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March 15, 2018
Subject: Antenna Kitting
Re: FCC ID: PWO460042
To Whom It May Concern:

The antenna kitting options for model 460042 signal booster were done for 5 Outside Antenna kit options and 3 Inside Antenna kit options. The order of the attached calculations is as follows:

Outside Antenna Kit Options:

1. Kit 314411-40075
2. Kit 311203-40020
3. Kit 314453-40075
4. Kit 301111-400170
5. Kit 304422-40020

Inside Antenna Kit Options:

1. Kit 311135-400150
2. Kit 309900-50N400
3. Kit 304412-400100

All equivalent antennas, cables, and accessories are suitable for use with 460042 signal booster.

Sincerely,

Patrick L. Cook
Chief Technology Officer

# Fixed Outside Antenna Kit Options

FCC ID: PWO460042

Final Output Power Limited to 30 dBm EIRP in all frequency bands

| Uplink Frequency (MHz) | 698-716 | 777-787 | 824-849 | 1710-1755 | 1850-1915 |
|---|---|---|---|---|---|
| Uplink Output Power (dBm) | 20.90 | 22.90 | 22.70 | 24.30 | 21.70 |

**1** Wide Band Directional Antenna With 75' Wilson 400 — 314411-40075

| | | | | | |
|---|---|---|---|---|---|
| Antenna Gains (dBi) | 7.3 | 7.2 | 7.8 | 7.9 | 9.1 |
| Coax Loss (dB) | 2.8 | 3.0 | 3.6 | 4.4 | 5.4 |
| Final Gain less Loss (dB) | 4.5 | 4.2 | 4.2 | 3.5 | 3.7 |
| Output Power plus Final Gain (dBm EIRP) | 25.4 | 27.1 | 26.9 | 27.8 | 25.4 |

**2** Omni Directional Antenna (311203) With 20' Wilson 400 — 311203-40020

| | | | | | |
|---|---|---|---|---|---|
| Antenna Gains (dBi) | -1.5 | -0.24 | 0.57 | -2.51 | 5.09 |
| Coax Loss (dB) | 0.7 | 0.7 | 0.7 | 1.1 | 1.1 |
| Final Gain less Loss (dB) | -2.2 | -0.94 | -0.13 | -3.61 | 4.0 |
| Output Power plus Final Gain (dBm EIRP) | 18.7 | 22.0 | 22.6 | 20.7 | 25.7 |

**3** Panel Antenna With 75' Wilson 400 — 314453-40075

| | | | | | |
|---|---|---|---|---|---|
| Antenna Gains (dBi) | 3.84 | 3.63 | 4.4 | 8.21 | 10.04 |
| Coax Loss (dB) | 2.8 | 3.0 | 3.6 | 4.4 | 5.4 |
| Final Gain less Loss (dB) | 1.04 | 0.63 | 0.8 | 3.81 | 4.64 |
| Output Power plus Final Gain (dBm EIRP) | 21.9 | 23.5 | 23.5 | 28.1 | 26.3 |

**4** Yagi Antenna 301111 With 170' Wilson 400 — 301111-400170

| | | | | | |
|---|---|---|---|---|---|
| Antenna Gains (dBi) | 10.0 | 10.0 | 10.8 | -6.8 | -13.8 |
| Coax Loss (dB) | 5.8 | 6.1 | 6.3 | 9.4 | 9.8 |
| Final Gain less Loss (dB) | 4.2 | 3.9 | 4.5 | -16.2 | -23.6 |
| Output Power plus Final Gain (dBm EIRP) | 25.1 | 26.8 | 27.2 | 8.1 | -1.9 |

**5** Omni Enterprise 304422 With 20' Wilson 400 — 304422-40020

| | | | | | |
|---|---|---|---|---|---|
| Antenna Gains (dBi) | 1.33 | 1.02 | 1.34 | 4.76 | 4.65 |
| Coax Loss (dB) | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Final Gain less Loss (dB) | 1.3 | 1.0 | 1.3 | 3.81 | 4.7 |
| Output Power plus Final Gain (dBm EIRP) | 22.2 | 23.9 | 24.0 | 28.1 | 26.4 |

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| Uplink Frequency Band (MHz) | 698-716 | 777-787 | 824-849 | 1710-1755 | 1850-1915 |
|---|---|---|---|---|---|
| Measured Uplink Gain (dB) | 61.6 | 60.00 | 62.80 | 67.20 | 68.00 |
| Measured RSSI Shutoff (dBm/MHz) | -45.00 | -45.00 | -45.70 | -51.20 | -53.30 |
| MSCL Minimum (dB) | 38.60 | 39.00 | 37.10 | 37.00 | 37.70 |
| 6' Separation Distance Path Loss (dB) | 34.70 | 35.57 | 36.16 | 42.48 | 43.21 |
| Polarity Loss | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Max Antenna Gain Less Cable Loss (dB) | -0.90 | -0.43 | 1.00 | 0.60 | 1.50 |

**1** Inside Antenna Kit 311135-400150: Panel w/150' Wilson 400

| Antenna Gain Less Cable Loss (dB) | -1.35 | -1.85 | -2.36 | -0.01 | -0.14 |
|---|---|---|---|---|---|
| | okay | okay | okay | okay | okay |
| Margin (dB) | -0.45 | -1.42 | -3.36 | -0.61 | -1.64 |

**2** Inside Antenna Kit 309900-50N: 2 Panel Antennas and a 50 Ohm 3-Way Splitter - 90' Wilson400

| Antenna Gain Less Cable/Splitter Loss (dB) | -1.17 | -1.37 | -2.97 | -0.11 | 1.09 |
|---|---|---|---|---|---|
| | okay | okay | okay | okay | okay |
| Margin (dB) | -0.27 | -0.94 | -3.97 | -0.71 | -0.41 |

**3** Inside Antenna Kit 304412-400100: Dome w/100' Wilson 400

| Antenna Gain Less Cable Loss (dB) | -2.43 | -1.69 | -3.09 | -0.33 | -1.29 |
|---|---|---|---|---|---|
| | okay | okay | okay | okay | okay |
| Margin (dB) | -1.53 | -1.26 | -4.09 | -0.93 | -2.79 |