

Details of downloading Spectras, ExSites and Mini Spectras

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¹\$Header: d:/00RMKb/Downloading/RCS/DnldDat.tex,v 1.7 2010-08-16 13:57:23-07 Hamilton Exp Hamilton \$

⁴tocdepth = 4

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1 Downloader Files[files]

A search through old Downloader executable files has determined that several versions of the various Downloader, and related programs, exist. There is no indication of which are the “best”, nor is there any indication of which have been “released into the wild”. The most interesting are grouped below by most likely compile date.

Name	Date/Time	Size	Screen
Esprit_110.exe	03/13/2003 04:38 PM	909,312	Figure 6, page 20
IPSMX_rts_120.exe	06/09/2004 09:16 AM	966,656	Figure 7, page 21
IPSMX_130.exe	02/16/2007 09:34 AM	958,464	Figure 9, page 22
IPSMX_200.exe	04/20/2007 10:05 AM	970,752	Figure 10, page 22
SpectraIII_IPSMX_200.exe	03/29/2007 02:51 PM	950,272	Figure 11, page 23
IPSMX_120.exe	11/14/2008 09:31 AM	966,656	Figure 12, page 23
Spectra3_100.exe	02/15/2002 03:40 PM	741,376	Figure 13, page 24
SpectraIII_110.exe	08/17/2004 01:58 PM	917,504	Figure 2, page 8
spectraiii_130.exe	10/09/2007 12:58 PM	950,272	Figure 3, page 14
Spectra_132.exe	05/17/2010 08:11 AM	954,368	Figure 4, page 16

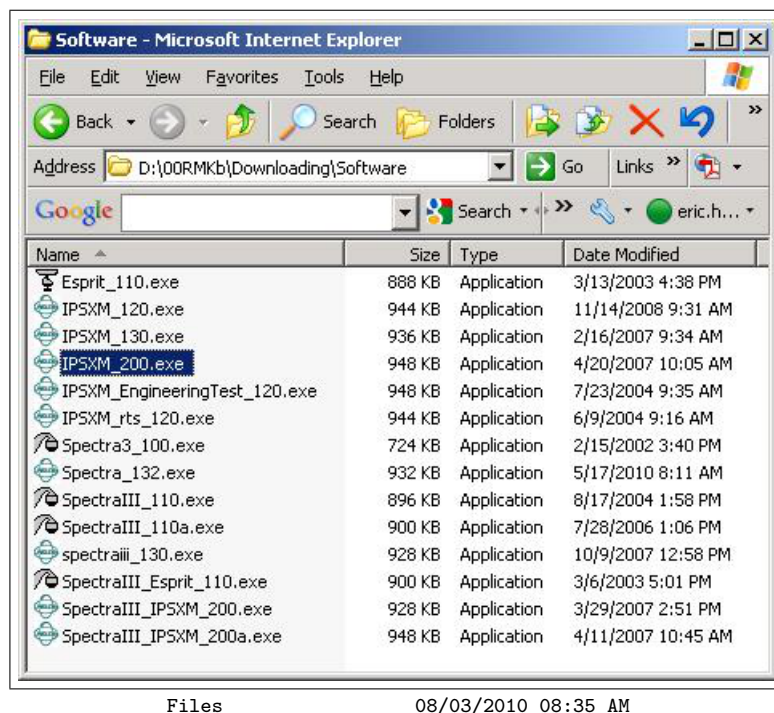


Figure 1: Initial Screen from Downloader Executable Files[Files]

⁵\$Header: d:/OORMKb/Downloading/RCS/Files.inc,v 1.4 2010-08-16 13:57:23-07 Hamilton Exp Hamilton \$

2 Downloading with a Palm Rev 1.2.1[palm121]

2.1 Attempting to download with a Palm and no file selected

```

1 # $Header: d:/OORMKb/Downloading/RCS/10aug03a.hed,v 1.1 2010-08-03 12:15:42-07 Hamilton Exp Hamilton $
2 # FTS capture buffer (8/3/2010 11:06:19 AM)
3 # Event 1 (8/3/2010 11:05:13.700879 AM) through
4 # Event 14 (8/3/2010 11:05:19.303499 AM)
5
6 # Downloading a Spectra III with a Palm rev 1.2.1 and no download file selected
7
8     1,      1: DTE      1      0.000000  0.000000 03
9
10    2,      1: DCE      2      0.211217  0.000000 01
11
12    2,      2: DTE      3      0.211226  0.000009 03
13
14    3,      2: DCE      4      1.012196  0.800970 02
15    3,      3: DCE      5      1.522243  0.510047 02
16    3,      4: DCE      6      2.032288  0.510045 02
17    3,      5: DCE      7      2.542334  0.510046 02
18    3,      6: DCE      8      3.052389  0.510055 02
19    3,      7: DCE      9      3.562427  0.510038 02
20    3,      8: DCE     10      4.072473  0.510046 02
21    3,      9: DCE     11      4.582519  0.510046 02
22    3,     10: DCE     12      5.092565  0.510046 02
23    3,     11: DCE     13      5.602608  0.510043
24    3,     12: DCE     14      5.602620  0.000012 00
25
26 # There were a total of      14 bytes transferred
27
28 # There were a total of      12 DCE bytes transferred
29 # The first DCE byte came in at 0.211217 seconds from the start of data collection
30 # The last DCE byte was at 5.602620 seconds from the start of data collection
31
32 # There were a total of      2 DTE bytes transferred
33 # The first DTE byte came in at 0.000000 seconds from the start of data collection
34 # The last DTE byte was at 0.211226 seconds from the start of data collection
35

```

2.2 Downloading a Spectra III with the Palm

```

1 # $Header: d:/OORMKb/Downloading/RCS/10aug03b.hed,v 1.1 2010-08-03 12:16:46-07 Hamilton Exp Hamilton $
2 # FTS capture buffer (8/3/2010 11:25:58 AM)
3 # Event 1 (8/3/2010 11:25:10.173981 AM) through
4 # Event 51,879 (8/3/2010 11:25:21.506069 AM)
5
6 # Downloading a Spectra III with rev 1.2.1 software on a Palm via the
7 # RJ-45 port at 115200 baud
8
9     1,      1: DTE      1      0.000000  0.000000 03
10    2,      1: DCE      2      0.212247  0.000000 01
11
12    2,      2: DTE      3      0.212256  0.000009 03
13    2,      3: DTE      4      0.220252  0.007996 53 30 30 46 30 30 30
14                                     30 36 31 37 30 37 30
15                                     35 46 36 38 36 43 36
16                                     36 35 46 36 32 36 39
17                                     30 30 30 30 45 43 0d
18    3,      2: DCE     39      0.499320  0.276259 01
19
20    3,     38: DTE     40      0.500594  0.276259 53 32
21    4,      3: DCE     42      0.500613  0.000008 01
22
23    4,     40: DTE     43      0.500622  0.000008 32 30 30 30 30 30 30

