IEEE 802.11
Wireless Access Method and Physical Specification

Title: **Proposed Japanese Frequency Hopping Patterns**

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Author: Dean Kawaguchi

Symbol Technologies, Inc.
1101 S. Winchester Blvd., Suite B-110
San Jose, CA. 95128
Telephone: (408)249-9890 x196
FAX: (408)446-4630
e-mail: DeanK@psd.symbol.com

Abstract

The Japanese spectrum allocation for wireless data contains only 26 MHz allocated from 2471 to 2497 MHz. The Japanese hopping patterns are defined using the same selection criteria and method as the adopted US hopping patterns. There is one small variation from the US criteria to accommodate the smaller number of available channels in Japan.

Summary

These Japanese hopping patterns were derived using the same method as that used for the accepted US hopping patterns. This method is described in the papers by IBM in submission numbers IEEE 802.11-92/84 and 93/60. The result is 12 patterns which can be used in three sets of 4 patterns similar to the result in 93/60. The number of channels used must be a prime number to use this class of patterns. The nearest prime number less than the 26 MHz available is 23. This is a reasonable number as it provides for at least one guard channel on either side.

There is one small variation between 93/60 and the Japanese hop patterns presented here. The minimum distance between contiguous hop channels used here is 6 MHz vs. 7 MHz in 93/60. This is because the number of channels available are significantly less in Japan. This reduces the temporal frequency diversity slightly but should not significantly affect throughput. This allows 12 patterns rather than 10 which is a nice number for dividing by three.

The use of the three sets is the same as that in 93/60. Using the patterns in a single set will minimize the number of contiguous collisions between patterns as well as the number of direct and adjacent channel collisions. Mixing patterns in different sets will minimize the number of collisions between any two patterns, but contiguous collisions cannot be avoided.

Set 1

1:	1	7	13	19	2	8	14	20	3	9	15	21	4	10	16	22	5	11	17	23	6	12	18
2:	1	10	19	5	14	23	9	18	4	13	22	8	17	3	12	21	7	16	2	11	20	6	15
3:	1	13	2	14	3	15	4	16	5	17	6	18	7	19	8	20	9	21	10	22	11	23	12
4:	1	16	8	23	15	7	22	14	6	21	13	5	20	12	4	19	11	3	18	10	2	17	9

Set 2

5:	1	8	15	22	6	13	20	4	11	18	2	9	16	23	7	14	21	5	12	19	3	10	17
6:	1	11	21	8	18	5	15	2	12	22	9	19	6	16	3	13	23	10	20	7	17	4	14
7:	1	14	4	17	7	20	10	23	13	3	16	6	19	9	22	12	2	15	5	18	8	21	11
8:	1	17	10	3	19	12	5	21	14	7	23	16	9	2	18	11	4	20	13	6	22	15	8

Set 3

9:	1	9	17	2	10	18	3	11	19	4	12	20	5	13	21	6	14	22	7	15	23	8	16
10:	1	12	23	11	22	10	21	9	20	8	19	7	18	6	17	5	16	4	15	3	14	2	13
11:	1	15	6	20	11	2	16	7	21	12	3	17	8	22	13	4	18	9	23	14	5	19	10
12:	1	18	12	6	23	17	11	5	22	16	10	4	21	15	9	3	20	14	8	2	19	13	7