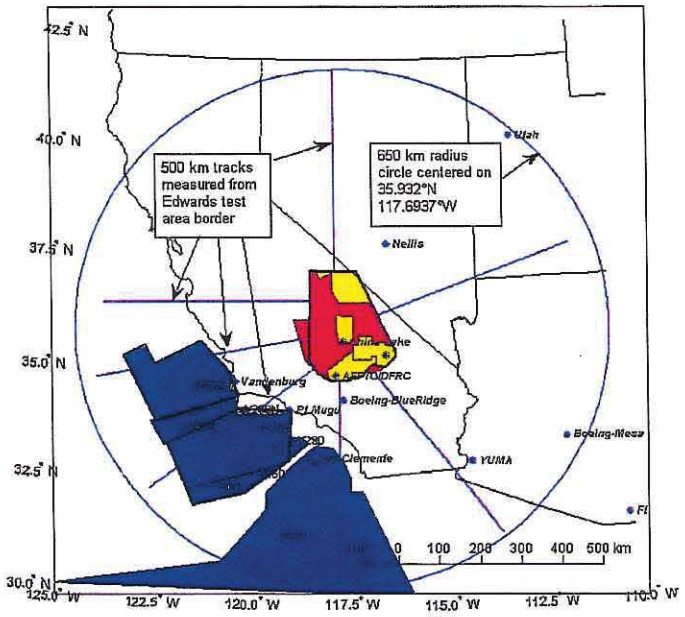
Scenario Assumptions

- Consider test range in southwest United States
- Consider all FS receive stations within 500 km of test range (in this case 6084 stations) operating in 5925-6700 MHz