```

⁶\$Header: d:/OORMKb/Downloading/RCS/Palm121.inc,v 1.2 2010-08-03 12:13:12-07 Hamilton Exp Hamilton \$

```

24                                     30 44 45 43 30 46 45
25                                     43 41 30 31 30 30 30
26                                     30 30 30 30 30 30 30
27                                     30 32 30 30 41 36 46
28                                     39 30 37 30 30 30 30
29                                     30 30 30 30 30 30 30
30                                     30 30 30 30 30 30 30
31                                     30 30 30 30 30 30 30
32                                     30 44 30 0d
33
34      4,      107: DTE   110      0.508606  0.002170 53 32
35      5,      4: DCE   112      0.508625  0.000009 01
36
37      5,      109: DTE   113      0.508633  0.000009 32 30 30 30 30 30 31
38                                     43 30 30 30 30 30 30
39                                     30 30 33 45 30 38 30
40                                     30 30 30 43 31 46 37
41                                     46 46 46 46 34 41 36
42                                     31 36 45 32 30 33 31
43                                     33 32 32 30 33 32 33
44                                     30 33 31 33 30 30 30
45                                     33 31 33 30 33 41 33
46                                     35 37 38 0d
47
48      5,      176: DTE   180      0.516106  0.001547 53 32
49      6,      5: DCE   182      0.516125  0.000009 01
50
51      6,      178: DTE   183      0.516133  0.000009 32 30 30 30 30 30 33
52                                     38 33 38 33 41 33 30
53                                     33 38 30 30 30 30 30
54                                     30 30 30 30 36 30 30
55                                     30 30 45 41 46 30 46
56                                     30 39 46 45 35 46 30
57                                     46 30 39 46 45 35 46
58                                     30 46 30 39 46 45 35
59                                     46 30 46 30 39 46 45
60                                     35 34 44 0d
61
62      6,      245: DTE   250      0.523798  0.001876 53 32
63      7,      6: DCE   252      0.523817  0.000009 01
64

```

2.2.1 Stopping a Spectra III download with the Palm

```

1  # $Header: d:/OORMKb/Downloading/RCS/10aug03b.tal,v 1.1 2010-08-03 12:17:11-07 Hamilton Exp Hamilton $
2
3  # Ending of a Palm to Spectra III download by unplugging the cable
4
5  744,      51120: DTE 51863      6.239026  0.000010 41
6  744,      51121: DTE 51864      6.239037  0.000011 30
7  744,      51122: DTE 51865      6.239080  0.000043 45
8  744,      51123: DTE 51866      6.239359  0.000279 31
9  744,      51124: DTE 51867      6.239369  0.000010 41
10 744,      51125: DTE 51868      6.239380  0.000011 38
11
12 745,      744: DCE 51869      6.741666  0.502286 02
13 745,      745: DCE 51870      7.251713  0.510047 02
14 745,      746: DCE 51871      7.761759  0.510046 02
15 745,      747: DCE 51872      8.271804  0.510045 02
16 745,      748: DCE 51873      8.781851  0.510047 02
17 745,      749: DCE 51874      9.291897  0.510046 02
18 745,      750: DCE 51875      9.801942  0.510045 02
19 745,      751: DCE 51876     10.311988  0.510046 02
20 745,      752: DCE 51877     10.821998  0.510010 02
21 745,      753: DCE 51878     11.332077  0.510079
22 745,      754: DCE 51879     11.332088  0.000011 00
23

```

2.3 Downloading a Spectra IV with the Palm

```

1 # $Header: d:/OORMKb/Downloading/RCS/10aug03c.hed,v 1.1 2010-08-03 12:16:51-07 Hamilton Exp Hamilton $
2 # FTS capture buffer (8/3/2010 11:29:15 AM)
3 # Event 1 (8/3/2010 11:28:27.518011 AM) through
4 # Event 52,876 (8/3/2010 11:29:00.946385 AM)
5
6 # Downloading a Spectra IV from a Palm with rev 1.2.1 software via the
7 # RJ-45 port at 115200 baud
8
9     1,      1: DTE      1      0.000000  0.000000 03
10    1,      2: DTE      2      0.211638  0.211638 03
11    1,      3: DTE      3      0.421571  0.209933 03
12    1,      4: DTE      4      0.631229  0.209658 03
13    1,      5: DTE      5      0.843482  0.212253 ff 29 00 57 00 00 80
14    2,      1: DCE     12      0.845416  0.001601 ff 29 00 80
15
16    2,     12: DTE     16      0.859225  0.000278 03
17    3,      5: DCE     17      0.859568  0.000278 01
18
19    3,     13: DTE     18      0.866700  0.007132 53 30 30 46 30 30 30
20                                     30 36 31 37 30 37 30
21                                     35 46 36 38 36 43 36
22                                     36 35 46 36 32 36 39
23                                     30 30 30 30 45 43
24    4,      6: DCE     52      0.869712  0.000275 01
25
26    4,     47: DTE     53      0.869720  0.000275 0d
27    4,     48: DTE     54      0.872695  0.002975 53 32 32 30 30 30 30
28                                     30 30 30 44 45 43 30
29                                     46 45 43 41 30 31 30
30                                     30 30 30 30 30 30 30
31                                     30 30 30 32 30 30 41
32                                     36 46 39 30 37 30 30
33                                     30 30 30 30 30 30 30
34                                     30 30 30 30 30 30 30
35                                     30 30 30 30 30 30 30
36                                     30 30 30 44 30 0d
37    5,      7: DCE    123      0.879558  0.000917 01
38
39    5,    117: DTE    124      0.880787  0.000917 53 32 32 30 30 30 30
40                                     30 31 43 30 30 30 30
41                                     30 30 30 30 33 45 30
42                                     38 30 30 30 30 43 31
43                                     46 37 46 46 46 46 34
44                                     41 36 31 36 45 32 30
45                                     33 31 33 32 32 30 33
46                                     32 33 30 33 31 33 30
47                                     30 30 33 31 33 30 33
48                                     41 33 35 37 38 0d
49    6,      8: DCE    193      0.886949  0.000277 01
50
51    6,    186: DTE    194      0.888642  0.000277 53 32 32 30 30 30 30
52                                     30 33 38 33 38 33 41
53                                     33 30 33 38 30 30 30
54                                     30 30 30 30 30 30 36
55                                     30 30 30 30 45 41 46
56                                     30 46 30 39 46 45 35
57                                     46 30 46 30 39 46 45
58                                     35 46 30 46 30 39 46
59                                     45 35 46 30 46 30 39
60                                     46 45 35 34 44 0d
61    7,      9: DCE    263      0.894783  0.000406 01
62

