



OUC IBW Uplink Calculations Worksheet

Instructions

1. Calculate maximum and minimum UL input to BDA first
2. Then calculate the required BDA output to reach the Donor tower within the allowed RSSI parameters
3. Then figure out what your gain will be and calculate the maximum RSSI at the Donor tower

Assumptions

1. 19 channels active (800mHz)
2. 10 channels active (700mHz)
3. DL / UL AGC off
4. Max radio TX Pwr = 34dBm for handhelds in buildings with no parking garage
5. Max radio TX Pwr = 44dBm for mobile radios in buildings with a parking garage

Formulas

Donor Tower RSSI (dBm) = Radio TX power - FSPL (radio to DAS Ant) + DAS Ant Gain
- Total Passive DAS loss + BDA Gain - Donor cable loss
+ Donor Antenna Gain - FSPL (Donor Ant to Donor Tower)

FSPL (dB) = $36.6 + 20 \times \log_{10}(d) + 20 \times \log_{10}(f)$

(d) = distance (miles) **(f)** = freq (mHz)

1meter = 3.28ft

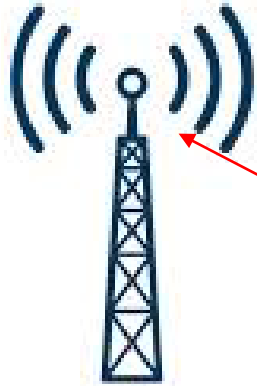
1mile = 5280ft

dBd = dBi - 2.15



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Donor Tower : _____



Dist. : _____ miles
 Freq : _____ MHz
 FSPL : _____ dB

Donor Ant Gain
 : _____ dBd

BDA
 Noise Figure : _____
 UL Gain : _____ dB

NEAR total
 Passive Loss
 : _____ dB

FAR total
 Passive Loss
 : _____ dB

DAS Ant Gain
 : _____ dBd

DAS Ant
 Gain
 : _____ dBd

Donor cable total
 Passive Loss
 : _____ dB



NEAR Path
 (strongest Tx)
 FSPL : _____ dB
 Dist. from Ant
 : _____

FAR Path
 (weakest Tx)
 FSPL : _____ dB
 Dist. from Ant
 : _____

Donor Tower Antenna Input
 (Max : -45dBm)
 NEAR RSSI : _____ dBm

Mathematical Received
 Noise
 Power : _____ dBm
 (LESS THAN -135dBm)

Max UL Output (NEAR)
 : _____ dBm

Min UL Output (FAR)
 : _____ dBm

Inline Attn.
 UL: _____ dB
 DL: _____ dB

Inline Attn.
 UL: _____ dB
 DL: _____ dB

Max UL Input (NEAR)
 : _____ dBm

Min UL Input (FAR)
 : _____ dBm

Max radio TX Pwr
 : _____ dBm