Figure 1. Test Area and Circular Region of Interest for FS Data



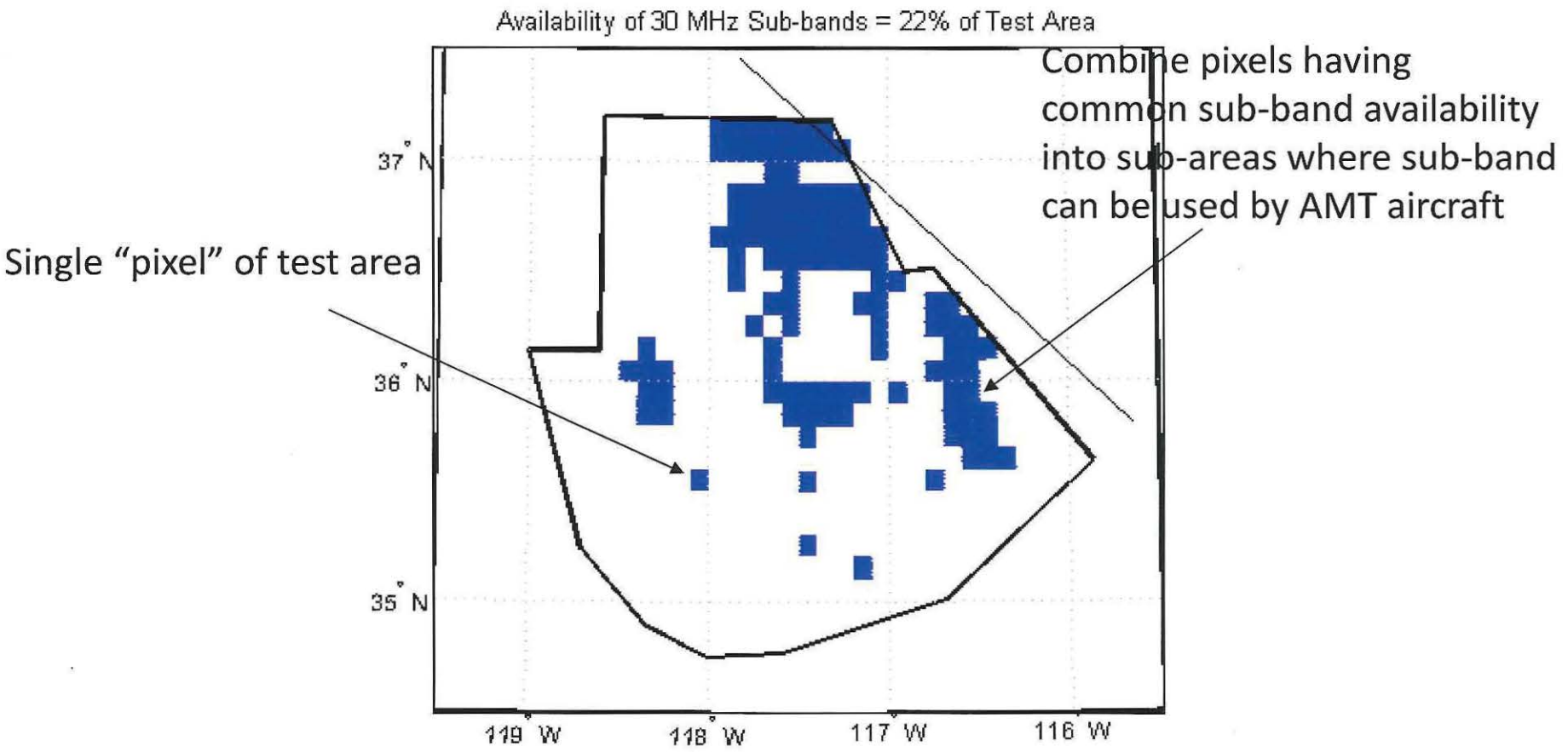
Exhibit

Analysis Approach

- **Instead of trying to find available spectrum sub-bands usable over the *entire* test area, consider smaller sub-spaces within the test area**
- **Subdivide the test area into large number of "pixels" (e.g. 160x120 = 19200 pixels) and determine spectrum availability for *each* pixel (e.g. 2.8 x 2.8 km) by applying draft Res [AMT4-6GHz] interference criteria**
- **A particular sub-band is assumed to be available for use by AMT aircraft in a particular "pixel" if there are no FS RX stations operating in the sub-band whose antenna boresights intersect the pixel or come within 12 km of the pixel (per draft Res)**
- **After determining sub-band availability for each of the 19200 pixels, consolidate/combine the pixels where appropriate in order to determine sub-areas within the test range where sub-bands are available**
- **Expect wide sub-bands to be available over only small areas and narrower sub-bands to be available over larger areas**

Analysis Approach (continued)

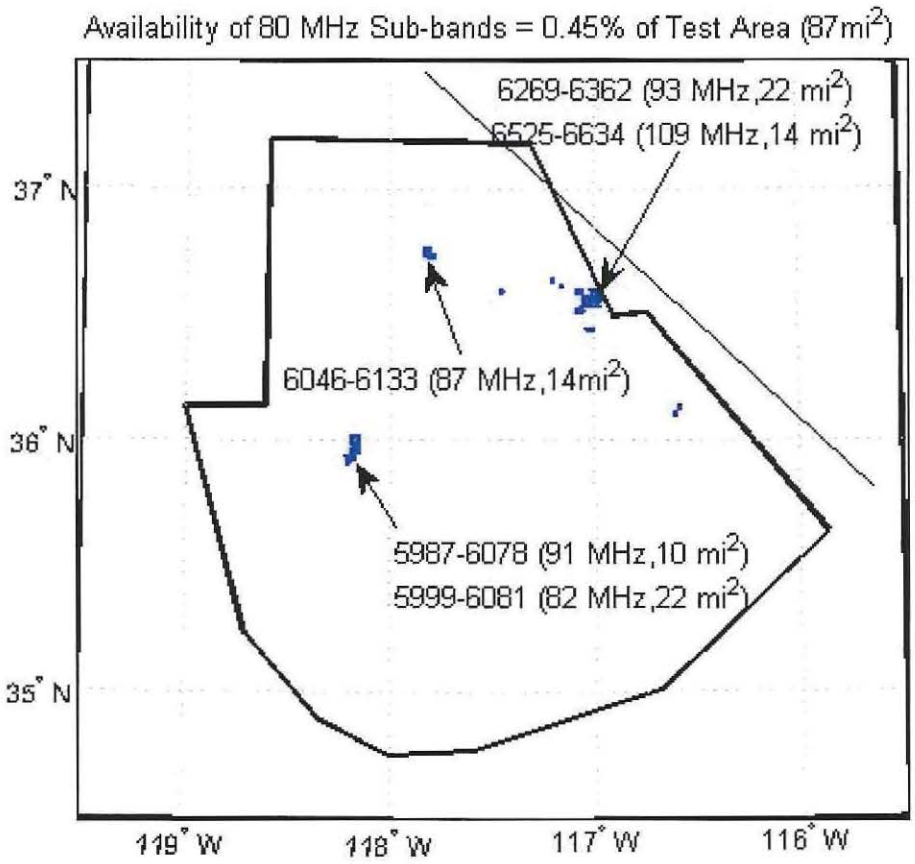
Figure 4. Sub-Dividing the Total Test Area into Pixels



Test area covered by 4deg x 3deg quadrangle -→ 40 pixels/deg → 160 x 120 = 19200 pixels (each pixel is approx 2.8 x 2.8 km)