```

3 Downloading with rev 1.20 of the original downloader[120]

Note

1. Due to problems in updating the on-screen display, there are more than one version of Rev 1.20 of the Down Loader software. The version used here seems to be correct.
2. The time from the end of one block of data to the next is about $680\mu\text{s}$.
3. The baud rate was 115200.
4. Each block of data usually consists of about 143 bytes of data.
5. The Spectra III displayed: BIOS VEERSION 1.00.0207
READY FOR DOWNLOADF...
while waiting for down load data.
6. The address field on the downloader is ignored.
7. A Spectra III down load file consists of several sub-files. The end of each sub file is marked with an S7 record, followed with an S0 record. No operator intervention is required between each sub-file for a complete download.
8. Due to a design error on the Spectra IV it is not possible to download using the RJ-45 port. The design problem relates to the UART not being able reliably work with characters that have 2 stop bits. It does work with characters that have 1 stop bit. This version of the Downloader uses 2 stop bits per character.

⁷\$Header: d:/OORMKb/Downloading/RCS/Rev120.inc,v 1.5 2010-08-16 13:57:23-07 Hamilton Exp Hamilton \$



SpectraIII-110

08/03/2010 08:35 AM

Figure 2: Initial Screen from SpectraIII_110.exe [SpectraIII-110]

3.1 Downloading on the RJ-45 port

3.1.1 Downloading a Spectra III

1. This download went to a normal ending:

```

1 # FTS capture buffer (8/16/2010 12:38:38 PM)
2 # Event 1 (8/16/2010 12:37:35.480034 PM) through
3 # Event 266,093 (8/16/2010 12:38:00.218072 PM)
4
5 # Normal download of a Spectra III using the old rev 1.20 downloader on its RJ-45
6
7     1,      1: DTE      1      0.000000 0.000000 03
8
9     2,      1: DCE      2      0.200981 0.000000 01
10
11     2,      2: DTE      3      0.200990 0.000009 03
12     2,      3: DTE      4      0.201696 0.000706 53 30 30 36 30 30 30
13 ... 30 34 38 34 34 35 32 31 42 0d
14
15     3,      2: DCE     21      0.493867 0.290881 01
16
17     3,     20: DTE     22      0.494408 0.290881 53 33 34 35 30 30 30
18 ... 30 30 30 30 30 30 30 30 30 30 36 46 43 30 30 30 30 30 37 36 43 30 30 30
19 ... 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
20 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
21 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
22 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 30 30 30 30 30
23 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 35 34 0d
24
25     4,      3: DCE    165      0.506795 0.000249 01
26
27     4,    163: DTE    166      0.507323 0.000249 53 33 34 35 30 30 30
28 ... 30 30 30 34 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
29 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 30 30 30 30 30
30 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
31 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
32 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
33 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 41 45 0d
34
35     5,      4: DCE    309      0.519868 0.000231 01
36
37     5,    306: DTE    310      0.520552 0.000231 53 33 34 35 30 30 30
38 ... 30 30 30 38 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
39 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 39 44 30 30 30
40 ... 30 30 37 36 43 30 30 30 30 30 30 37 46 39 30 30 30 30 30 38 30 39 30 30 30
41 ... 30 30 37 41 44 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
42 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
43 ... 30 30 37 36 43 30 30 30 30 30 30 37 45 44 45 43 0d
44
45     6,      5: DCE    453      0.533117 0.000275 01
46
47     6,    449: DTE    454      0.533646 0.000275 53 33 34 35 30 30 30
48 ... 30 30 30 43 30 30 30 30 30 30 37 43 39 30 30 30 30 30 37 42 44 30 30 30
49 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 45 31 30 30 30
50 ... 30 30 37 44 35 30 30 30 30 30 38 31 31 30 30 30 30 30 37 36 43 30 30 30
51 ... 30 30 37 36 43 30 30 30 30 30 30 37 36 43 30 30 30 30 30 37 36 43 30 30 30
52 ... 30 30 37 36 43 30 30 30 30 30 30 38 30 31 30 30 30 30 30 38 32 31 30 30 30
53 ... 30 30 38 31 39 30 30 30 30 30 30 37 36 43 39 45 0d
54
55     7,      6: DCE    597      0.546197 0.000372 01
56
57     7,    592: DTE    598      0.546734 0.000372 53 33 34 35 30 30 30
58 ... 30 30 31 30 30 30 30 30 30 30 30 32 38 30 30 30 30 30 31 41 34 30 30 30
59 ... 30 30 31 45 43 30 30 30 30 30 30 33 43 30 30 30 30 30 31 46 34 32 41 31
60 ... 34 45 38 30 35 32 41 32 34 45 38 30 36 32 41 34 34 45 38 30 37 46 30 30
61 ... 39 41 37 30 32 42 37 30 33 46 30 30 38 43 37 30 32 44 37 30 33 46 30 30
62 ... 35 38 37 30 32 39 37 30 33 46 30 30 32 36 30 30 32 30 30 43 46 36 30 31
63 ... 32 30 30 43 46 37 34 36 33 32 34 46 30 41 43 0d
64
65     8,      7: DCE    741      0.559287 0.000379 01

```

```

66
67      8,      735: DTE      742      0.559783 0.000379 53 33 34 35 30 30 30
68 ... 30 30 31 34 30 38 37 30 34 32 43 38 36 39 36 30 37 30 30 37 44 38 37 30
69 ... 34 36 30 30 44 39 44 32 37 38 37 30 34 36 30 37 36 39 44 31 37 38 44 30
70 ... 34 33 43 38 36 38 37 31 44 31 33 32 45 31 45 36 37 39 37 31 44 38 44 30
71 ... 34 37 36 35 41 38 37 31 44 30 31 34 45 33 30 35 37 39 37 31 44 38 44 30
72 ... 34 33 43 38 45 38 37 30 44 31 32 32 33 31 36 36 37 39 37 30 44 38 44 30
73 ... 34 37 36 35 35 38 37 32 44 33 43 45 33 44 44 0d
74
75      9,      8: DCE      885      0.572361 0.000309 01
76

