

Bubble Dancer RES
1:12 scale

Mark Drele 20 Dec 01

mass = 30 oz
= 54 oz ballasted
m/A = 4.3 oz/ft^2 @ 30 oz
= 7.7 oz/ft^2 @ 54 oz
area = 1014 sq in
span = 117 in
A.R. = 13.5

CL = 1.1 max
= 0.8 min sink
= 0.6 max L/D
= 0.1 min
min sink = 0.79 ft/s @ 30 oz
0.96 ft/s @ 54 oz
max L/D = 23.0 @ 30 oz
26.0 @ 54 oz

Item weights	

700mAh	90 g
1 JR241	9 g
2 HS81	34 g
Hitec 555	23 g
pushrods	12 g
fuse	115 g
boom	37 g
stab	20 g
rudd	16 g
wing	502 g
TOTAL	858 g
	30 oz

All-moving tail
100 sq in 9.8%
Vh = 0.40
-17 ... +10 deg
strong expo
-6 deg mix-in
with full spoiler

73 sq in 7.2%
Vv = 0.025
+/-25 deg
strong expo

3g caps
2g core
6g LE sheet
1g LE
2g TE
4g ribs
1g tip
1g glue
6g Ultrakote-Lite
26g TOTAL tip panel

11g caps
10g core
2g wrap
14g LE sheet
2g LE
6g TE
14g ribs
1g sag strip
2g glue
10g Ultrakote-Lite
72g TOTAL mid panel

16g joiner, 3/8" CF rod
16g joiner box
32g TOTAL joiner

46g caps
30g core
3g wrap
46g LE sheet
4g LE
13g TE
2g sag strip
18g spoiler
32g ribs
13g bolt beam
5g glue
30g Monokote
242g TOTAL center panel

Yaw inertias (g-in^2 / 1000)

tips	150	36
mids	130	31
center	23	5
joiners	13	3
fuse	4	1
boom	25	6
pushrods	6	2
stab	21	5
rudder	26	6
radio	11	3
nose wt	9	2
TOTAL	423	100%

36" CF boom
0.58" -> 0.28" ID
0.035" wall

Design (never-exceed) Loads

wing lift 150 lb @ 90 mph, CL=1.0
root bend.mom. 2100 lb-in
root cap load 2800 lb
root cap area 0.030 in^2
cap stress 93 ksi
web stress 215 psi (shear)

root torsion 19 lb-in
root Dbox th. 0.094 in
wing Dbox shear 40 psi

AG35
Re sqrt(CL)
80K
(100K)

AG36
65K
(80K)

AG37
40K
(50K)