

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.