

There are a total of 256 different frequencies that the transmitter can transmit on. However, each transmitter will only utilizes a subset of these frequencies which are determined pseudo randomly depending on the serial number of the transmitter. The subset consists of 64 unique frequencies.

Here is the complete frequency list:

Channel	Frequency
0	902.20
1	902.30
2	902.40
3	902.50
4	902.60
5	902.70
6	902.80
7	902.90
8	903.00
9	903.10
10	903.20
11	903.30
12	903.40
13	903.50
14	903.60
15	903.70
16	903.80
17	903.90
18	904.00
19	904.10
20	904.20
21	904.30
22	904.40
23	904.50
24	904.60
25	904.70
26	904.80
27	904.90
28	905.00
29	905.10
30	905.20
31	905.30
32	905.40
33	905.50
34	905.60
35	905.70
36	905.80
37	905.90
38	906.00
39	906.10
40	906.20
41	906.30
42	906.40
43	906.50

44	906.60
45	906.70
46	906.80
47	906.90
48	907.00
49	907.10
50	907.20
51	907.30
52	907.40
53	907.50
54	907.60
55	907.70
56	907.80
57	907.90
58	908.00
59	908.10
60	908.20
61	908.30
62	908.40
63	908.50
64	908.60
65	908.70
66	908.80
67	908.90
68	909.00
69	909.10
70	909.20
71	909.30
72	909.40
73	909.50
74	909.60
75	909.70
76	909.80
77	909.90
78	910.00
79	910.10
80	910.20
81	910.30
82	910.40
83	910.50
84	910.60
85	910.70
86	910.80
87	910.90
88	911.00
89	911.10
90	911.20
91	911.30
92	911.40
93	911.50
94	911.60
95	911.70

96	911.80
97	911.90
98	912.00
99	912.10
100	912.20
101	912.30
102	912.40
103	912.50
104	912.60
105	912.70
106	912.80
107	912.90
108	913.00
109	913.10
110	913.20
111	913.30
112	913.40
113	913.50
114	913.60
115	913.70
116	913.80
117	913.90
118	914.00
119	914.10
120	914.20
121	914.30
122	914.40
123	914.50
124	914.60
125	914.70
126	914.80
127	914.90
128	915.00
129	915.10
130	915.20
131	915.30
132	915.40
133	915.50
134	915.60
135	915.70
136	915.80
137	915.90
138	916.00
139	916.10
140	916.20
141	916.30
142	916.40
143	916.50
144	916.60
145	916.70
146	916.80
147	916.90

148	917.00
149	917.10
150	917.20
151	917.30
152	917.40
153	917.50
154	917.60
155	917.70
156	917.80
157	917.90
158	918.00
159	918.10
160	918.20
161	918.30
162	918.40
163	918.50
164	918.60
165	918.70
166	918.80
167	918.90
168	919.00
169	919.10
170	919.20
171	919.30
172	919.40
173	919.50
174	919.60
175	919.70
176	919.80
177	919.90
178	920.00
179	920.10
180	920.20
181	920.30
182	920.40
183	920.50
184	920.60
185	920.70
186	920.80
187	920.90
188	921.00
189	921.10
190	921.20
191	921.30
192	921.40
193	921.50
194	921.60
195	921.70
196	921.80
197	921.90
198	922.00
199	922.10

200	922.20
201	922.30
202	922.40
203	922.50
204	922.60
205	922.70
206	922.80
207	922.90
208	923.00
209	923.10
210	923.20
211	923.30
212	923.40
213	923.50
214	923.60
215	923.70
216	923.80
217	923.90
218	924.00
219	924.10
220	924.20
221	924.30
222	924.40
223	924.50
224	924.60
225	924.70
226	924.80
227	924.90
228	925.00
229	925.10
230	925.20
231	925.30
232	925.40
233	925.50
234	925.60
235	925.70
236	925.80
237	925.90
238	926.00
239	926.10
240	926.20
241	926.30
242	926.40
243	926.50
244	926.60
245	926.70
246	926.80
247	926.90
248	927.00
249	927.10
250	927.20
251	927.30

252	927.40
253	927.50
254	927.60
255	927.70

Here is a sample of a hopping sequence:

Hop Number	Channel
0	111
1	132
2	143
3	124
4	155
5	116
6	140
7	157
8	148
9	159
10	121
11	122
12	133
13	134
14	115
15	156
16	110
17	137
18	18
19	129
20	131
21	112
22	123
23	114
24	10
25	120
26	15
27	126
28	147
29	158
30	119
31	130
32	160
33	141
34	162
35	113
36	144
37	135
38	146
39	127
40	138

41	119
42	161
43	142
44	153
45	154
46	125
47	136
48	17
49	118
50	139
51	151
52	152
53	13
54	14
55	145
56	16
57	117
58	128
59	150
60	149
61	1
62	201
63	21

>1) Provide a sample or two of a sequence of hopping channels. With one of the sequences as an example, >indicate where a transmission begins when a previous transmission stops in the middle of a sequence.

Answer:

The transmitter has a continuous hop counter even though it is not transmitting. This effectively makes the transmitter start at a random frequency every time. If a transmission started at 24 and ended at 34, the next transmission can start anywhere, depending on when (in time) a button is pressed (for example).

During idle mode, when there is no 'button' activity, the transmitter will only hop to and transmit once every 30th hop. For example if the transmitter is in idle mode, it will hop and transmit at 20, wait for 30 hops without transmitting and then hop and transmit at 50.

Let me know if this is confusing.

>

>2) What is the receiver input bandwidth?

The receiver-input bandwidth is 17.8kHz

>

>3) How does the receiver synchronize with the first pseudo-random channel transmitted by the transmitter and shifts frequencies with the transmitter

The receiver chooses the quietest frequency out of the first 3 hop frequencies in the sequence and waits there for the transmitter to hop by. If it doesn't see anything for 3 seconds, it will again look for the quietest frequency out of the first 3 hop frequencies in the sequence and wait. Once it has found the transmitter, it will hop in synch with the transmitter until the receiver doesn't receive any valid packets for more than 1 second. It will then go back to the quietest frequency out of the first 3 hop frequencies in the sequence and wait there.