transmit identifier 601T3. Calculations are based upon an average receive power for L1 and L2 of -130 dBm at the unit under test.

The attenuation of the GPS signal while traveling through free space is calculated with the following formula:

FSL = K1 + 20*LOG (D) + 20*LOG (F)
Where:
K1 = the constant factor (-37.87) for the desired units (feet),
F = the frequency in MHz; and
D = the slant range distance from the transmitter antenna to 100 feet beyond the nearest exterior wall in feet.

The GPS Re-radiation device transmits at two frequencies: 1575.42 MHz for L1 and 1227.6 MHz for L2.

Therefore, the Free Space Path Loss (FSL) equals:

1. For L1: FSL = -37.87 + 20*LOG(273.5) + 20*LOG(1575.42) = 74.8 dB

2. For L2: FSL = -37.87 + 20*LOG(273.5) + 20*LOG(1227.6) = 72.6 dB

The calculated signal at 100 feet beyond the nearest exterior wall from the transmit antenna is as follows:

1. L1 Transmitted Power = 33.5 picowatts EIRP = -74.8 dBm/24 MHz
At 100 feet = -74.8 – 74.8 = **-149.6 dBm/24 MHz**

2. L2 Transmitted Power =32.0 picowatts EIRP = -75.0 dBm/24 MHz
At 100 feet = -75.0 – 72.6 = **-147.6 dBm/24 MHz**

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SYSTEM 11
LMAC PLANT 10
BUILDING 601 EAST
ADVANCED DEVELOPMENT HANGAR AREA
IDENTIFIERS: 601T4

The following calculations are for System 11 transmit identifier 601T4. All transmitter locations are equal distance from the nearest exterior wall. Calculations are based upon an average re-transmitted receive power for L1 and L2 of -130 dBm at the unit under test.

The attenuation of the GPS signal while traveling through free space is calculated with the following formula:

FSL = K1 + 20*LOG (D) + 20*LOG (F)
Where:
K1 = the constant factor (-37.87) for the desired units (feet),
F = the frequency in MHz; and
D = the slant range distance from the transmitter antenna to 100 feet beyond the nearest exterior wall in feet.

The GPS Re-radiation device transmits at two frequencies: 1575.42 MHz for L1 and 1227.6 MHz for L2.

Therefore, the Free Space Path Loss (FSL) equals:

1. For L1: FSL = -37.87 + 20*LOG(235.8) + 20*LOG(1575.42) = 73.5 dB

2. For L2: FSL = -37.87 + 20*LOG(235.8) + 20*LOG(1227.6) = 71.4 dB

The calculated signal at 100 feet beyond the nearest exterior wall from the transmit antenna is as follows:

1. L1 Transmitted Power = 33.5 picowatts EIRP = -74.8 dBm/24 MHz
At 100 feet = -74.8 - 73.5 = **-148.3 dBm/24 MHz**

2. L2 Transmitted Power = 32.0 picowatts EIRP = -75.0 dBm/24 MHz
At 100 feet = -75.0 - 71.4 = **-146.4 dBm/24 MHz**

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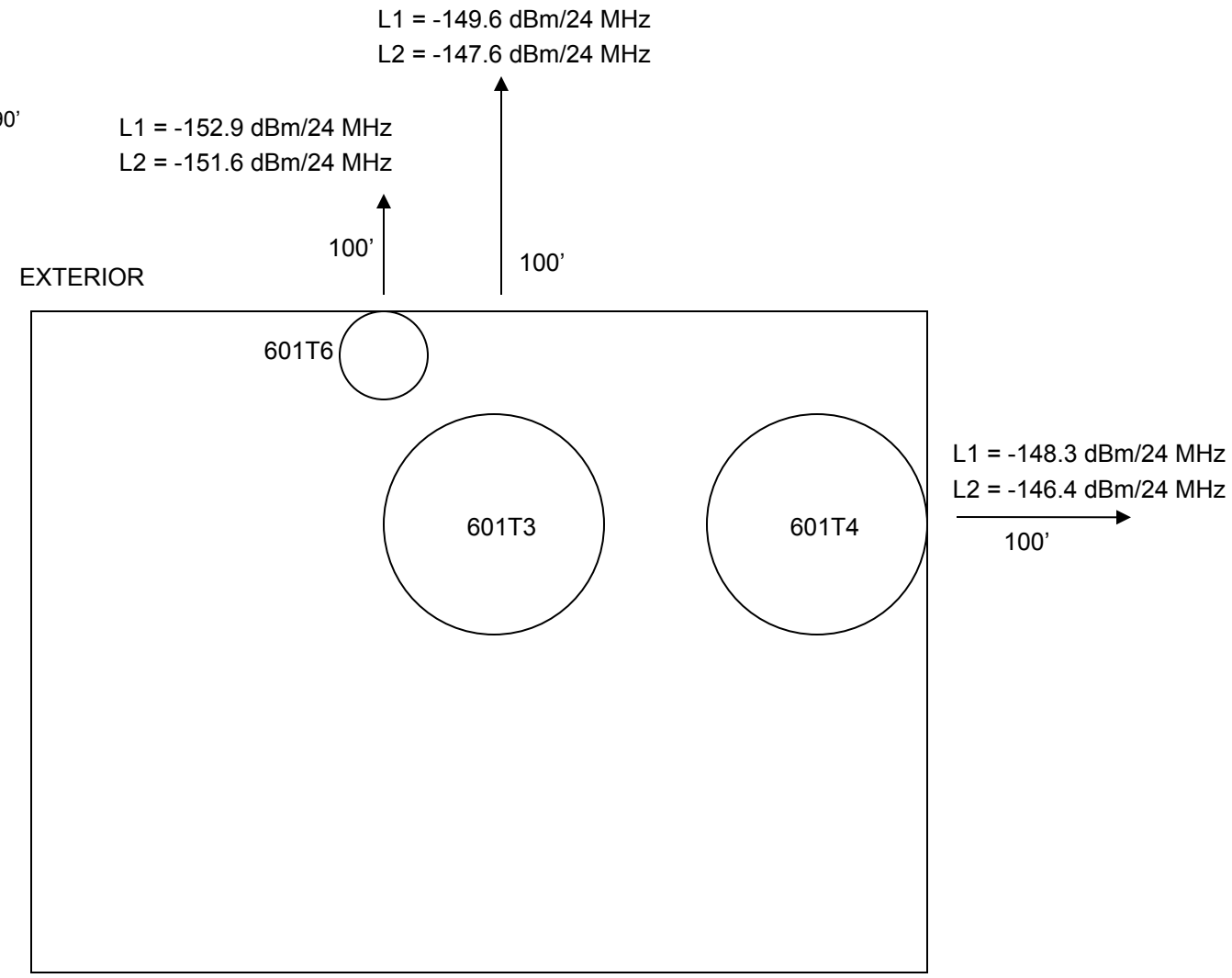
SYSTEM 11
LMAC PLANT 10
BUILDING 601
ADP, R/D AREAS & LAB
IDENTIFIERS: 601T3/T4/T6
BUILDING DIMENSION: 940’ X 590’



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System 11