

MPE Exhibit for Airvana Models 750722 &  
750723

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## Model 750722

### MPE for each transmitter

| <b><u>750722: BC0 (Beacon)</u></b>                           |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 5.4       | dBm                |
| Maximum peak output power at the antenna terminal:           | 3.467     | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 879.6     | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 0.586400  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.000690  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 29.294638 | dBi                |

| <b><u>750722: BC10 (Beacon)</u></b>                          |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 4.9       | dBm                |
| Maximum peak output power at the antenna terminal:           | 3.090     | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 862.9     | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 0.575267  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.000615  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 29.711391 | dBi                |

| <b><u>750722: BC1 (Beacon)</u></b>                           |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 15.7      | dBm                |
| Maximum peak output power at the antenna terminal:           | 37.154    | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 1931.25   | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.000000  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.007391  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 21.312699 | dBi                |

**750722: BC1 (EVDO)**

|  |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 24.5      | dBm                |
| Maximum peak output power at the antenna terminal:           | 281.838   | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 1956.25   | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.000000  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.056070  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 12.512699 | dBi                |

**750722: BC1 (One-X)**

|  |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 17.0      | dBm                |
| Maximum peak output power at the antenna terminal:           | 50.119    | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 1988.75   | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.000000  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.009971  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 20.012699 | dBi                |

## Combined MPE Calculation for 750722

MPE for entire 750722:

|                                       | (power density)<br>mW/cm <sup>2</sup> | (MPE limit)<br>mW/cm <sup>2</sup> | (pwr density / limit)<br>numeric |
|---------------------------------------|---------------------------------------|-----------------------------------|----------------------------------|
| <b>Beacon (BC1 yields worst case)</b> | 0.007391                              | 1.0000                            | 0.007391                         |
| <b>EVDO (BC1)</b>                     | 0.056070                              | 1.0000                            | 0.056070                         |
| <b>One-X (BC1)</b>                    | 0.009971                              | 1.0000                            | 0.009971                         |

SUM (Power Density / Limit): 0.073432

OVERALL LIMIT: 1.0

RESULT: **Pass**

## Model 750723

### MPE for each transmitter

| <b><u>750723: BC0 (Beacon)</u></b>                           |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 4.6       | dBm                |
| Maximum peak output power at the antenna terminal:           | 2.884     | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 879.6     | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 0.586400  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.000574  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 30.094638 | dBi                |

| <b><u>750723: BC10 (Beacon)</u></b>                          |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 4.3       | dBm                |
| Maximum peak output power at the antenna terminal:           | 2.692     | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 862.9     | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 0.575267  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.000535  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 30.311391 | dBi                |

| <b><u>750723: BC1 (Beacon)</u></b>                           |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 14.4      | dBm                |
| Maximum peak output power at the antenna terminal:           | 27.542    | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 1956.25   | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.000000  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.005479  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 22.612699 | dBi                |

**750723: BC1 (EVDO)**

|  |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 23.7      | dBm                |
| Maximum peak output power at the antenna terminal:           | 234.423   | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 1988.75   | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.000000  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.046637  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 13.312699 | dBi                |

**750723: BC1 (One-X)**

|  |           |                    |
|--|-----------|--------------------|
| Maximum peak output power at the antenna terminal:           | 15.6      | dBm                |
| Maximum peak output power at the antenna terminal:           | 36.308    | mW                 |
| Antenna gain (typical):                                      | 0.0       | dBi                |
| Maximum antenna gain:  | 1.0       | numeric            |
| Prediction distance:   | 20        | cm                 |
| Prediction frequency:  | 1956.25   | MHz                |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.000000  | mW/cm <sup>2</sup> |
| Power density at prediction frequency:                       | 0.007223  | mW/cm <sup>2</sup> |
| Maximum allowable antenna gain:                              | 21.412699 | dBi                |

## Combined MPE Calculation for 750723

MPE for entire 750723:

|                                       | (power density)<br>mW/cm <sup>2</sup> | (MPE limit)<br>mW/cm <sup>2</sup> | (pwr density / limit)<br>numeric |
|---------------------------------------|---------------------------------------|-----------------------------------|----------------------------------|
| <b>Beacon (BC1 yields worst case)</b> | 0.005479                              | 1.0000                            | 0.005479                         |
| <b>EVDO (BC1)</b>                     | 0.046637                              | 1.0000                            | 0.046637                         |
| <b>One-X (BC1)</b>                    | 0.007223                              | 1.0000                            | 0.007223                         |

SUM (Power Density / Limit): 0.059340

OVERALL LIMIT: 1.0

RESULT: **Pass**



## Formulas for Calculations

### Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

### MPE Summation over Multiple Transmitters:

If  $[ Pd(1) / LPd(1) ] + [ Pd(2) / LPd(2) ] + \dots + [ Pd(n) / LPd(n) ] < 1$ ,

then device complies with FCC's RF radiation exposure limit for general population for a mobile device.

Where;

Pd(n) = Power density of n<sup>th</sup> transmitter at 20cm

LPd(n) = Power density limit for the n<sup>th</sup> transmitter

The highest gain values were used for antenna gain.