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# C004 Frequency Hopping Spread Spectrum description

This document outlines the frequency hopping mechanism and scheme used in the transceiver. Herein is described how the following FCC requirements 15.247(a) (1), 15.247(g), 15.247(h) are met and adhered to. The radio system uses a 2FSK modulation format. Communication is FDD (Frequency division duplexing) based.

## 1) 15.247 (a) (1)

The system is a frequency hopping spread spectrum transceiver. The system channel hoping scheme is selected and determined by and from a pseudo randomly ordered list of hopping frequencies. Each frequency is used equally on the average.

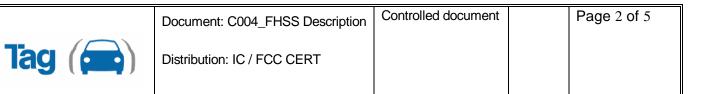
The system utilizes a pseudo randomly generated list that is stored in a memory based lookup table. Each transmission event is started on the next channel in the table. (See channel selection table below...)

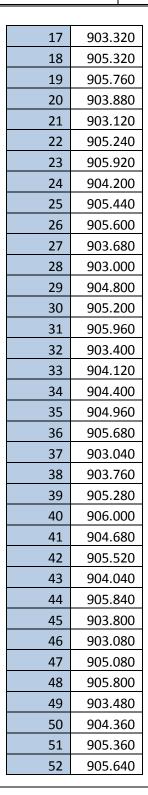
#### TX TABLE:

Seq	Low (MHz)	
1	904.000	
2	904.480	
3	905.160	
4	905.720	
5	903.520	
6	904.760	
7	903.160	
8	905.400	
9	9 903.960	
10	904.560	
11	905.880	
12	903.640	
13	905.000	
14	904.280	
15	905.560	
16	905.480	

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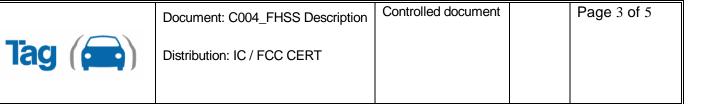
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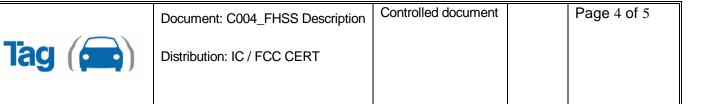
53 904.880

**RX TABLE:** 

1 2	924.000 924.480 925.160		
2	924.480		
_			
	925.160		
3			
4	925.720		
5	923.520		
6	924.760		
7	923.160		
8	925.400		
9	923.960		
10	924.560		
11	925.880		
12	923.640		
13	925.000		
14	924.280		
15	925.560		
16	925.480		
17	923.320		
18	925.320		
19	925.760		
20	923.880		
21	923.120		
22	925.240		
23	925.920		
24	924.200		
25	925.440		
26	925.600		
27	923.680		
28	923.000		
29	924.800		

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30	925.200	
31	925.960	
32	923.400	
33	924.120	
34	924.400	
35	35 924.960	
36	925.680	
37	923.040	
38	923.760	
39	39 925.280	
40	926.000	
41	924.680	
42	925.520	
43	924.040	
44	925.840	
45	923.800	
46	923.080	
47	925.080	
48	925.800	
49	923.480	
50	924.360	
51	925.360	
52	925.640	
53	924.880	

The associated system receiver has a compliant input bandwidth and has the ability to hop in synchronization with the transmitter. Synchronization is achieved by decoding packet headers and position pointers within the packets. The receiver interprets the packet headers and position markers and determines the next receive and transmit channel assignment that is in the pseudo randomly ordered channel selection table.

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# 2) 15.247 (g)

When presented with a continuous data stream the system will continue to operate using its pseudo randomly generated hoping scheme. A data stream which requires the use of all of the hoping channels in order to be completely received will be received using a pseudo random sequence.

During a short transmission or burst the system will select the next channel in its pseudo randomly ordered channel selection table. The last used position in the table is indexed in the memory and is incremented by one in order to select the next channel in the pseudo randomly ordered channel selection table for the next transmission event.

## 3) 15.247 (h)

The system does not incorporate any means for intelligent coordination other than a means for synchronization of the transmitter and the receiver. This synchronization does not take into account any interference or channel occupancy but other systems. Both the transmitter and the receiver synchronize to each other by decoding packet headers and position pointers within the packets. These serve to enable the system to know when to hop to the next channel in the pseudo randomly ordered channel selection table and to stay synchronized.