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

Other notes

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 from the Honeywell C7189R1004 indoor temperature sensor when not linked to any receiver:

```
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
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