



MOTOROLA
intelligence everywhere™

Canopy™ System Application Note
Wind Loading

September 2002



TABLE OF CONTENTS

Canopy Application Note.....	i
Wind Loading	i
Notice.....	iii
Wind Loading	1

LIST OF TABLES

<i>Table 1. Wind Loading for Canopy Device Configurations.....</i>	<i>1</i>
<i>Table 2. Reported Wind Velocities for Selected U.S Cities (Source: National Weather Service)</i>	<i>2</i>

Notice

The information in this publication is subject to change without notice. Motorola shall not be liable for technical or editorial errors or omissions nor for any damages resulting from the use of this material.

Each configuration tested or described may or may not be the only available solution. This test is not a determination of product quality or correctness, nor does it ensure compliance with any federal, state or local requirements. Motorola does not warrant products other than its own strictly as stated in Motorola's product warranties.

MOTOROLA and the Stylized M Logo are registered in the US Patent & Trademark Office. Canopy is a trademark of Motorola, Inc. All other product or service names are the property of their respective owners. © Motorola, Inc. 2002.

Wind Loading

Wind loading of tower-mounted antennas is normally specified as projected area in square feet. Antenna structures are normally rated according to this measure. The numbers for the various Canopy device configurations is shown in the *Table 1*.

Side thrust t (measured in pounds) for a flat object can be computed by the formula:

$$t = 0.0042 \cdot v^2$$

where v is the peak wind velocity in miles per hour. Although this information is not normally needed, it is included in the table for a range of wind velocities.

Table 1. Wind Loading for Canopy Device Configurations

Projected Area (Square Feet)		Side Thrust (In Pounds)				
		80 MPH	100 MPH	120 MPH	140 MPH	160 MPH
Single CM or AP or BH	0.3	8.1	12.6	18.1	24.7	32.3
Cluster of 6 AP's	1.2	32.3	50.4	72.6	98.8	129.0
SM or BH with Dish	2.5	67.2	105.0	151.2	205.8	268.8
CMM II	1.35	36.3	56.7	81.6	111.1	145.2

The next question, of course, is “what’s the wind velocity?” *Table 2* gives some selected maximums (“fastest single mile”) reported by the National Weather Service.

*Table 2. Reported Fastest Single Wind Velocities for Selected U.S Cities
(Source: National Weather Service)*

City	Wind Velocity
Bismarck, North Dakota	72
Buffalo, New York	91
Chicago, Illinois	87
Hatteras, North Carolina	110
Miami, Florida	132
New York, New York	99
Pensacola, Florida	114

It is normal practice to multiply the “fastest single mile” number by a factor of 1.3; this would give a number in, for instance, Pensacola of 150 MPH.