```

2. This is the end of the first sub-file and the start of the second sub-file.

```

1
2      247,      246: DCE      35157      3.686610 0.000337 01
3
4      247,      34912: DTE      35158      3.687140 0.000337 53 33 34 35 30 30 30
5 ... 30 30 33 44 30 30 38 30 30 30 30 30 30 32 30 30 30 30 30 30 30 30 30 30
6 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
7 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
8 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
9 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
10 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 46 42 0d
11
12      248,      247: DCE      35301      3.699692 0.000424 01
13
14      248,      35055: DTE      35302      3.700220 0.000424 53 37
15
16      249,      248: DCE      35304      3.700239 0.000008 01
17
18      249,      35057: DTE      35305      3.700248 0.000008      30 35 30 30 30
19 ... 30 30 36 46 43 46 38 0d
20      249,      35070: DTE      35318      3.701506 0.000011 53 30 30
21
22      250,      249: DCE      35321      3.701563 0.000022 01
23
24      250,      35073: DTE      35322      3.701637 0.000022      36 30 30 30
25 ... 30 34 38 34 34 35 32 31 42 0d
26      250,      35087: DTE      35336      3.702855 0.000010 53 33 34 35 30 30 30
27 ... 30 34 30 30 30 45 30 30 44 31 33 34 37 30 30 35 35 41 41 46 46 30 31 38
28 ... 44 30 34 30 32 30 32 30 31 30 30 30 30 30 30 31 34 35 34 45 34 37 34
29 ... 43 34 39 35 33 34 38 30 30 30 30 35 30 35 32 34 35 35 33 35 33 32 30 34
30 ... 39 35 32 34 39 35 33 32 30 34 46 35 30 34 35 34 45 32 30 35 34 34 46 32
31 ... 30 34 33 34 46 34 45 35 34 34 39 34 45 35 35 34 35 30 30 35 30 35 32 34
32 ... 35 35 33 35 33 32 30 34 39 35 32 34 39 38 34 0d
33
34      251,      250: DCE      35479      3.715570 0.000414 01
35
36      251,      35230: DTE      35480      3.716092 0.000414 53 33 34 35 30 30 30
37 ... 30 34 30 34 30 35 33 32 30 34 46 35 30 34 35 34 45 32 30 35 34 34 46 32
38 ... 30 35 33 34 31 35 36 34 35 30 30 35 30 35 32 34 35 35 33 35 33 32 30 34
39 ... 39 35 32 34 39 35 33 32 30 34 33 34 43 34 46 35 33 34 35 32 30 35 34 34
40 ... 46 32 30 34 33 34 31 34 45 34 33 34 35 34 43 30 30 35 30 35 32 34 35 35
41 ... 33 35 33 32 30 34 39 35 32 34 39 35 33 32 30 34 46 35 30 34 35 34 45 32
42 ... 30 35 34 34 46 32 30 35 33 34 35 34 43 38 33 0d
43
44      252,      251: DCE      35623      3.728692 0.000276 01
45

```

3. This is the end of the second sub-file and the start of the last sub-file.

```

1
2      1594,      1593: DCE      228871      21.309137 0.000274 01
3
4      1594,      227279: DTE      228872      21.309607 0.000274 53 33 34 35 30 30 30
5 ... 31 42 43 38 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
6 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30

```

```

7 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 31 37
8 ... 31 30 30 30 30 30 30 30 30 31 38 33 34 43 30 30 30 31 42 42 35 30 31 38 30
9 ... 30 30 30 30 30 30 31 39 30 30 31 34 31 34 31 35 30 39 30 35 30 32 30 46 31
10 ... 34 30 30 30 30 30 30 30 30 30 30 30 30 30 30 38 45 0d
11
12 1595, 1594: DCE 229015 21.322206 0.000470 01
13
14 1595, 227422: DTE 229016 21.322676 0.000470 53 33 34 35 30 30 30
15 ... 31 42 43 43 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
16 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
17 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
18 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
19 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
20 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
21
22 1596, 1595: DCE 229159 21.335235 0.000379 01
23
24 1596, 227565: DTE 229160 21.335765 0.000379 53 37
25
26 1597, 1596: DCE 229162 21.335784 0.000008 01
27
28 1597, 227567: DTE 229163 21.335793 0.000008 30 35 30 30 30
29 ... 30 38 30 30 30 37 41 0d
30 1597, 227580: DTE 229176 21.337364 0.000355 53 30
31
32 1598, 1597: DCE 229178 21.337383 0.000008 01
33
34 1598, 227582: DTE 229179 21.337392 0.000008 30 45 30 30 30
35 ... 30 36 36 36 46 36 45 37 34 33 33 33 30 33 32 32 44 36 44 36 46 36 34 33
36 ... 38 0d
37 1598, 227613: DTE 229210 21.340202 0.000010 53 33 34 35 30 30 30
38 ... 31 43 30 30 30 34 36 34 46 34 45 35 34 30 30 30 33 30 30 30 33 34 37 36
39 ... 35 36 45 36 35 37 32 36 39 36 33 32 30 36 36 36 46 36 45 37 34 30 30 36
40 ... 36 36 46 36 45 37 34 33 33 33 30 33 32 32 44 36 44 36 46 36 34 30 30 33
41 ... 31 33 30 32 46 33 31 33 30 32 46 33 30 33 33 30 30 33 31 33 33 33 41 33
42 ... 30 33 39 33 41 33 31 33 34 30 30 30 30 30 30 30 30 30 30 30 30 30 30
43 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 34 36 0d
44
45 1599, 1598: DCE 229353 21.352598 0.000009 01
46
47 1599, 227756: DTE 229354 21.353335 0.000009 53 33 34 35 30 30 30
48 ... 31 43 30 34 30 30 30 46 45 30 30 37 46 30 30 46 46 30 30 46 46 46 43 30
49 ... 33 33 46 43 30 46 43 30 33 33 46 43 30 30 43 46 33 33 30 43 46 45 43 31
50 ... 33 33 37 43 38 32 43 44 33 33 34 43 42 32 43 44 33 33 34 43 42 45 43 31
51 ... 33 33 37 43 38 30 43 46 33 33 30 43 46 34 43 42 33 33 32 43 44 30 43 46
52 ... 33 33 30 43 46 46 43 30 33 33 46 43 30 46 43 30 33 33 46 43 30 30 46
53 ... 46 30 30 46 46 30 30 46 45 30 30 37 46 44 42 0d
54
55 1600, 1599: DCE 229497 21.365895 0.000348 01
56