Analysis Results

Figure 5. Areas where at least 80 MHz sub-bands are available



Note: Total test area is 19,246 sq mi

Table 1. Size of Sub-Areas where at Least 80 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
5999	6081	82	21.78	0.113
6269	6361	92	21.65	0.112
6282	6362	80	16.82	0.087
6525	6634	109	14.41	0.075
6046	6133	87	14.38	0.075
5987	6078	91	9.68	0.050
6221	6333	112	9.60	0.050
6557	6641	84	7.21	0.037
6135	6223	88	4.81	0.025
6555	6636	81	4.80	0.025
6201	6300	99	4.80	0.025
6054	6140	86	2.40	0.012
6254	6348	94	2.40	0.012

Figure 6. Areas where at least 70 MHz sub-bands are available

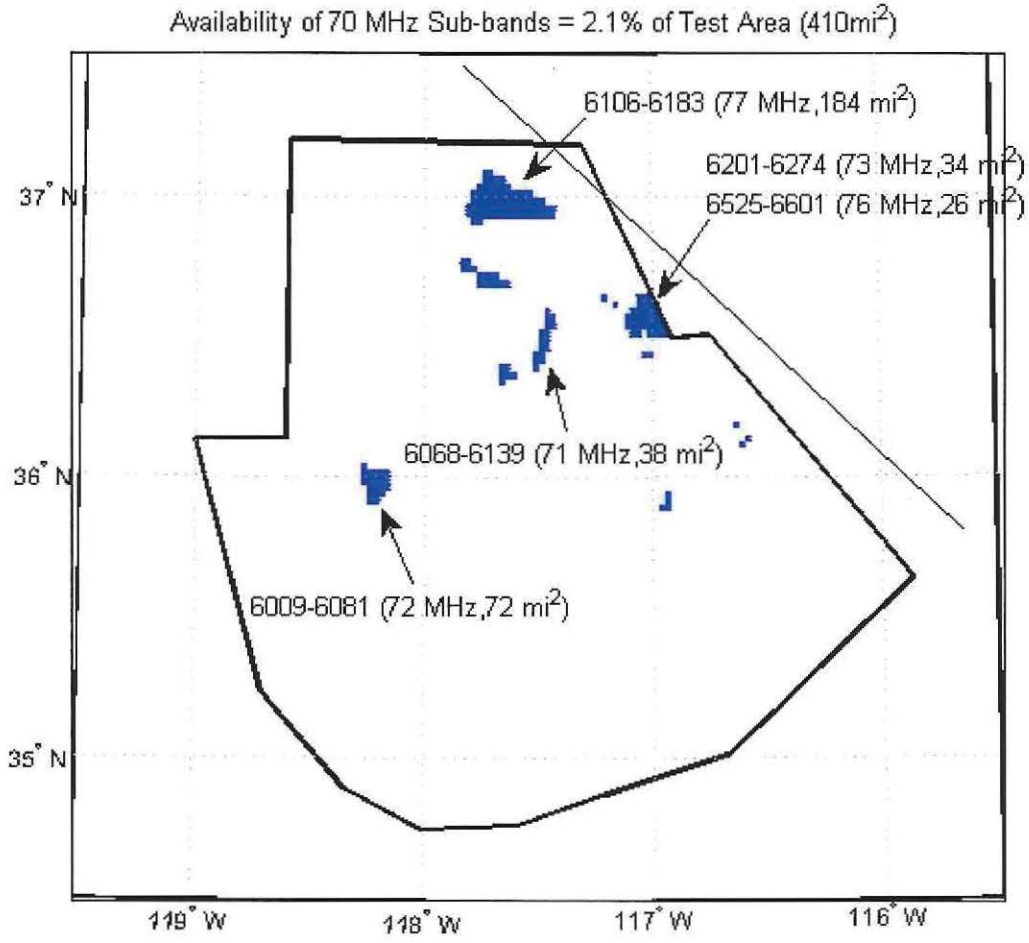


Table 2. Size of Sub-Areas where at Least 70 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
6106	6183	77	184.07	0.956
6114	6185	71	78.95	0.410
6009	6081	72	72.38	0.376
6002	6078	76	48.40	0.251
6068	6139	71	38.47	0.200
6201	6274	73	33.61	0.175
6070	6140	70	26.45	0.137
6525	6601	76	26.43	0.137
5999	6071	72	21.78	0.113
6269	6361	92	21.65	0.112
6292	6362	70	16.82	0.087
6167	6244	77	16.82	0.087
6557	6634	77	16.81	0.087
6532	6626	94	14.41	0.075
6046	6133	87	14.38	0.075
6354	6425	71	9.69	0.050
5987	6068	81	9.68	0.050
6221	6333	112	9.60	0.050
6565	6641	76	7.21	0.037
6205	6278	73	7.20	0.037
6135	6223	88	4.81	0.025
6209	6290	81	4.80	0.025
6064	6137	73	2.40	0.012
6264	6338	74	2.40	0.012

