February 13, 2004

Mr. B.C. "Jay" Jackson, Jr., P.E.
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20054

RE: WT Docket 02-86
Response to Questions of February 4, 2004

Dear Mr. Jackson:

AirCell, Inc. ("AirCell") is pleased to have the opportunity to submit additional information, related to AirCell's January 16, 2004 filing in the above-referenced docket, as requested in your e-mail to Michele Farquhar dated February 4, 2004. The questions (in italics) and answers are as follows:

1) *Please confirm that the data submitted results from operations of AirCell ground stations employing the "standard" AirCell ground station antenna as opposed to the "smart" antenna used at some AirCell ground stations.*

This is confirmed. The data submitted for operations used standard AirCell antennas. One site, Mariposa, located in central California, used a passive panel antenna to shape the service contour but did not include any switching or amplification as a smart antenna system would. Mariposa is basically a 180°-wide service cell pointed south down the central California valley. The flight test was a linear fly-by at a closest distance of about 40 miles. All other antennas were standard AirCell "omni" antennas. At most AirCell serving sites, two omni antennas with different up-tilt to their patterns are used, providing diversity receive and both low and high altitude coverage. This is the scheme used in all reported results except Mariposa.

2) *In regard to Figure 12, please identify the locations of the flights and please supply the histogram actual counts.*

I have attached relabeled figures, which will add the requested information in a more readable manner.

Figure 12 From a flight in October 2000 on AirCell site 12, located at Wolf Summit, West Virginia.

Figure 12.1 From a flight in June 2002 on AirCell sites 61, 62 and 99. Sites 61 and 62 are located in Kansas, and site 99 is located in Colorado.

Figure 12.2 From a flight in June 2002 on AirCell site 51, located at Petit Jean, Arkansas and AirCell site 50, located at Muskogee, Oklahoma.

Figure 12.3 From a flight in June 2002 on AirCell sites 15, 26 and 27, all located in Florida.

Figure 12.4 From a flight test in February 2002 on AirCell site 138, located in Mariposa, CA.

Figure 12.5 From a test flight in July 2003 on AirCell site 37, located at Algora, Iowa and site 151, located at Rock Valley, Iowa.

The actual counts are shown both on the vertical access of the histogram presentation and are referenced by a count in the channel level box on the flight test map.

By way of background, DPC steps are not measures of calibrated power, but are only relative measurements. The AirCell installation includes allowance for loss for an Antenna Matching Unit ("AMU"), which typically attenuates all forward RF signals by 9.5 dB. In addition, there is 1 to 3 dB of loss in installation cabling and connectors. Finally, not all cellular phone modules transmit at their rated power. We measure the power level of every phone at each power step before shipping. Based on these measurements, it is our experience that most, if not all, AirCell cell phone modules actually supply approximately 2 dB less power than the specifications suggest. For example, step 2 for our modules is actually typically about 360 mW (or 40 mW as measured at AMU), as opposed to the 600 mW (75 mW at AMU) permitted by the specification. We have attached Figure 10 (reproduced from our January 16, 2004 filing), which shows the results of measurements of multiple units taken over the course of a production run.

Thus, the result of design changes made since the Texas test – adding the AMU and moving to a newer version of the phone module – is that the nominal power step will be $^{1}/_{2}$ to $^{3}/_{4}$ step higher on average (*i.e.,* the histogram of step numbers is shifted half a step to the right), but the net power delivered to the antenna is actually slightly lower than in the Texas test. Only calibrated power measurements taken at the antenna input provide meaningful power level data. Relying on assumed power based on internal DPC steps can result in an error of as much as 4 dB or more.

Sincerely,

/s/ Jim Stinehelfer

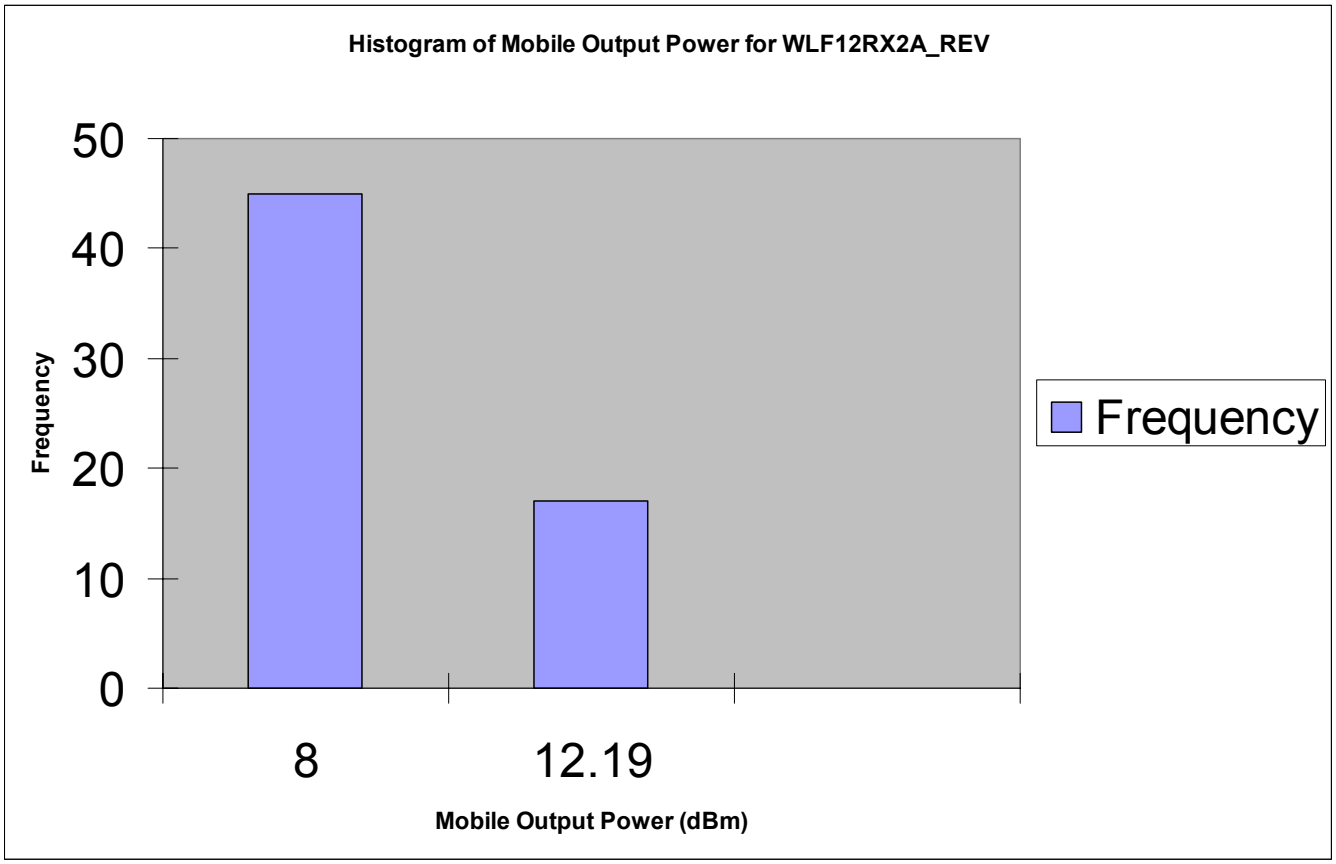
Jim Stinehelfer
President
AirCell, Inc.