```

4. This is the end of a normal download:

```

1
2 1852, 1851: DCE 265785 24.663707 0.000413 01
3
4 1852, 263935: DTE 265786 24.664238 0.000413 53 33 34 35 30 30 30
5 ... 31 46 46 38 30 30 30 46 45 30 30 30 46 46 38 30 36 30 31 33 45 43 30 33
6 ... 43 30 46 33 30 30 30 46 45 30 30 33 46 46 30 30 45 30 37 31 38 46 30 30
7 ... 43 30 37 31 38 43 30 33 43 30 31 31 45 43 30 33 30 30 31 30 36 43 30 33
8 ... 30 30 31 30 36 43 30 33 30 30 31 30 36 43 30 33 30 30 31 30 36 43 30 33
9 ... 38 30 31 30 45 46 30 30 43 30 37 31 38 46 30 30 43 30 37 31 38 30 30 46
10 ... 43 30 30 31 46 30 30 46 38 30 30 30 46 45 41 0d
11
12 1853, 1852: DCE 265929 24.676788 0.000307 01
13
14 1853, 264078: DTE 265930 24.677313 0.000307 53 33 34 35 30 30 30
15 ... 31 46 46 43 30 46 46 30 30 30 46 46 46 46 30 30 30 30 46 46 43 33 33
16 ... 43 33 43 33 33 33 43 43 33 33 43 43 33 33 43 43 33 33 43 43 30 46 46
17 ... 30 30 46 46 30 46 30 46 46 30 30 46 43 43 33 33 43 43 33 33 43 43 33

```

```

18 ... 33 43 43 33 33 33 43 43 33 43 33 33 43 30 30 46 46 46 46 30 30 30 30 46
19 ... 46 46 46 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30
20 ... 30 30 30 30 30 30 30 30 30 30 30 30 30 30 31 32 0d
21
22 1854,      1853: DCE      266073      24.689919  0.000276 01
23
24 1854, 264221: DTE      266074      24.690385  0.000276 53 37
25
26 1855,      1854: DCE      266076      24.690404  0.000008 01
27
28 1855, 264223: DTE      266077      24.690413  0.000008 30 35 30 30 30 31 43
29 ... 30 30 30 33 39 0d
30
31 1856,      1855: DCE      266090      24.692024  0.000396 01
32
33 1856, 264236: DTE      266091      24.692033  0.000396 85
34 1856, 264237: DTE      266092      24.738027  0.045994
35 1856, 264238: DTE      266093      24.738038  0.000011 00
36
37 # There were a total of 266093 bytes transferred
38
39 # There were a total of      1855 DCE bytes transferred
40 # The first DCE byte came in at 0.200981 seconds from the start of data collection
41 # The last DCE byte was at 24.692024 seconds from the start of data collection
42
43 # There were a total of 264238 DTE bytes transferred
44 # The first DTE byte came in at 0.000000 seconds from the start of data collection
45 # The last DTE byte was at 24.738038 seconds from the start of data collection
46

```

5. This download was intentionally disconnected part way through. There was no evidence of trying to restart communications.

```

1
2 126,      125: DCE 17733      2.097146  0.000314 01
3
4 126,      17609: DTE 17734      2.097665  0.000314 53 33 34 35 30 30 30 3
5 ...0 31 45 43 30 30 30 30 30 30 38 46 30 30 30 30 31 39 42 43 30 30 30 3
6 ...0 30 38 38 38 30 31 45 38 34 38 30 30 30 30 38 30 30 32 43 38 30 30 30 3
7 ...0 30 38 39 30 30 30 38 30 30 32 38 38 37 31 31 30 36 31 45 37 42 37 30 3
8 ...1 37 37 30 46 36 30 30 36 42 36 30 37 36 30 45 36 42 36 36 37 41 37 30 3
9 ...1 33 34 36 37 42 37 30 31 30 30 43 46 37 35 30 43 36 30 30 31 41 37 30 3
10 ...5 31 32 35 34 41 37 32 35 32 30 31 34 31 37 0d
11
12 127,      126: DCE 17877      2.110050  0.000022 01
13
14 127,      17752: DTE 17878      2.110759  0.000022 53 33 34 35 30 30 30 3
15 ...0 31 46 30 30 46 30 30 41 41 36 30 35 41 37 30 35 31 45 36 31 32 41 30 3
16 ...7 45 38 30 31 41 37 30 34 41 37 30 32 32 30 30 32 42 37 30 34 32 34 30 3
17 ...3 32 41 30 33 45 37 46 34 30 30 43 46 30 30 43 42 30 30 30 30 30 30 43 4
18 ...2 30 30 30 32 30 30 43 42 30 30 30 33 32 34 37 30 30 30 37 45 32 32 33 3
19 ...2 45 38 30 38 37 37 35 34 36 31 34 36 30 33 32 36 31 43 36 37 38 45 30 3
20 ...7 32 41 30 45 45 38 30 31 30 30 44 45 31 34 0d
21
22 # There were a total of 18020 bytes transferred
23
24 # There were a total of      126 DCE bytes transferred
25 # The first DCE byte came in at 0.201176 seconds from the start of data collection
26 # The last DCE byte was at 2.110050 seconds from the start of data collection
27
28 # There were a total of 17894 DTE bytes transferred
29 # The first DTE byte came in at 0.000000 seconds from the start of data collection
30 # The last DTE byte was at 2.123114 seconds from the start of data collection
31