Figure 7. Areas where at least 60 MHz sub-bands are available

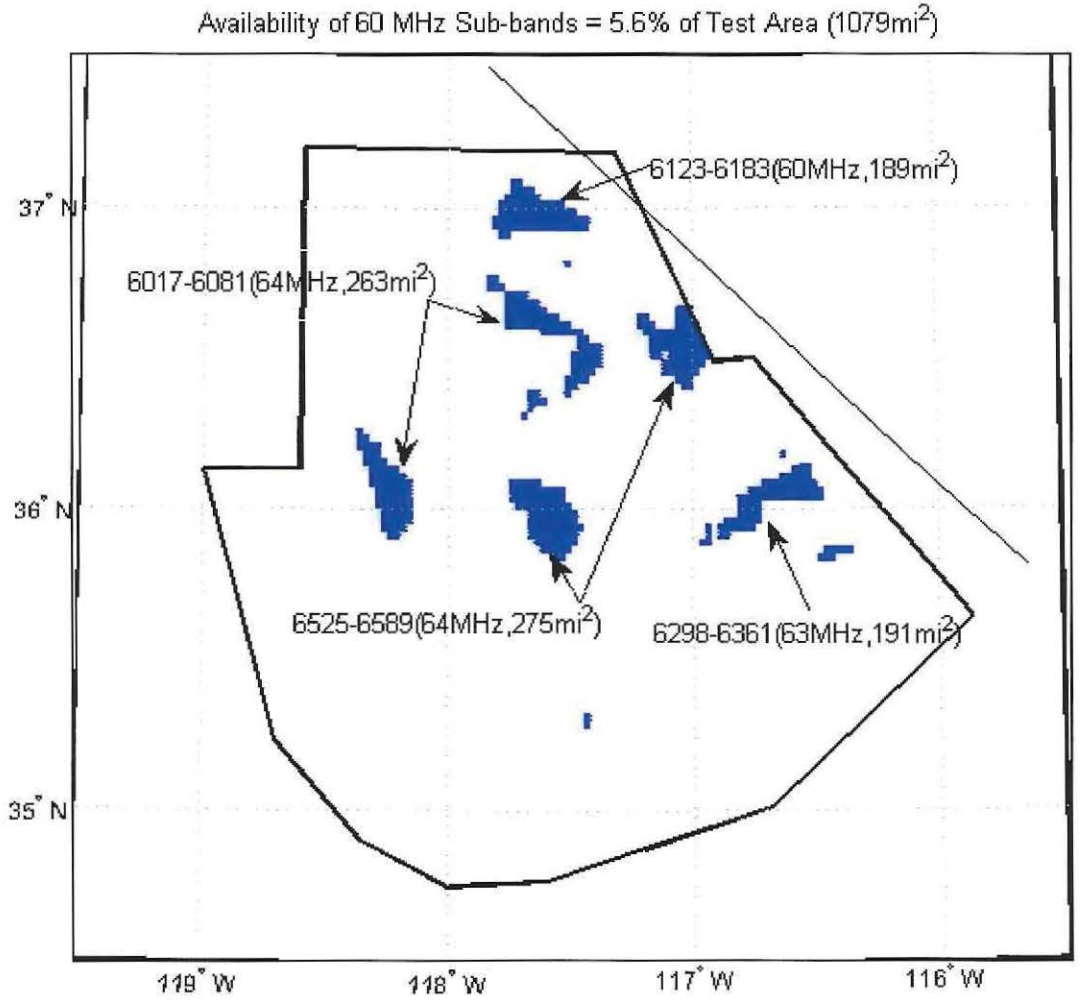


Table 3. Size of Sub-Areas where at Least 60 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
6525	6589	64	275.31	1.431
6017	6081	64	262.70	1.365
6298	6361	63	190.80	0.991
6123	6183	60	188.95	0.982
6106	6172	66	186.48	0.969
6113	6182	69	184.07	0.956
6530	6591	61	178.58	0.928
6302	6362	60	89.29	0.464
6124	6185	61	83.83	0.436
6009	6076	67	72.38	0.376
6076	6139	63	67.32	0.350
6269	6333	64	60.07	0.312
6303	6363	60	55.67	0.289
6068	6133	65	50.45	0.262
6002	6068	66	48.40	0.251
6209	6274	65	40.81	0.212
6074	6135	61	38.47	0.200
6201	6268	67	33.61	0.175
6147	6213	66	28.83	0.150
6080	6140	60	26.45	0.137
6532	6601	69	26.43	0.137
6294	6357	63	24.05	0.125
6274	6337	63	24.05	0.125
5999	6061	62	21.78	0.113
6278	6353	75	21.65	0.112
6629	6691	62	19.39	0.101
6167	6244	77	16.82	0.087
6557	6634	77	16.81	0.087
6632	6694	62	14.54	0.076
6542	6616	74	14.41	0.075
6046	6127	81	14.38	0.075
5925	5992	67	12.03	0.063
6354	6425	71	9.69	0.050
5987	6058	71	9.68	0.050
6215	6278	63	9.61	0.050
6221	6328	107	9.60	0.050
6575	6641	66	7.21	0.037
6135	6206	71	4.81	0.025
6154	6223	69	4.81	0.025
6219	6280	61	4.80	0.025