cc: Michael D. Sullivan

Figure 10
Typical Mobile Output Power Levels

PL	Mobile Output Power (mW)	Mobile Output Power (dBm)	Output Power at AMU (dBm)	Output Power at AMU (mW)
2	360	25.56	16.06	40.39
3	147	21.67	12.17	16.49
4	59	17.71	8.21	6.62
5	24	13.80	4.30	2.69
6	9	9.54	0.04	1.01
7	3	4.77	-4.73	0.34

Figure 12


Histogram of Mobile Output Power for WLF12RX2A_REV
50
40
30
20
10
0
Frequency
8
12.19
Mobile Output Power (dBm)
Frequency

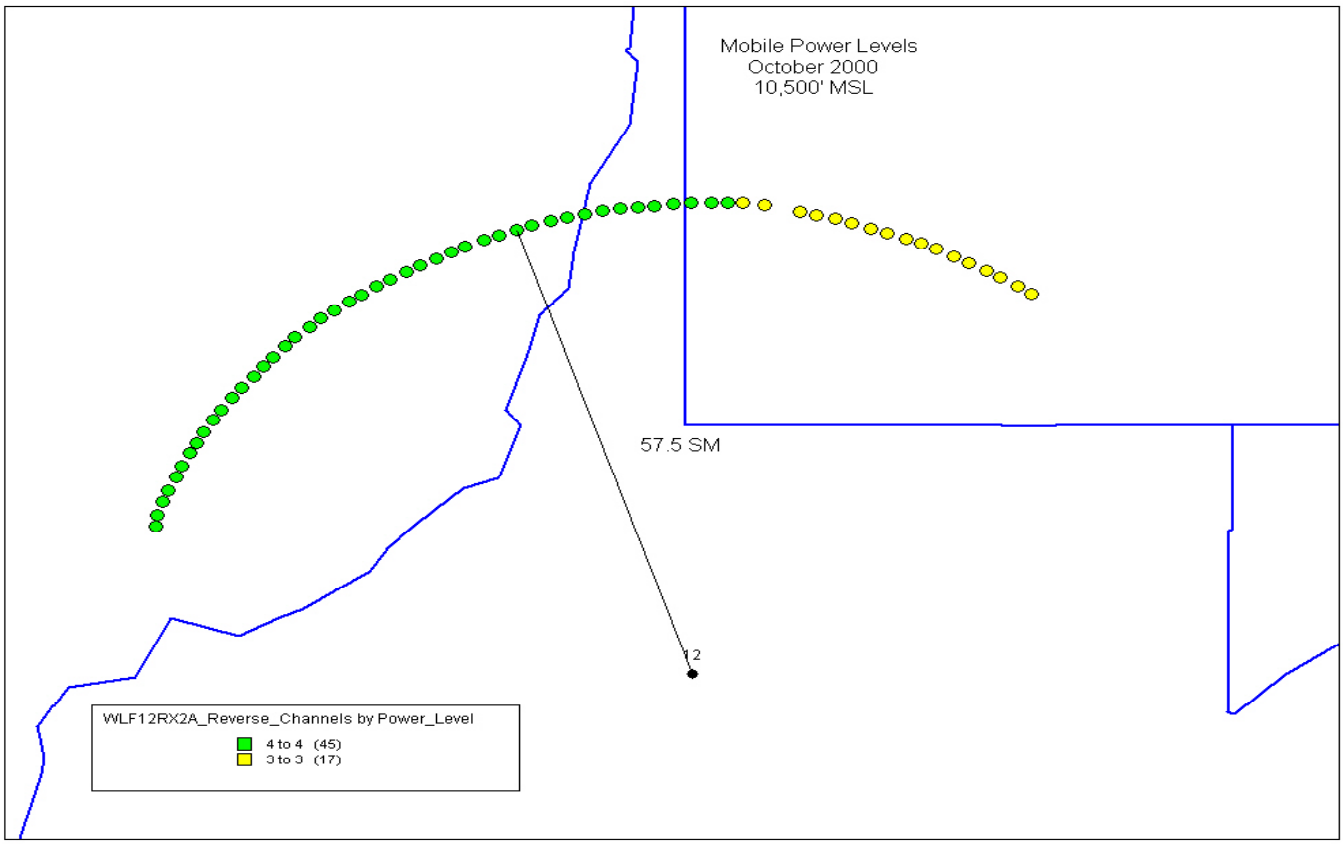
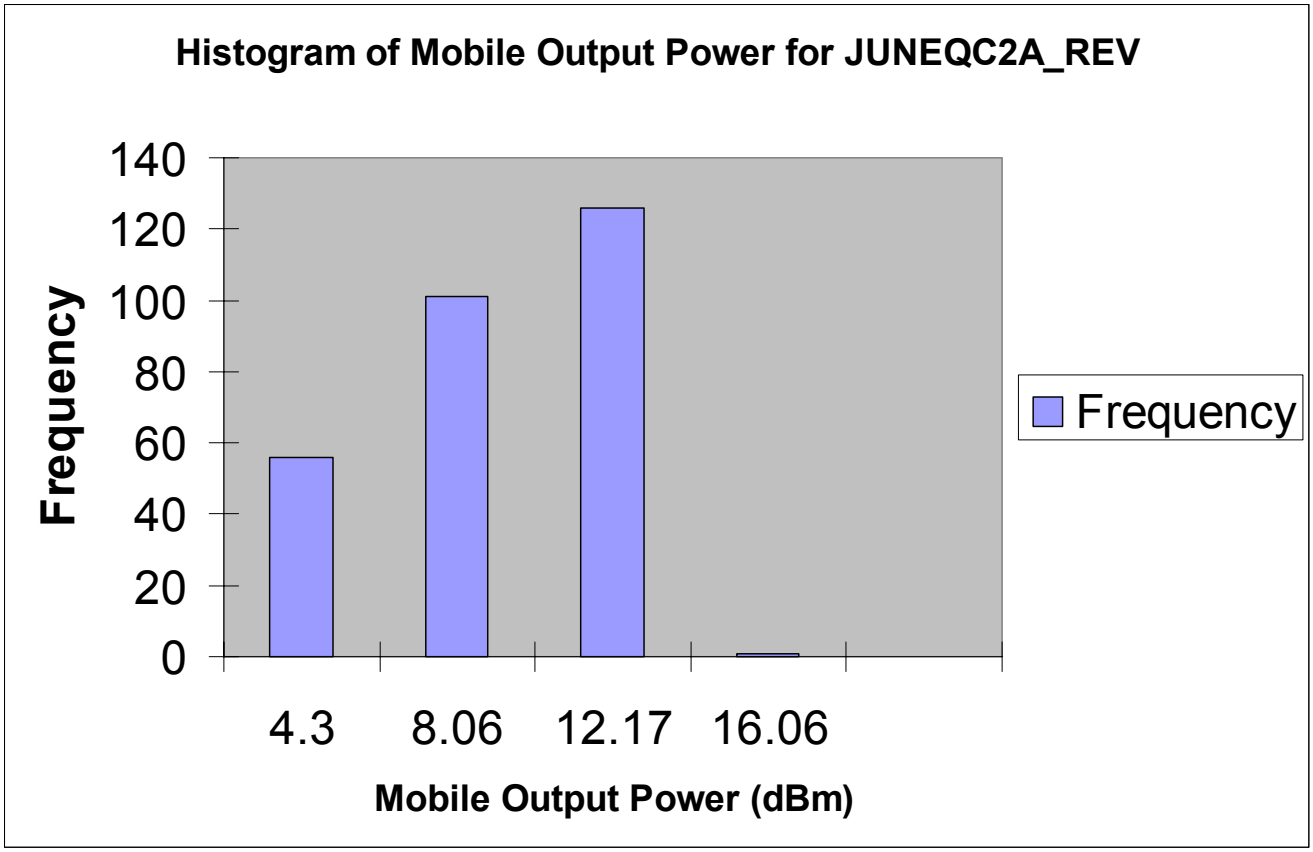

