**RedLINK CC1101 RF transceiver configuration**

|  |  |  |  |
| --- | --- | --- | --- |
| reg addr | name | value in hex | interpretation |
| 00 | GDO 2 | 06 | output is "sync word sent/rcvd" |
| 01 | GDO 1 | 0D | output is "serial data out" |
| 02 | GDO 0 | 2F.  38 | output is sometimes "hardwired to 0"  and sometimes "CLK\_XOSC/16" |
| 03 | FIFO threshold | 47 | ADC retention, threshold is 32 bytes TX, 32 bytes RX (of 64-byte FIFOs) |
| 04/05 | sync word | 63xx, | where xx=90, 65, 75, 8E, 7A, 93, 7B, 94, 83, 9C, 87, 6E, 84, 6B, 91, 78, 86, 6D, 99, 80 |
| 06 | packet length | 63 | 99 bytes(but not used in variable-packet mode) |
| 07 | packet control 1 | 44 | preamble quality threshold 2  no autoflush of RX FIFO on bad CRC  append 2 status bytes to packet RSSI (dBm signal power), CRC OK, LQI)  no address check |
| 08 | packet control 0 | 45 | data whitening on  normal FIFO mode  CRC enabled  variable packet length, set by first byte after sync word |
| 09 | device address | 0, or 06 | (for packet filtering) |
| 0A | channel number | varies | 00 1C 18 55 22 5F 2C 61 3C 79 46 0A 3E 04 5B 1E 44 08 73 36 |
| 0B | frequency control 1 | 06 | IF frequency: 152 Khz |
| 0C | frequency control 0 | 00 | frequency offset for base, in units of 1587 Hz (none) |
| 0D/0E/0F | frequency control word (H/M/L, 24 bits) | 22BB33 | 2,274,099 \* 396.7 = 902.1350 Mhz (only at init)  2,274,096 \* 396.7 = 902.1338 Mhz (all other times) |
| 10 | modem config 4 | CA | BW = 26MHz/(8\*(4+00)\*2\*\*3) = 26Mhz/(32\*8) = 101.5 Khz |
| 11 | modem config 3 | 83 | symbol rate = 26 Mhz \* (256+131)\*2\*\*10)/2\*\*28 = 38.383 Kb |
| 12 | modem config 2 | 12 | enable DC blocking, GFSK modulation, disable Manchester, 16/16 sync word bits |
| 13 | modem config 1 | 62 | disable forward error correction, 16 preamble bytes, chan spacing exponent = 2 |
| 14 | modem config 0 | F8 | chan spacing mantissa = 248. default spacing = 199.951 Khz |
| 15 | deviation | 34 | exp=3, man=4; deviation = 19.0 Khz |
| 16 | state machine 2 | 07 | default (end-of-packet timeout for sync) |
| 17 | state machine 1 | 00 | CCA always, idle after packet sent or received |
| 18 | state machine 0 | 18 | calibrate when going to RX or TX from idle;  expire count 64 (150 usec) |
| 19 | freq offset config | 16 | gain 3K, K/2, sat BWchan/4 |
| 1A | bit sync config | 6C | defaults |
| 1B | AGC control 2 | 43 |  |
| 1C | AGC control 1 | 40 |  |
| 1D | AGC control 0 | 91 |  |
| 1E/1F | event timeout (H/L) | 876B | default = 34,667, or 1 second |
| 20 | wake on radio control | F8 | default |
| 21 | RX config | 56 | default |
| 22 | TX config | 10 | default (select PATABLE entry 0) |
| 23 | freq cal 3 | E9 |  |
| 24 | freq cal 2 | 2A |  |
| 25 | freq cal 1 | 00 |  |
| 26 | freq cal 0 | 1F |  |
| 27 | RC osc config 1 | 41 |  |
| 28 | RC osc config 0 | 00 |  |
| 29 | freq calib ctl | 59 | default |
| 2A | prod test | 7F | default |
| 2B | AGC test | 3F | default |
| 2C | test2 | 81 |  |
| 2D | test1 | 35 |  |
| 2E | test0 | 09 |  |
| … |  |  |  |
| 3E | PATABLE (power amp) | C0 | default, always |

JimmySwimmy says "50 channels, 903 to 926.4 Mhz, 69 Khz each channel, 400 Khz spacing".

I see 101.5 Khz channels with spacing of 199.9 Khz. With a base frequency of 902.13 Mhz and a maximum channel number of 0x79 = 121, that implies that the highest frequency is 902.13 + 121\*.1999 = 926.31.

I can't tell yet which channel numbers are unused, or what the sequence is.

Example transmitted data packets:

12 23 30 0B FF FE E8 1F F0 00 00 87 82 12 00 E8 1F FF 81

12 23 30 0B FF FE E8 1F F0 00 00 87 82 12 00 E8 1F FF 81

12 23 30 0B FF FE E8 1F F0 00 00 87 82 12 00 E8 1F FF 81

12 23 30 0B FF FE E8 1F F0 00 00 87 82 12 00 E8 1F FF 81

15 03 31 E4 E8 1F E8 1F F0 01 00 0A 12 80 00 46 34 07 ED 7F FF 06

15 03 31 E4 E8 1F E8 1F F0 01 00 0A 12 80 00 46 34 07 ED 7F FF 06

15 03 31 E4 E8 1F E8 1F F0 01 00 0A 12 80 00 46 34 07 ED 7F FF 06