```

3.1.2 Downloading a Spectra IV

3.2 Downloading on the RS-422 port

3.2.1 Downloading a Spectra III

3.2.2 Downloading a Spectra IV

4 Downloading with rev 1.3.0 of the original downloader[130]

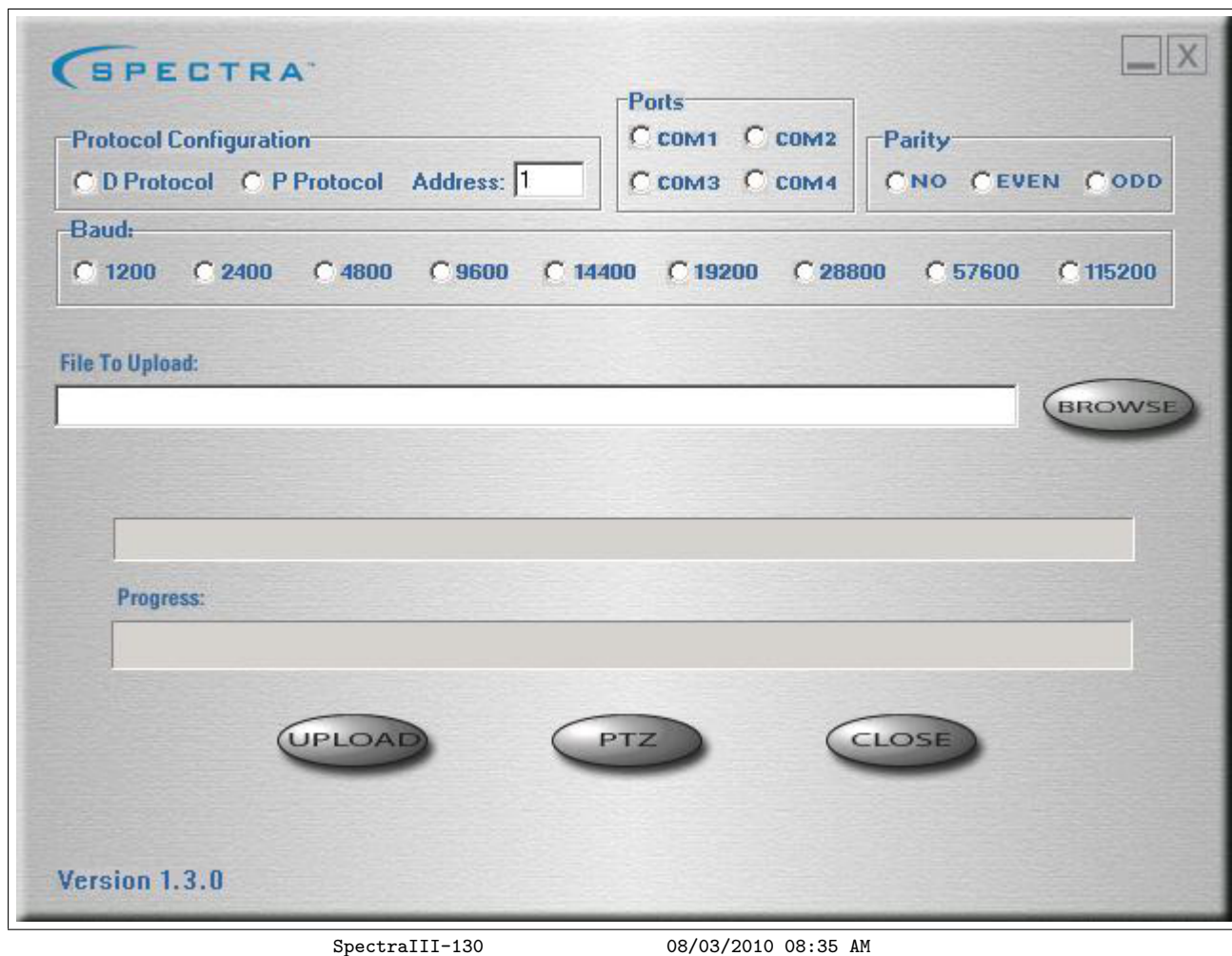


Figure 3: Initial Screen from spectraiii_130.exe[SpectraIII-130]

4.1 Downloading on the RJ-45 port

4.1.1 Downloading a Spectra III

4.1.2 Downloading a Spectra IV

Spectra IV running rev 1.07 software at address 77, port 1 on a Dell laptop.

```
1 # $Header: d:/OORMKb/Downloading/RCS/10aug02c.hed,v 1.1 2010-08-02 14:41:20-07 Hamilton Exp Hamilton $
2 # FTS capture buffer (8/2/2010 12:16:49 PM)
3 # Event 1 (8/2/2010 12:15:57.571561 PM) through
```

⁸\$Header: d:/OORMKb/Downloading/RCS/Rev130.inc,v 1.2 2010-08-12 12:59:43-07 Hamilton Exp Hamilton \$

```

4 # Event 18,482 (8/2/2010 12:16:26.446606 PM)
5
6 # Spectra III with rev 1.3.0 of the downloader on the RJ port at 115200 baud
7 # Note that it never works. It is unclear why it never starts to work.
8
9     1,      1: DTE      1      0.000000  0.000000 03
10    1,      2: DTE      2      0.200479  0.200479 03
11    1,      3: DTE      3      0.401646  0.201167 03
12    1,      4: DTE      4      0.703395  0.301749 03
13    1,      5: DTE      5      0.904385  0.200990 ff 4d 00 57 00 00 a4
14    2,      1: DCE     12      0.908352  0.003335 ff 4d 00 a4
15
16    2,     12: DTE     16      0.909202  0.000087 03
17    3,      5: DCE     17      0.911269  0.000087 01
18
19    3,     13: DTE     18      0.911891  0.000622 53 30 30 46 30 30 30
20                                           30 36 31 37 30 37 30
21                                           35 46 36 38 36 43 36
22                                           36 35 46 36 32 36 39
23                                           30 30 30 30 45 43 0d
24    4,      6: DCE     53      0.922677  0.007545 02
25
26    4,     48: DTE     54      0.923238  0.007545 53 30 30 46 30 30 30
27                                           30 36 31 37 30 37 30
28                                           35 46 36 38 36 43 36
29                                           36 35 46 36 32 36 39
30                                           30 30 30 30 45 43 0d
31    5,      7: DCE     89      0.938586  0.012256 02
32
33    5,     83: DTE     90      0.939151  0.012256 53 30 30 46 30 30 30
34                                           30 36 31 37 30 37 30
35                                           35 46 36 38 36 43 36
36                                           36 35 46 36 32 36 39
37                                           30 30 30 30 45 43 0d
38    6,      8: DCE    125      0.954304  0.012062 02
39
40 < Many more failues happen here >
41

