1 Theory of operation, FHSS

The W-DMX OEM PCB makes use of Frequency Hopping Spread Spectrum and operates in the 2,45GHz ISM band.

W-DMX changes frequency every 910uS and the dwell time is 300uS on every frequency.

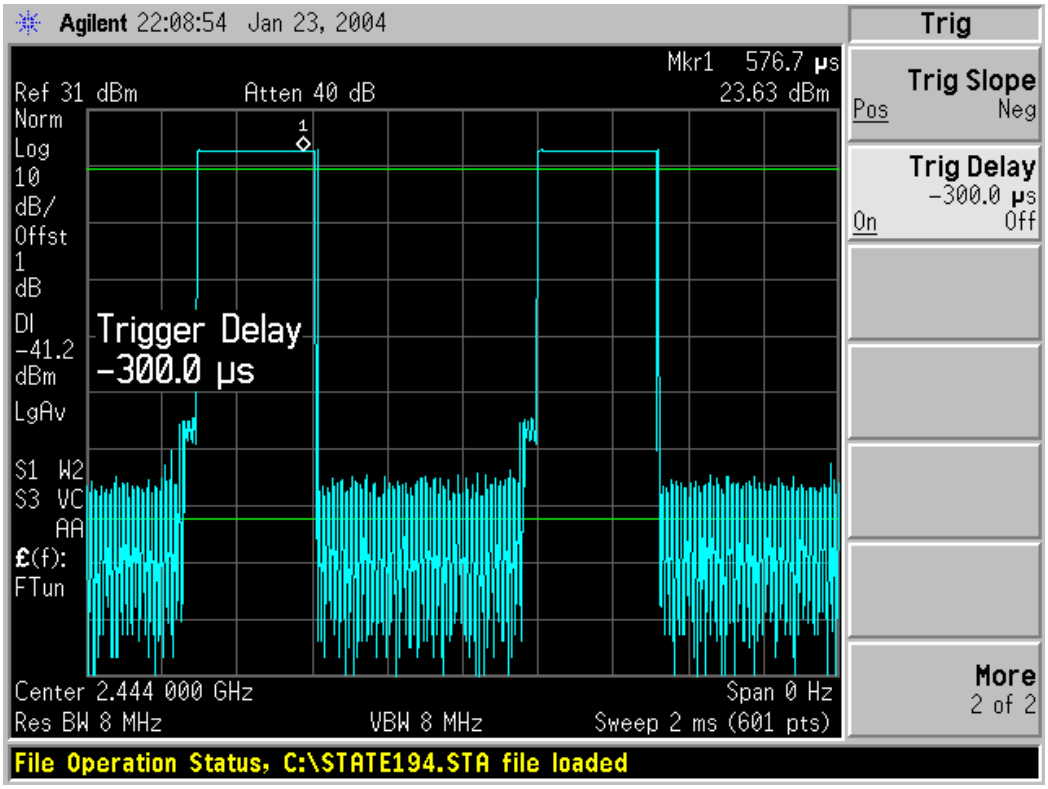


Figure 1 Frequency refresh rate and dwell time.

The FHSS pattern is randomly generated (random seed) and is unique for every W-DMX OEM PCB.

Wireless Solution Sweden AB
Stureparksvägen 7 – 451 55 Uddevalla – Sweden
+46 522 511 511 Tel. +46 522 65 33 59 Fax.
Wirelessdmx.com sales@wirelessdmx.com

2 Frequency generation

The random frequencies used by W-DMX are generated from a table ranging from lowest to highest frequency:

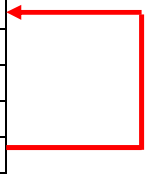
Frequency	Index	Position in look up table (example)
f_0	0	45
f_1	1	11
…	…	
f_{n-1}	n-1	0
f_n	n	74

Table below is an example of how the frequency key look up table stored in the W-DMX eeprom.

Frequency	Position in look up table (example)
f_{n-1}	0
f_{34}	1
…	
f_{15}	i-1
f_{67}	i

For every unique W-DMX a unique frequency look up table is generated that is repeated from position 0-last position. Every frequency is only repeated once and frequency change is done every 910uS. This means that W-DMX restart at frequency position 0 every (i+1)*910uS where "i" is the last position in the look up table.

Random frequency key
f_{n-1}
f_{34}
…
f_{15}
f_{67}



Wireless Solution Sweden AB
Stureparksvägen 7 – 451 55 Uddevalla – Sweden
+46 522 511 511 Tel. +46 522 65 33 59 Fax.
Wirelessdmx.com sales@wirelessdmx.com