

Pseudorandom Frequency Hopping Sequence.

In the firmware, the ISM band (902 MHz – 928 MHz) is divided into 54 frequencies. Out of these 4 channels are used as control channels and rest 50 frequency channels are used for data communications.

The firmware has a set of 50 frequency tables each table has all the 50 frequencies assigned in a random order. All the 50 tables are uniquely arranged in random so that no two tables are identical. The Frequency tables are provided at the end of this document.

At power on all the units will be in control channel in listen mode.

To start communication, the transmitter sends a header packet in control channel. This packet contains the ID of the receiver and also the frequency table to be used for hopping.

Frequency table Number is a random number between 1 & 50.

After decoding this packet the addressed receiver sends an acknowledgement packet and jumps to the frequency table specified in the header.

System Receiver Hopping Capability.

This way both transmit and receive units hop to the same frequency as per the table.

No unit is allowed to stay on any channel for more than 250 msecs.

Both the units will jump to the table and starts communicating at the first frequency specified in the table.

If the data is more than one packet (256 bytes) then in a specified amount of time both the units jump to the next frequency in the table and send/ receive data.

Both sides continue hopping to the frequencies as per the table till data transmission is complete.

Thereafter both the units return to the control channel.

So every time a unit wants to send data it uses a random number to select which frequency table to use.

Hence every time a different frequency table is used.

System Receiver Input Bandwidth

The unit uses FSK modulation with a deviation of 130 KHz.

The Chipcon chip allows FSK receiver to decode signals with a deviation of 65 KHz. Data sheet is attached.

Equal Hopping Frequency Use:

Since every table uses all the allowable frequencies, and since all tables are generated randomly, each table is used equally.

Additionally, since each table contains all the frequencies, the usage of each frequency is also the same.

Frequency Tables (accuracy +/- 15 ppm)

Index	Frequency	Index	Frequency	Index	Frequency
0	902.5572	20	912.78696	40	922.3716
1	903.018	21	913.1556	41	922.74024
2	903.6324	22	913.6164	42	923.2932
3	904.33457	23	914.0772	43	923.84616
4	904.8612	24	914.44584	44	924.39912
5	905.322	25	914.9916	45	924.95208
6	905.7828	26	915.39377	46	925.50504
7	906.15144	27	916.3812	47	926.058
8	906.7044	28	916.842	48	926.61096
9	907.25736	29	917.21064	49	927.16392
10	907.626	30	917.7636		
11	908.0868	31	918.31656		
12	908.5476	32	918.6852		
13	908.91624	33	919.146		
14	909.4692	34	919.6068		
15	909.86417	35	919.97544		
16	910.3908	36	920.5284		
17	910.8516	37	920.92337		
18	911.68104	38	921.45		
19	912.234	39	921.9108		

Control Channel Frequency Tables

Index	Frequency
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RF LAN, FCC ID: PDVRFLAN

0	902.0964
1	906.7044
2	911.3124
3	915.9204