```

4.2 Downloading on the RS-422 port

4.2.1 Downloading a Spectra III

4.2.2 Downloading a Spectra IV

5 Downloading with rev 1.3.2 of the original downloader[132]

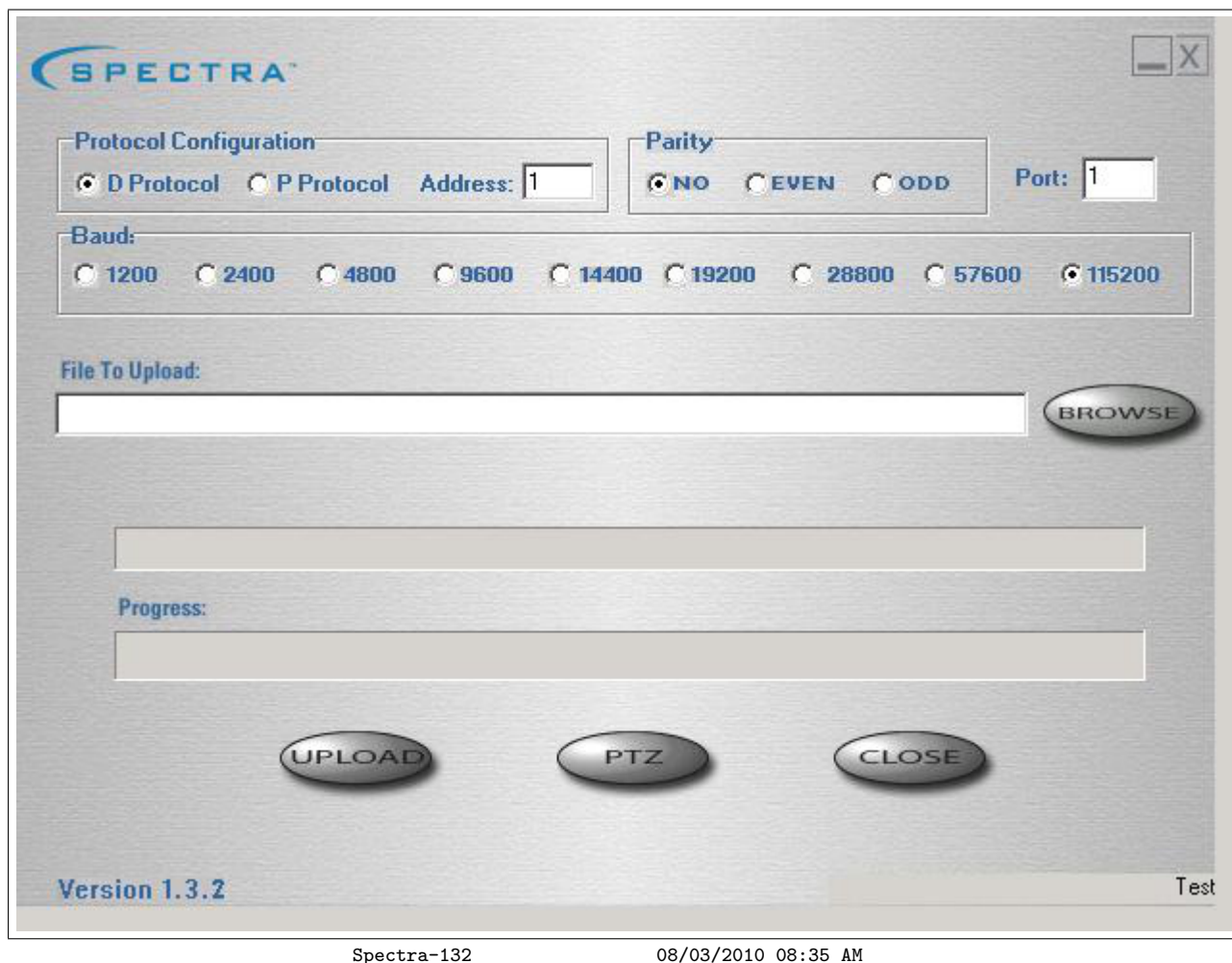


Figure 4: Initial Screen from Spectra_132.exe[Spectra-132]

5.1 Downloading on the RJ-45 port

5.1.1 Downloading a Spectra III

```

1 # $Header: d:/OORMKb/Downloading/RCS/10aug02g.hed,v 1.1 2010-08-02 14:41:31-07 Hamilton Exp Hamilton $
2 # FTS capture buffer (8/2/2010 2:35:25 PM)
3 # Event 1 (8/2/2010 2:34:16.198404 PM) through
4 # Event 61,999 (8/2/2010 2:34:44.834704 PM)
5
6 # Spectra III, downloader rev 1.3.2, RJ-45 port 115200

```

⁹\$Header: d:/OORMKb/Downloading/RCS/Rev132.inc,v 1.4 2010-08-12 12:59:43-07 Hamilton Exp Hamilton \$

```

7 # This was working normally when I stopped it due to the large capture file.
8
9 1, 1: DTE 1 0.000000 0.000000
10 1, 2: DTE 2 0.000012 0.000012 00
11 1, 3: DTE 3 0.382605 0.382593
12 1, 4: DTE 4 0.382617 0.000012 00
13 1, 5: DTE 5 0.459081 0.076464
14 1, 6: DTE 6 0.459092 0.000011 00
15 1, 7: DTE 7 17.455088 16.995996 03
16 2, 1: DCE 8 17.954794 0.499706 01
17
18 2, 8: DTE 9 17.954802 0.499706 03
19 2, 9: DTE 10 17.955500 0.000698 53 30 30 46 30 30 30
20 30 36 31 37 30 37 30
21 35 46 36 38 36 43 36
22 36 35 46 36 32 36 39
23 30 30 30 30 45 43 0d
24
25 3, 2: DCE 45 18.238777 0.280454 01
26
27 3, 44: DTE 46 18.239158 0.280454 53 32
28 4, 3: DCE 48 18.239559 0.000315 01
29
30 4, 46: DTE 49 18.239567 0.000315 32 30 30 30 30 30 30
31 30 44 45 43 30 46 45
32 43 41 30 31 30 30 30
33 30 30 30 30 30 30 30
34 30 32 30 30 41 36 46
35 39 30 37 30 30 30 30
36 30 30 30 30 30 30 30
37 30 30 30 30 30 30 30
38 30 30 30 30 30 30 30
39 30 44 30 0d
40
41 4, 113: DTE 116 18.245174 0.000011 53
42 5, 4: DCE 117 18.245451 0.000277 01
43
44 5, 114: DTE 118 18.245460 0.000277 32 32 30 30 30 30 30
45 31 43 30 30 30 30 30
46 30 30 30 33 45 30 38
47 30 30 30 30 43 31 46
48 37 46 46 46 46 34 41
49 36 31 36 45 32 30 33
50 31 33 32 32 30 33 32
51 33 30 33 31 33 30 30
52 30 33 31 33 30 33 41
53 33 35 37 38 0d
54
55 6, 5: DCE 186 18.251339 0.000275 01
56
57 6, 182: DTE 187 18.251348 0.000275 53 32 32 30 30 30 30
58 30 33 38 33 38 33 41
59 33 30 33 38 30 30 30
60 30 30 30 30 30 30 36
61 30 30 30 30 45 41 46
62 30 46 30 39 46 45 35
63 46 30 46 30 39 46 45
64 35 46 30 46 30 39 46
65 45 35 46 30 46 30 39
66 46 45 35 34 44 0d
67
68 6, 251: DTE 256 18.257216 0.000011 53 32 32
69
70 7, 6: DCE 259 18.257279 0.000009 01
71
72 < Many more messages >
73