Figure 8. Areas where at least 50 MHz sub-bands are available

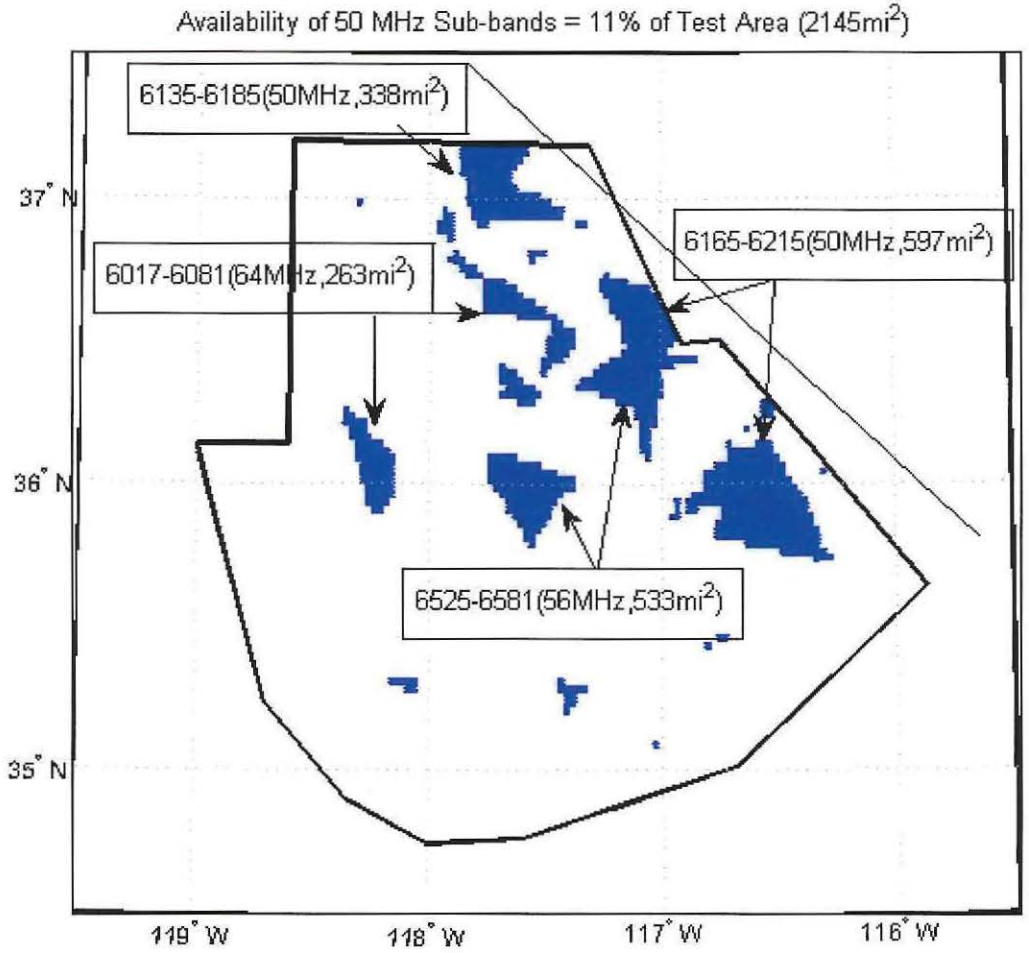


Table 4. Size of Sub-Areas where at Least 50 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
6165	6215	50	597.50	3.105
6525	6581	56	533.10	2.770
6135	6185	50	338.15	1.757
6532	6589	57	275.31	1.431
6017	6081	64	262.70	1.365
6133	6183	50	196.18	1.019
6298	6361	63	190.80	0.991
6123	6182	59	188.95	0.982
6106	6172	66	186.48	0.969
6540	6591	51	178.58	0.928
6167	6223	56	175.71	0.913
6166	6216	50	118.02	0.613
6221	6274	53	115.16	0.598
6076	6133	57	91.27	0.474
6312	6362	50	89.29	0.464
6134	6184	50	88.65	0.461
6009	6066	57	72.38	0.376
6084	6139	55	67.32	0.350
6269	6333	64	60.07	0.312
6313	6363	50	55.67	0.289
6068	6125	57	50.45	0.262
6002	6058	56	48.40	0.251
6209	6270	61	40.81	0.212
6639	6691	52	38.69	0.201
6201	6258	57	33.61	0.175
6147	6213	66	28.83	0.150
6090	6140	50	26.45	0.137
6542	6601	59	26.43	0.137

