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Subject: Hopping algorithm and compliance with FCC 15.247 (a) (1)

1. Hopping algorithm description

The hopping algorithm is defined by a table of n frequencies, when $n \geq 75$. The hopping sequence follows cyclically the frequencies in the table, staying in each frequency for a constant period. The frequencies note the center frequencies in each hop. Each frequency in the table appears once. The frequencies in the table are all in the range 2402- 2482, with at least 1MHz between any two frequencies in the table. The order of frequencies in the table is pseudorandom.

2. Hopping time

The hopping time in a given is constant. (typically WipLL uses 50mSec)

3. Number of channels

The number of channels is determined by the table size n which is at least 75 (WipLL uses $n=79$).

4. Resolution

The minimum difference between any two channels is 1 MHz.

5. Channel distribution.

Since any used channel is included once in the table, all the channels are equally used, each one occupies 1/n of the time.

6. Occupancy time.

Each used channel is used once per cycle of n frequencies ($n = 79$ see par. 3 above). The total occupancy time in 30 seconds is:

$$(30\text{sec})/n = 0.4\text{sec} \quad 30/79 = 0.380 \text{ sec.}$$

7. Receiver synchronization.

The system receiver input bandwidth filter matches the hopping channel bandwidth and synchronized with the corresponding transmitter on the hopping sequence.

15.247 Spec.	Requirement	WipLL capability	Comply
Spread Spectrum	FHSS or DSSS	FHSS	yes
Channel Separation	-20dB bandwidth (1MHz)	-20 dB bandwidth (1MHz)	yes
List of Freq.	Pseudo random ordered list.	Pseudo random ordered list	yes
Use of Freq.	Equal use of Freq.	Constant hop period (50mS) each freq. used once in table.	yes
Frequency band	2400- 2483.5MHz	2402 – 2482MHz	yes
Number of frequencies	Min. 75	79	yes
Occupied BW per hop	<1MHz at -20dB	<1MHz at -20dB	yes
Average time of occupancy	<0.4 sec see within 30 sec period-average.	0.33 sec within 30sec – average.	yes

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