Mobile Power Levels
October 2000
10,500' MSL
57.5 SM
12
WLF12RX2A_Reverse_Channels by Power_Level
4 to 4 (45)
3 to 3 (17)

Figure 12.1


Histogram of Mobile Output Power for JUNEQC2A_REV
Frequency
140
120
100
80
60
40
20
0
4.3
8.06
12.17
16.06
Mobile Output Power (dBm)
Frequency

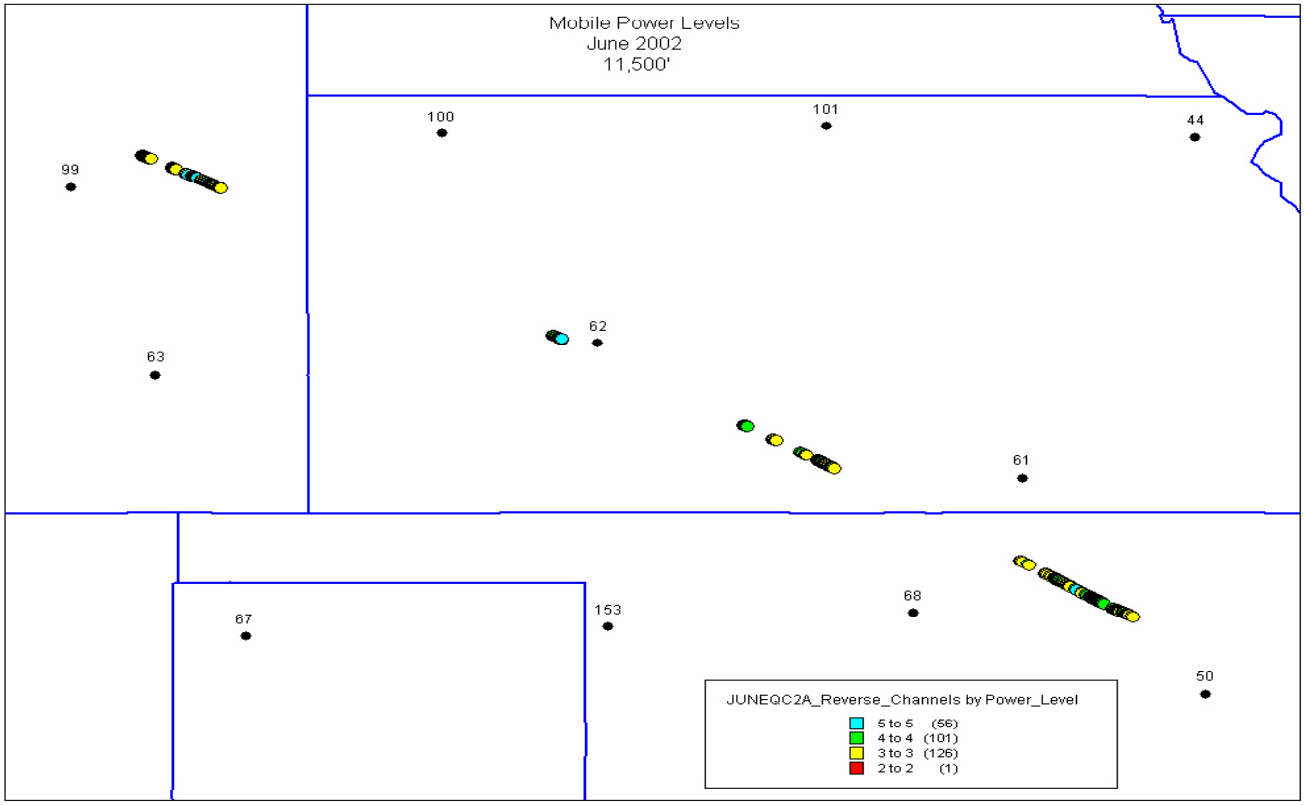
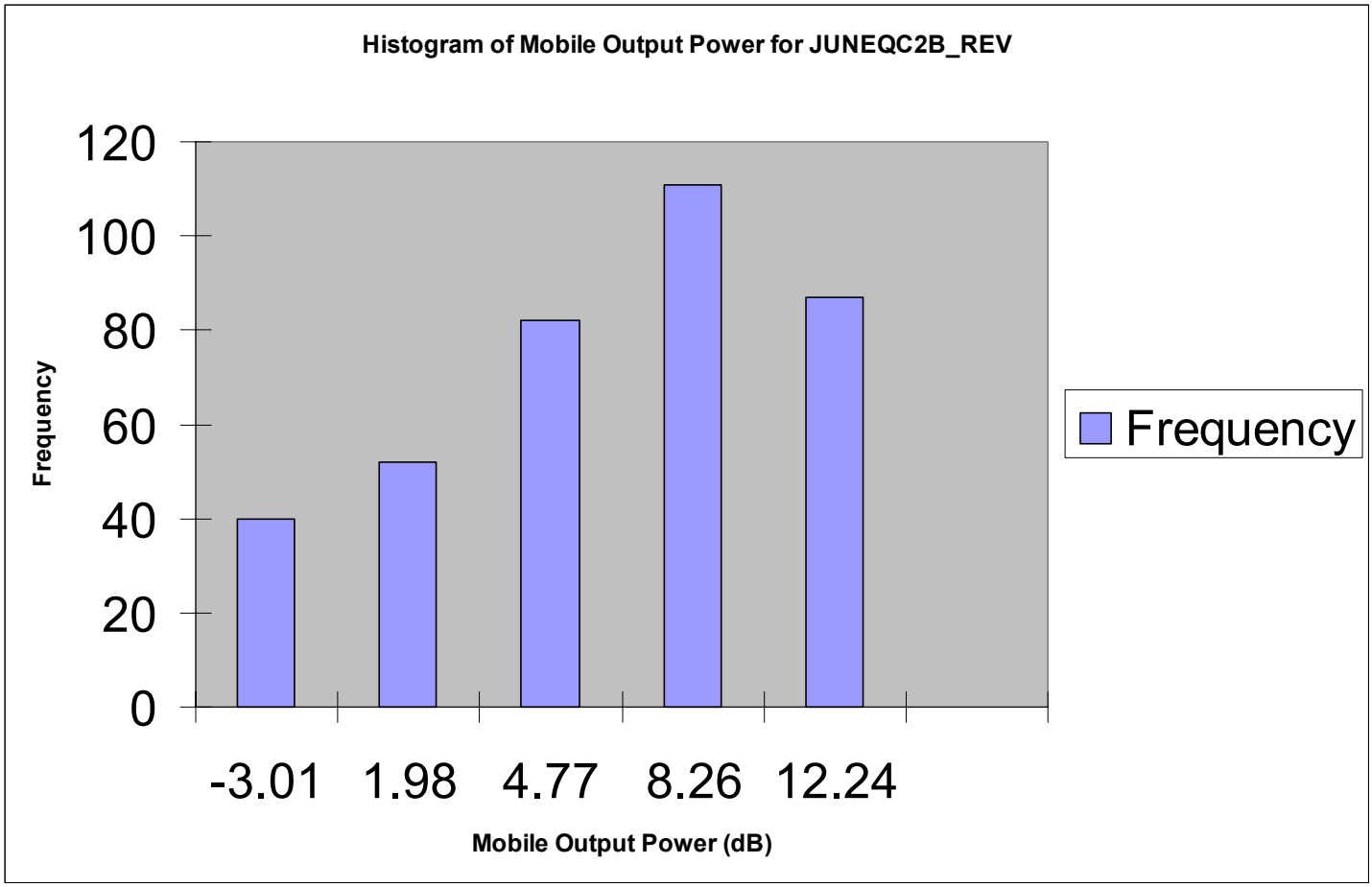

Mobile Power Levels
June 2002
11,500'
100
101
44
99
62
63
61
67
153
68
50
JUNEQC2A_Reverse_Channels by Power_Level
5 to 5 (56)
4 to 4 (101)
3 to 3 (126)
2 to 2 (1)

Figure 12.2


Histogram of Mobile Output Power for JUNEQC2B_REV
120
100
80
60
40
20
0
Frequency
-3.01
1.98
4.77
8.26
12.24
Mobile Output Power (dB)
Frequency