Figure 9. Areas where at least 40 MHz sub-bands are available

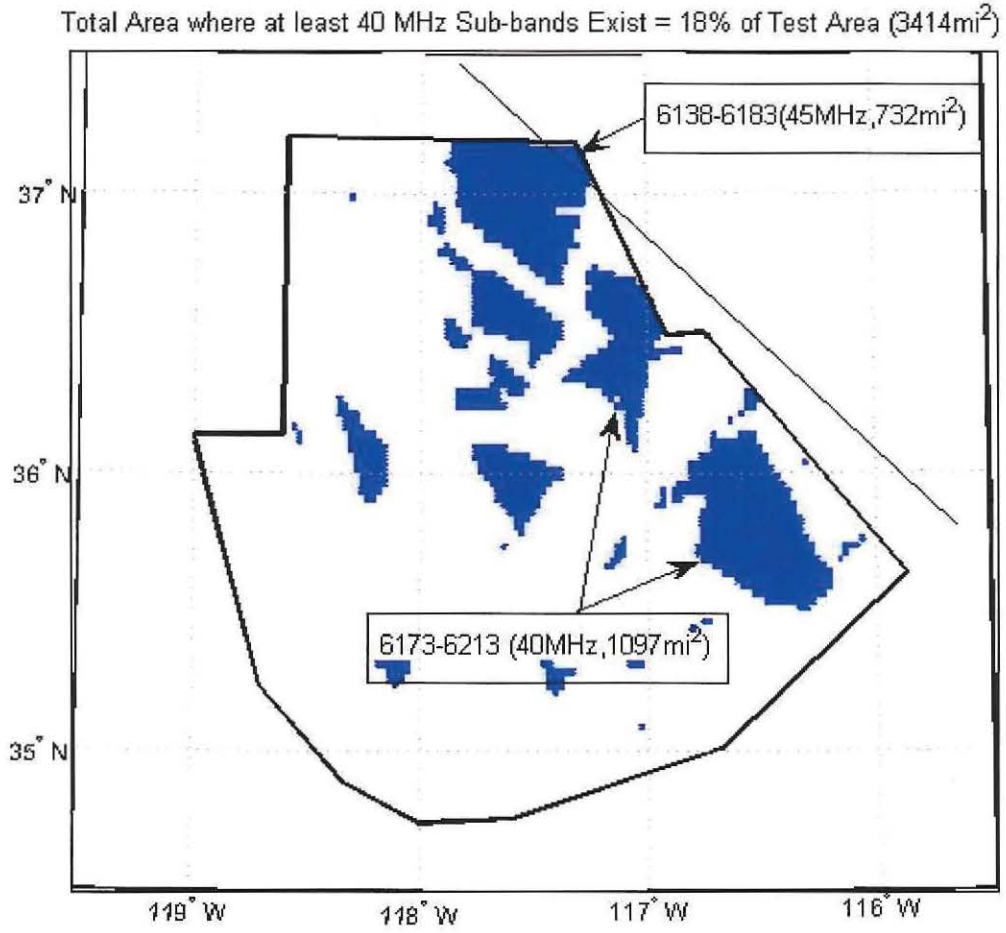


Table 5. Size of Sub-Areas where at Least 40 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
6173	6213	40	1097.08	5.700
6167	6212	45	1089.79	5.663
6174	6215	41	1070.66	5.563
6138	6183	45	732.38	3.805
6135	6177	42	727.60	3.781
6165	6206	41	621.52	3.229
6525	6581	56	533.10	2.770
6106	6148	42	452.15	2.349
6017	6060	43	394.85	2.052
6549	6589	40	385.87	2.005
6144	6185	41	342.93	1.782
6547	6588	41	292.31	1.519
6550	6591	41	284.31	1.477
6542	6586	44	275.31	1.431
6021	6081	60	262.70	1.365
6123	6172	49	198.69	1.032
6320	6361	41	198.12	1.029
6133	6174	41	196.18	1.019
6298	6359	61	190.80	0.991
6109	6162	53	186.48	0.969
6176	6223	47	175.71	0.913
6559	6601	42	125.00	0.649
6221	6274	53	115.16	0.598
6076	6133	57	91.27	0.474
6322	6362	40	89.29	0.464
6098	6139	41	76.88	0.399
6009	6056	47	72.38	0.376
6147	6193	46	72.04	0.374

