

Pat,

It was fun tracking the SimSat-3 balloon mission today, July 25, 2007, from the K1HTV Glenn Dale, MD (grid square FM18ox) QTH. Since the 2-meter APRS beacon data was to be well documented, I focused on attempting to track the 70-cm beacons and capture some telemetry.

I first acquired the CricketSat or PICetSat beacon on approximately 433.940 MHz, 20 kHz higher than its posted 432.92 MHz frequency. AOS was at 12:23:12 UTC, but it would have been earlier if I had tuned to the higher than posted frequency. I was expecting a steady tone and had fed the audio from the IC-706MK-IIIG transceiver into the DigiPan software on the PC to measure its audio frequency. The antenna used was an old 27-element 70-cm KLM yagi at 85 feet fed with 125 feet of RG-8 type coax. I was surprised to hear the FM carrier being modulated (MCW) with "HI" followed by other Morse characters. The deviation was low and there was much fading, which made CW copy difficult at times. I started to get reasonable copy of the telemetry at 12:32z until around 12:45z, when the deviation became so low that CW copy was no longer possible.

Whenever the beacon started to send the MCW telemetry, the carrier frequency shifted downward by 500 to 600 Hz. This was probably due to a sag in the oscillator voltage because of the extra load of the telemetry circuitry being switched on for the MCW data transmission.

Here is the log of what I copied at the K1HTV balloon tracking station:

Time in UTC (currently EDT+4)

12:21:50 Reported launch of the Simsat-3 balloon from 38° 12.75' N, 75° 40.89' W  
12:22:41 Altitude = 994 ft from the SimSat-3 net on 3860 kHz SSB.  
12:23:12 AOS at K1HTV on 433,939.6 kHz  
12:24:00 Altitude = 1682 ft

Telemetry copied after each HI:

12:29:05 F51 T6-- P664?  
12:30 F52 T60- P652  
12:31:05 F53 T60- P6--  
12:32:00 F54 T603 P620  
12:32:55 F55 T601 P59-  
12:33:56 F56 T598 P572, Altitude = 14169 ft  
12:34:47 F57 T596 P546  
12:35:43 F58 T592 P---  
12:36:39 F59 T588 P---  
12:37:35 F60 T584 P443

12:38:34 F61 T580 P423, Altitude = 20333 ft  
12:39:25 F62 T575 P319?  
12:40:19 F63 T559 P373  
12:41:12 F64 T552 P355  
12:42:15 F65 T559 P332  
12:42:32 433,941.1 kHz, Altitude = 25733 ft  
12:43:03 F66 T552 P303  
12:44:02 F67 T541 P294  
12:45:03 F68 T53- P274  
12:46 Deviation too low to copy CW telemetry  
12:47:09 433,944.7 kHz, Altitude = 31937 ft  
12:54 433,947.5 kHz  
12:55 433,947.9 kHz  
12:59 433,948.5 kHz (jumps up 600 Hz)

13:00 433,949.1 kHz  
13:02 433,949.2 kHz  
13:04:45 Altitude = 47579 ft  
13:05 433,948.5 kHz  
13:06 433,948.4 kHz  
13:07:30 Altitude = 49865 ft  
13:11 Altitude = 53835 ft  
13:17 433,947.5 kHz  
13:22 433,947.1 kHz  
13:25 Altitude = 66019 ft  
13:27 433,946.7 kHz  
13:30 Altitude = 71000 ft  
13:32 433,946.7 kHz  
13:45 433,947.7 kHz  
13:45:25 Altitude = 88236 ft  
13:48 433,948.0 kHz, Altitude = 91152 ft  
13:51:23 433,948.1 kHz, Altitude = 94866 ft  
13:56:01 Altitude = 99941 ft  
13:56:40 Altitude = 100751 ft  
13:58:00 Altitude = 102260 ft  
13:59:19 Altitude = 96923 ft  
13:59:59 Altitude = 91021 ft

14:01:18 433,948.4 kHz, Altitude = 81343 ft  
14:03:57 433,948.0 kHz, Altitude = 66472 ft  
14:06 433,947.0 kHz  
14:07 433,946.5 kHz  
14:08 433,946.0 kHz  
14:09 433,945.2 kHz

14:12 433,943.6 kHz  
14:13 433,942.5 kHz  
14:15:40 433,940.9 kHz, Altitude = 31458 ft  
14:16:20 Altitude = 29981 ft  
14:17:27 433,940.3 kHz, Altitude = 26,894 ft  
14:19 433,940.0 kHz  
14:21:11 Altitude = 15146 ft  
14:23:30 433,942.0 kHz, Altitude = 11344 ft  
14:23:09 Altitude = 9497 ft  
14:23:50 Altitude = 7617 ft  
14:24:29 433,942.5 kHz Altitude = 5787 ft  
14:25:09 433,942.7 kHz Altitude = 4117  
14:25:10 433,942.8 kHz  
14:25:20 433,942.9 kHz  
14:25:48 Altitude = 2450 ft  
14:26:00 433,943.2 kHz  
14:26:21 433,943.1 kHz  
14:26:28 Altitude = 705 ft  
  
14:26:43 LOS at K1HTV Glenn Dale, MD (FM18ox) QTH

Minor edits by P.Kilroy on 8/10/2007.