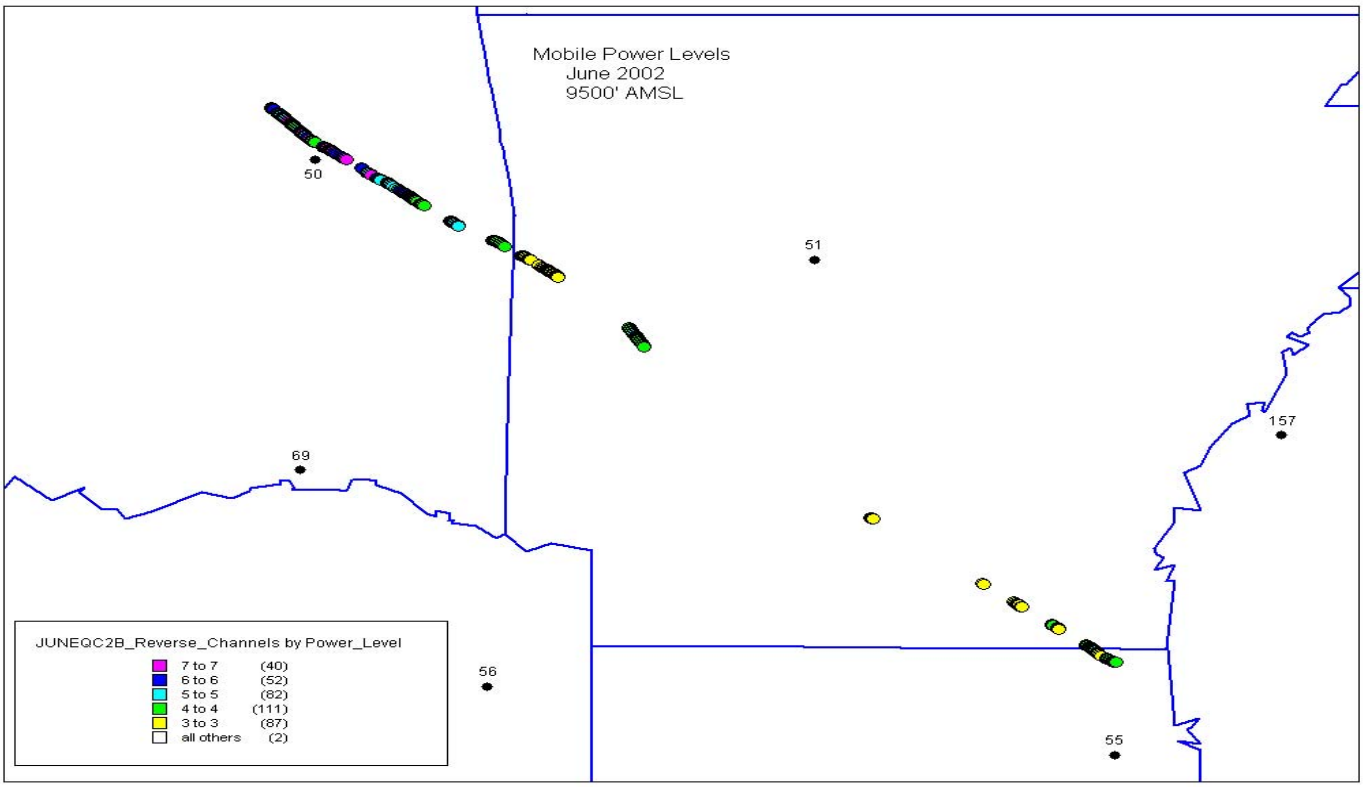
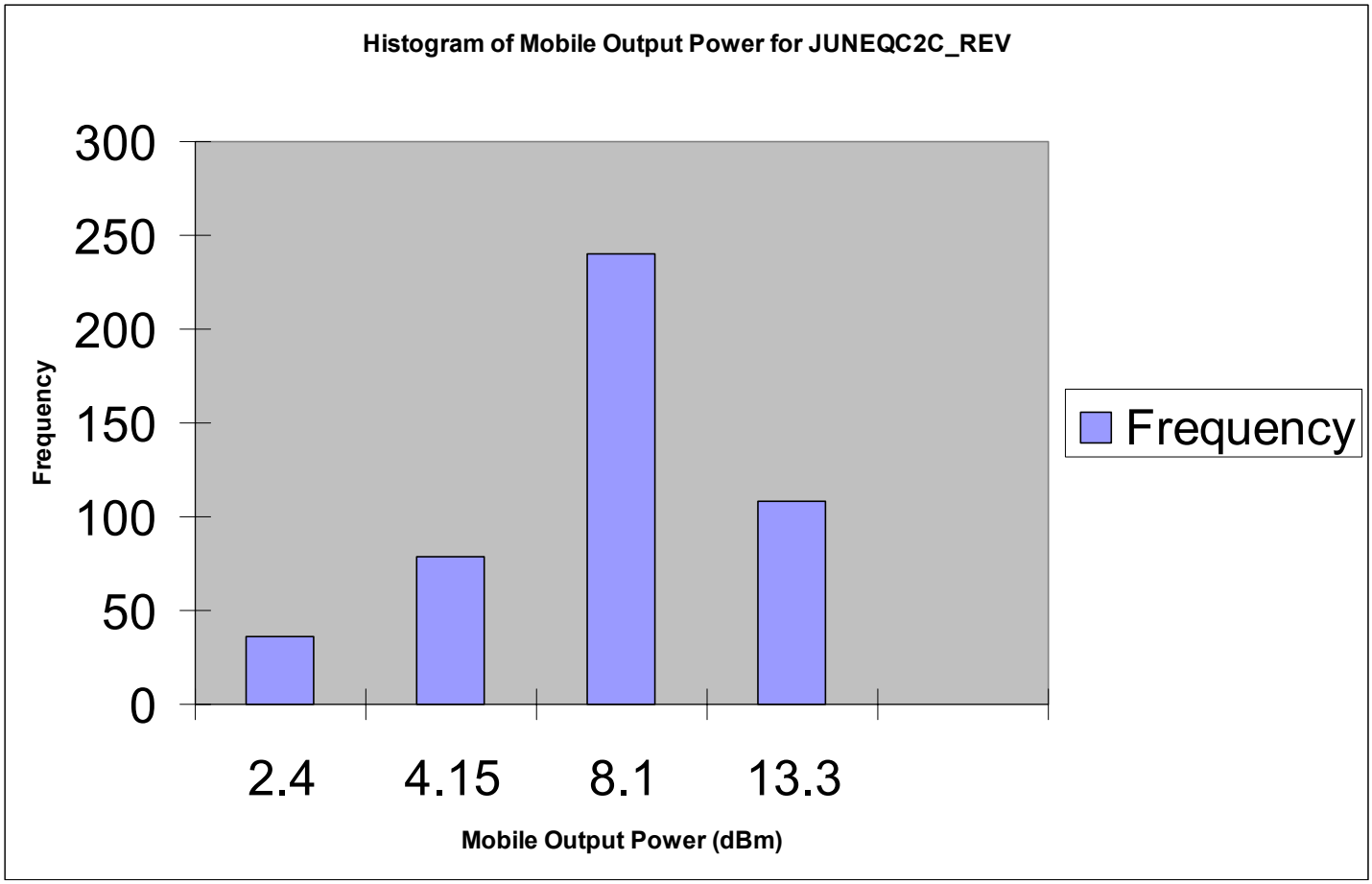

Mobile Power Levels
June 2002
9500' AMSL
50
51
69
157
56
55
JUNEQC2B_Reverse_Channels by Power_Level
7 to 7 (40)
6 to 6 (52)
5 to 5 (82)
4 to 4 (111)
3 to 3 (87)
all others (2)

Figure 12.3


Histogram of Mobile Output Power for JUNEQC2C_REV
300
250
200
150
100
50
0
Frequency
2.4
4.15
8.1
13.3
Mobile Output Power (dBm)
Frequency