Figure 10. Areas where at least 30 MHz sub-bands are available

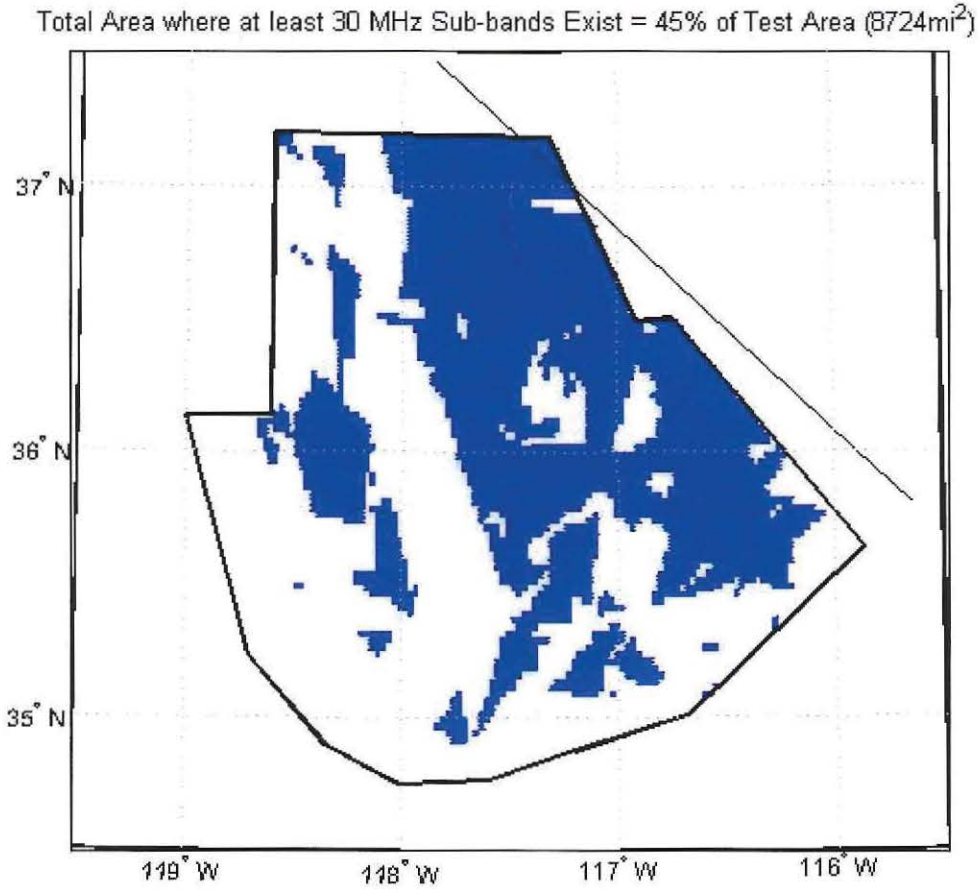


Table 6. Size of Sub-Areas where at Least 30 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
6549	6581	32	2201.66	11.440
6106	6139	33	1673.90	8.698
6528	6561	33	1478.75	7.684
6525	6557	32	1413.07	7.342
6148	6183	35	1212.10	6.298
6559	6589	30	1195.82	6.213
6547	6578	31	1137.48	5.910
6173	6213	40	1097.08	5.700
6167	6202	35	1089.79	5.663
6110	6140	30	1072.75	5.574
6184	6215	31	1070.66	5.563
6138	6172	34	1069.90	5.559
6017	6052	35	1042.17	5.415
6560	6591	31	978.36	5.084
6147	6177	30	964.00	5.009
6135	6167	32	886.19	4.605
6557	6588	31	870.11	4.521
6046	6081	35	828.90	4.307
6298	6333	35	789.01	4.100
6154	6185	31	747.01	3.881
6143	6176	33	732.38	3.805
6328	6361	33	680.80	3.537
6165	6196	31	621.52	3.229
6111	6143	32	579.89	3.013
6532	6576	44	533.10	2.770
5925	5963	38	500.94	2.603
6114	6148	34	452.15	2.349
6552	6583	31	417.47	2.169