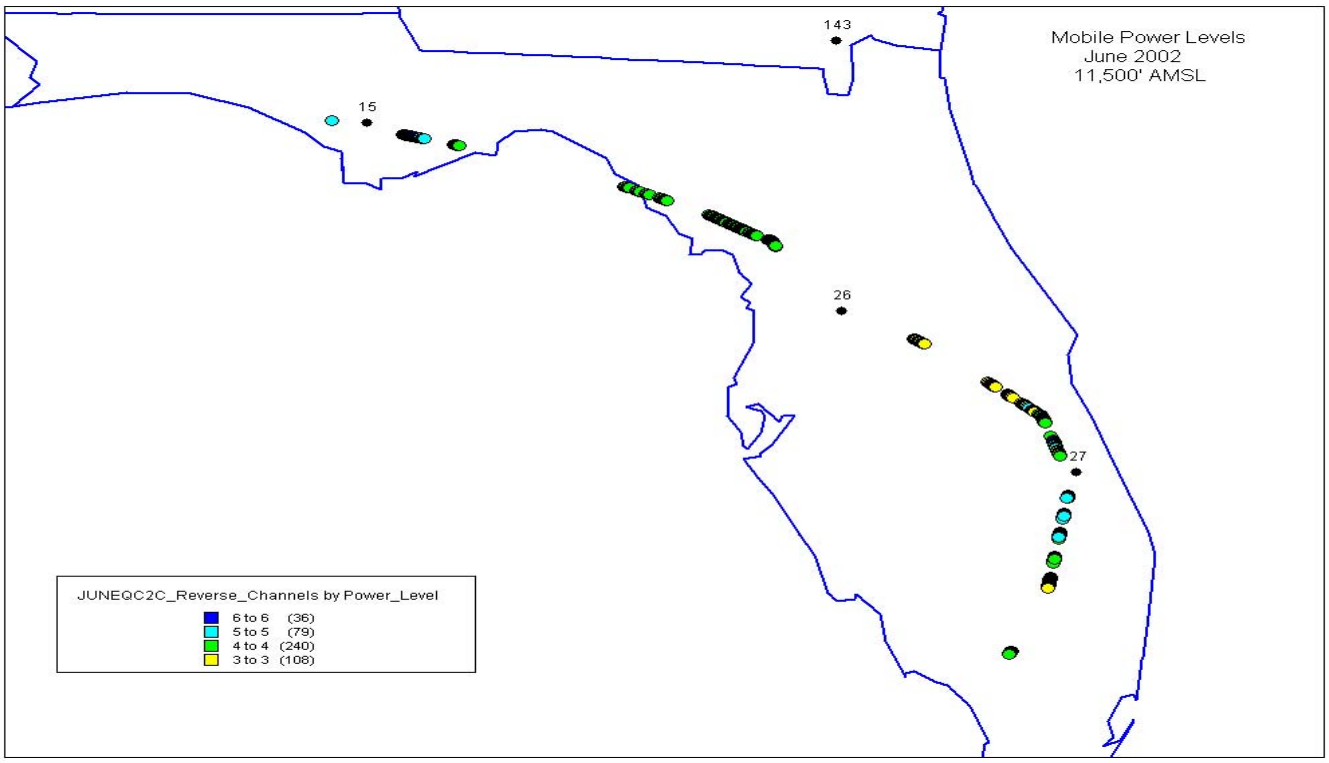
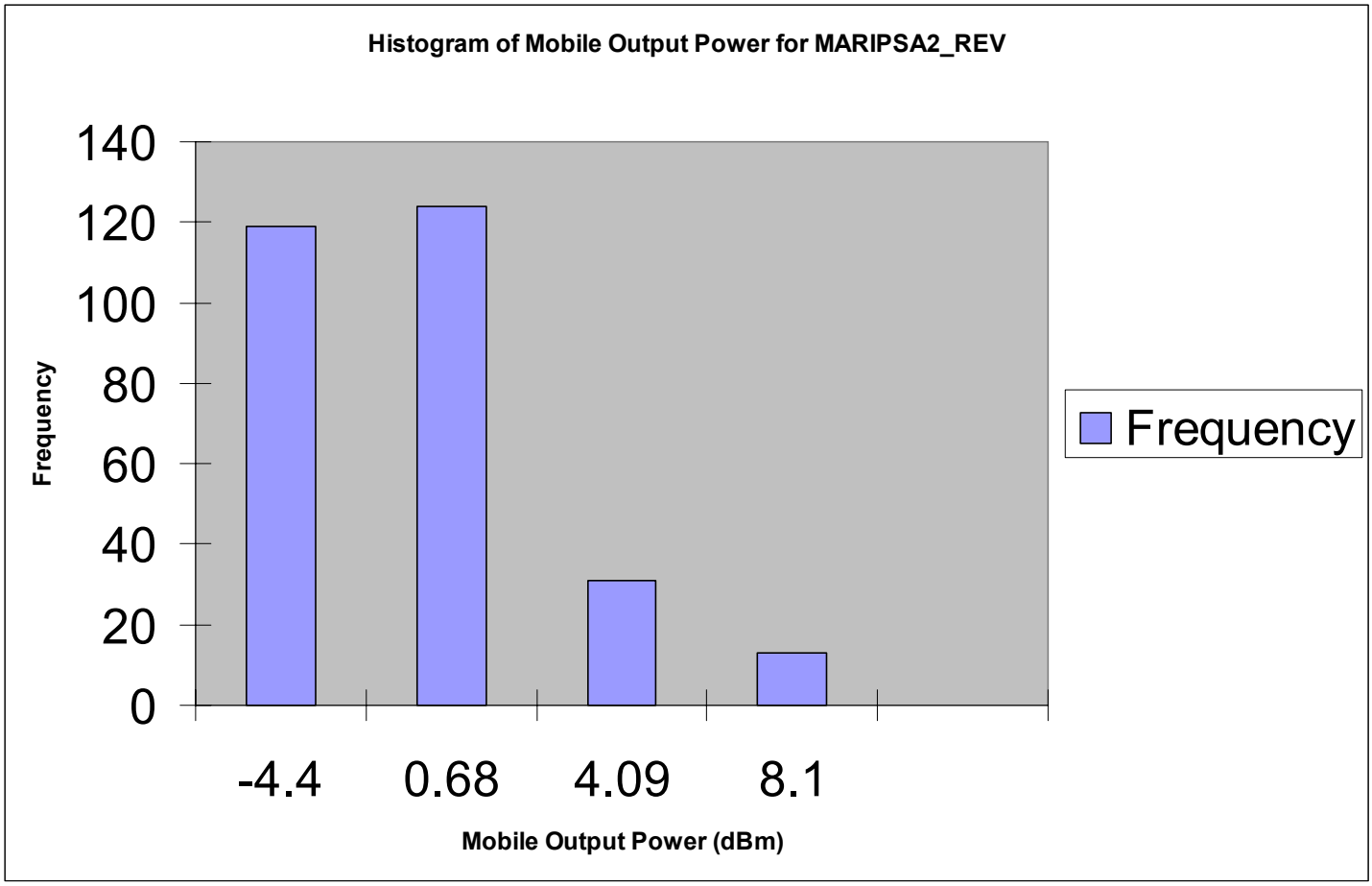

Mobile Power Levels
June 2002
11,500' AMSL
143
15
26
27
JUNEQC2C_Reverse_Channels by Power_Level
6 to 6 (36)
5 to 5 (79)
4 to 4 (240)
3 to 3 (108)

Figure 12.4


Histogram of Mobile Output Power for MARIPSA2_REV
Frequency
140
120
100
80
60
40
20
0
-4.4
0.68
4.09
8.1
Mobile Output Power (dBm)
Frequency

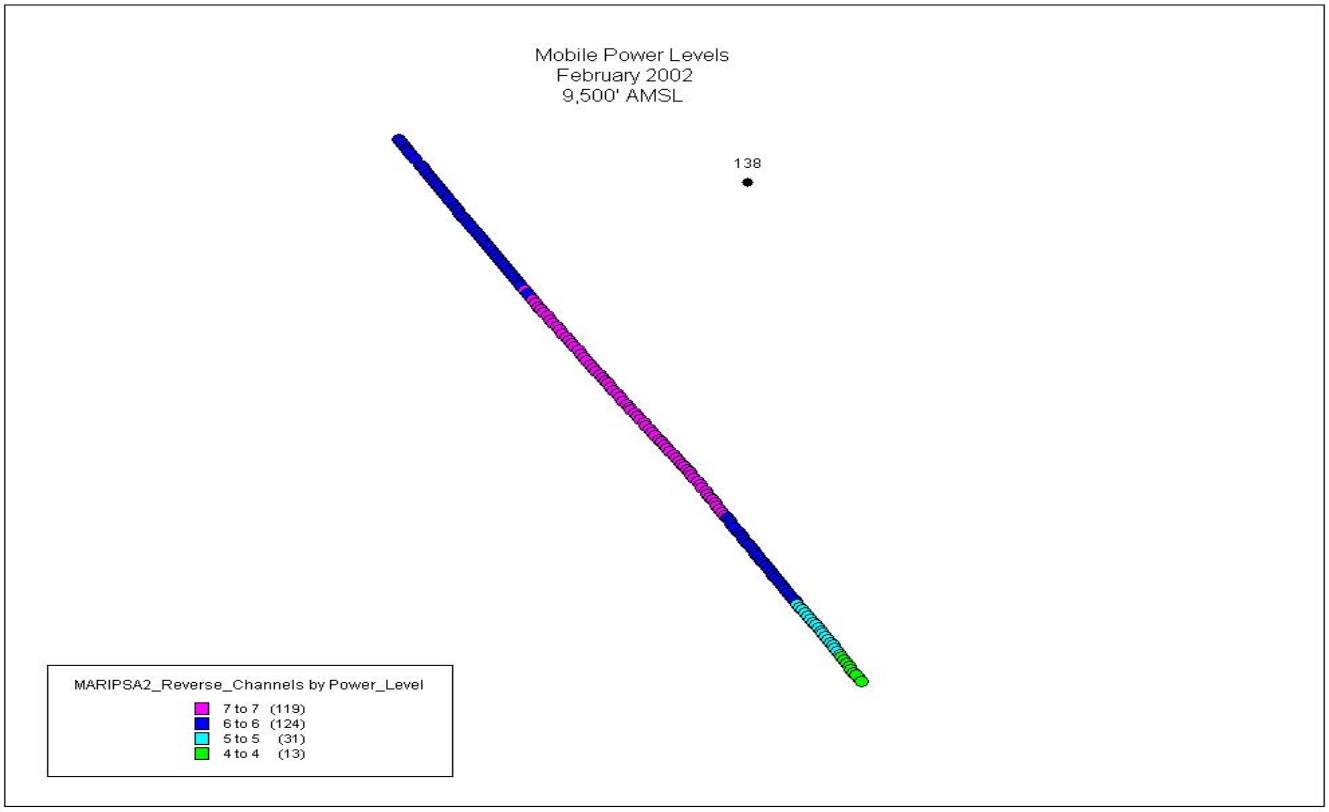
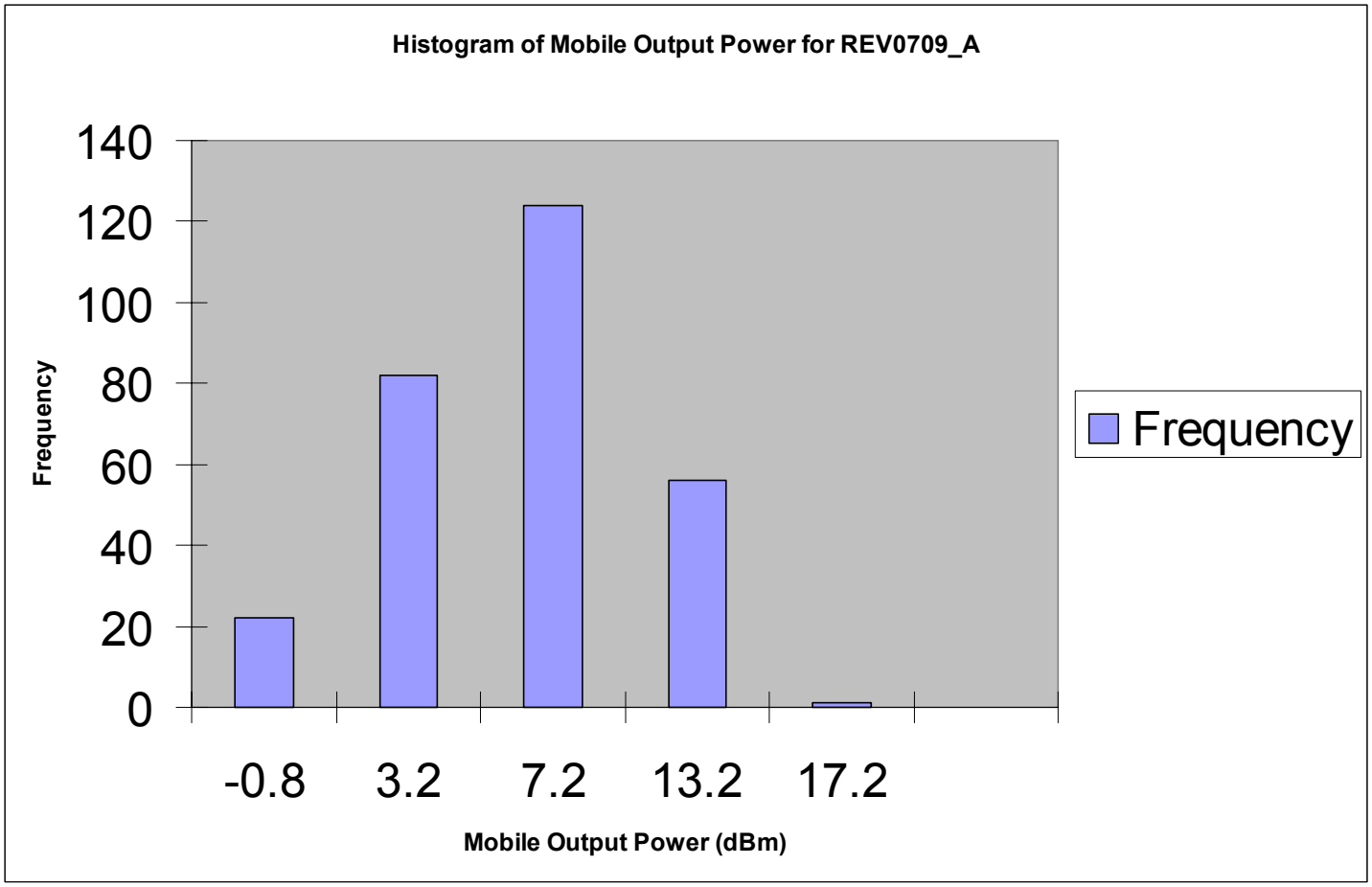
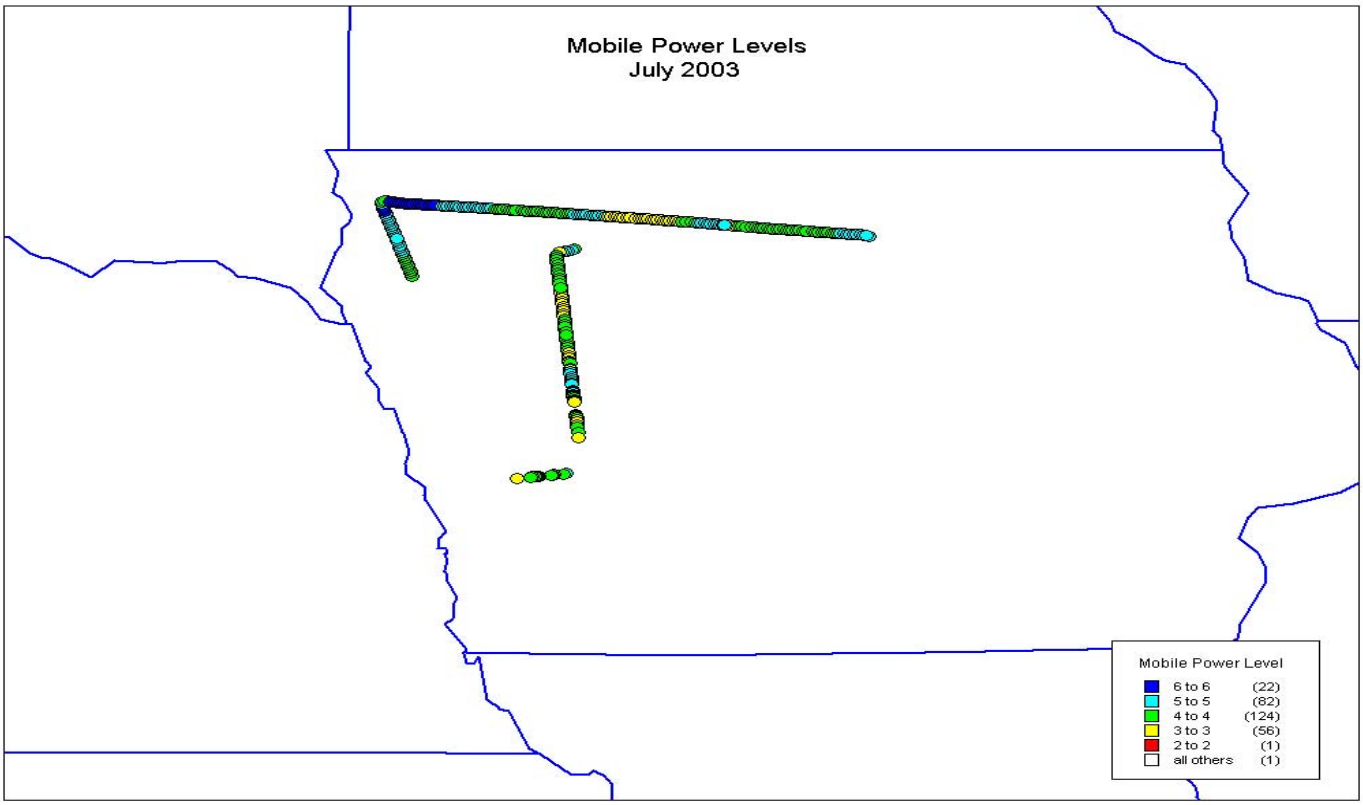

Mobile Power Levels
February 2002
9,500' AMSL
138
MARIPSA2_Reverse_Channels by Power_Level
7 to 7 (119)
6 to 6 (124)
5 to 5 (31)
4 to 4 (13)

Figure 12.5


Histogram of Mobile Output Power for REV0709_A
Frequency
140
120
100
80
60
40
20
0
-0.8
3.2
7.2
13.2
17.2
Mobile Output Power (dBm)
Frequency


Mobile Power Levels
July 2003
Mobile Power Level
6 to 6 (22)
5 to 5 (82)
4 to 4 (124)
3 to 3 (56)
2 to 2 (1)
all others (1)