Figure 11. Areas where at least 20 MHz sub-bands are available

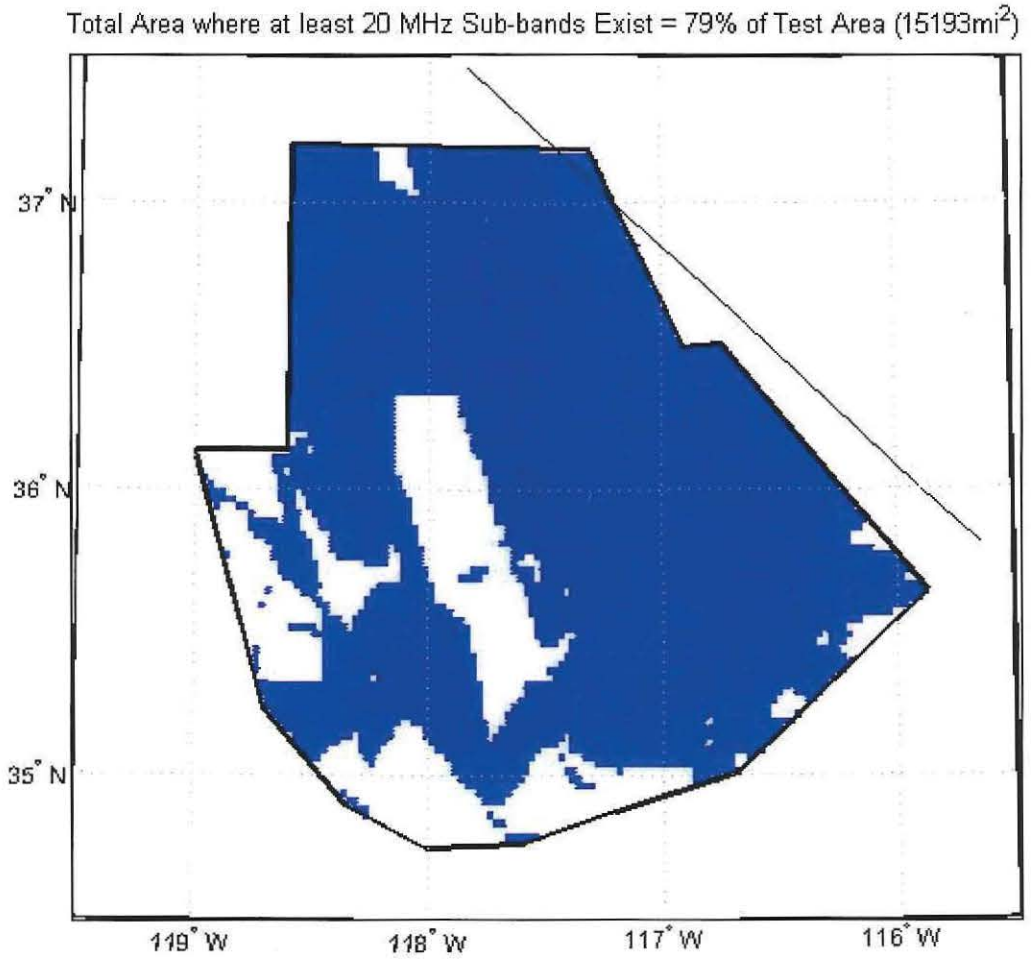


Table 7. Size of Sub-Areas where at Least 20 MHz Contiguous Bandwidth is Available

Sub-Band (MHz)		BW (MHz)	Area(mi^2)	% Test Area
6165	6185	20	7310.41	37.985
6559	6581	22	6990.95	36.325
6528	6548	20	4639.19	24.105
6529	6549	20	4553.55	23.660
6530	6551	21	4486.79	23.313
6525	6547	22	4446.91	23.106
6557	6578	21	3486.11	18.114
6554	6576	22	2426.73	12.609
6569	6589	20	2354.08	12.232
6552	6573	21	2206.43	11.465
6549	6571	22	2201.66	11.440
6157	6183	26	2093.31	10.877
6570	6591	21	2059.24	10.700
6532	6552	20	1836.23	9.541
6106	6128	22	1813.19	9.421
6113	6133	20	1767.47	9.184
6111	6132	21	1753.08	9.109
6109	6130	21	1743.34	9.058
6533	6553	20	1743.21	9.058
6114	6139	25	1693.24	8.798
6148	6172	24	1689.01	8.776
6629	6651	22	1511.96	7.856
6173	6193	20	1489.87	7.741
6138	6158	20	1484.73	7.715
6167	6192	25	1482.58	7.703
6534	6561	27	1478.75	7.684
6147	6167	20	1440.91	7.487
6135	6157	22	1301.03	6.760