```

5.1.2 Stopping a download sequence on a Spectra III

There is no way in software to stop a download sequence. The only known way is to disconnect the download cable. When this happens these are the communications that occur. Note that a full message was just acknowledged, a new message was “broken” and the Spectra III started to send continous LACKs (0x02) to the downloader. It only gets out of the continous LACKs when the Spectra III is powered off or after several commands, including noise, come in on the input lines.

```

1 # $Header: d:/OORMKb/Downloading/RCS/10aug02g.tal,v 1.1 2010-08-02 14:40:45-07 Hamilton Exp Hamilton $
2 # Stopping a Spectra III down load with rev 1.3.2 of the downloader
3
4 889,      61098: DTE 61986    23.536766  0.000087 30
5 889,      61099: DTE 61987    23.536853  0.000087 45
6 889,      61100: DTE 61988    23.536939  0.000086 f1
7
8 890,      889: DCE 61989    24.045877  0.508938 02
9 890,      890: DCE 61990    24.555923  0.510046 02
10 890,      891: DCE 61991    25.065969  0.510046 02
11 890,      892: DCE 61992    25.576014  0.510045 02
12 890,      893: DCE 61993    26.086061  0.510047 02
13 890,      894: DCE 61994    26.596107  0.510046 02
14 890,      895: DCE 61995    27.106152  0.510045 02
15 890,      896: DCE 61996    27.616199  0.510047 02
16 890,      897: DCE 61997    28.126245  0.510046 02
17 890,      898: DCE 61998    28.636289  0.510044
18 890,      899: DCE 61999    28.636300  0.000011 00
19
20 < Nothing more follows >

```

5.1.3 Downloading a Spectra IV

Spectra IV running rev xxx software at address 41, port on a Dell laptop.

```

1 # $Header: d:/OORMKb/Downloading/RCS/10aug02a.hed,v 1.1 2010-08-02 12:01:58-07 Hamilton Exp Hamilton $
2 # FTS capture buffer (8/2/2010 11:18:53 AM)
3 # Event 1 (8/2/2010 11:05:40.741029 AM) through
4 # Event 1,132,307 (8/2/2010 11:07:55.896381 AM)
5
6 # Downloading a Spectra IV with rev 1.3.2 in the RJ port at 115200
7 # There were no problems with this download, it was stopped because
8 # only the initial communications were wanted.
9 # Lines have been trimmed to a maximum of 75 total characters in width.
10
11
12 1,      1: DTE      1      0.000000  0.000000 03
13 1,      2: DTE      2      0.499565  0.499565 03
14 1,      3: DTE      3      0.999547  0.499982 03
15 1,      4: DTE      4      1.499532  0.499985 03
16 1,      5: DTE      5      1.999503  0.499971 ff 29 00 57 00 00 80
17 2,      1: DCE     12      2.001352  0.001516 ff 29 00 80
18
19 2,      12: DTE     16      2.002154  0.000285 03
20 3,      5: DCE     17      2.004298  0.000285 01
21
22 3,      13: DTE     18      2.004892  0.000594 53 30 30 46 30 30 30 7
23                                     30 36 31 37 30 37 30 14
24                                     35 46 36 38 36 43 36 21
25                                     36 35 46 36 32 36 39 28
26                                     30 30 30 30 45 43 0d 35
27 4,      6: DCE     53      2.007840  0.000170 01
28
29 4,      48: DTE     54      2.008372  0.000170 53 32 32 30 30 30 30 7
30                                     30 30 30 44 45 43 30 14
31                                     46 45 43 41 30 31 30 21
32                                     30 30 30 30 30 30 30 28

```

```

33                                     30 30 30 32 30 30 41 35
34                                     36 46 39 30 37 30 30 42
35                                     30 30 30 30 30 30 30 49
36                                     30 30 30 30 30 30 30 56
37                                     30 30 30 30 30 30 30 63
38                                     30 30 30 44 30 0d 69
39      5,          7: DCE      123      2.017443  0.003178 01
40
41      5,          117: DTE   124      2.017959  0.003178 53 32 32 30 30 30 30 7
42                                     30 31 43 30 30 30 30 14
43                                     30 30 30 30 33 45 30 21
44                                     38 30 30 30 30 43 31 28
45                                     46 37 46 46 46 46 34 35
46                                     41 36 31 36 45 32 30 42
47                                     33 31 33 32 32 30 33 49
48                                     32 33 30 33 31 33 30 56
49                                     30 30 33 31 33 30 33 63
50                                     41 33 35 37 38 0d 69
51      6,          8: DCE      193      2.024056  0.000290 01
52
53 < Many, many more records have been deleted >
54

```

5.1.4 Stopping a Spectra IV download sequence

Again there is no way in software to stop a download sequence. The only known way is to disconnect the download cable.

```

1  16169, 1115307: DTE1131478 110.465385 0.000010 34
2  16169, 1115308: DTE1131479 110.465396 0.000011 30
3  16169, 1115309: DTE1131480 110.465407 0.000011 e5
4
5  16170, 16172: DCE 1131481 110.479578 0.014171 02
6  16170, 16173: DCE 1131482 112.103552 1.623974 02
7  16170, 16174: DCE 1131483 112.119389 0.015837 02
8  16170, 16175: DCE 1131484 112.134949 0.015560 02
9  16170, 16176: DCE 1131485 112.150438 0.015489 02
10 16170, 16177: DCE 1131486 112.166163 0.015725 02
11 16170, 16178: DCE 1131487 112.181511 0.015348 02
12 16170, 16179: DCE 1131488 112.197324 0.015813 02
13
14 < The LNACKs never stop until more data comes in over the comm lines >
15

```

5.2 Downloading on the RS-422 port

5.2.1 Downloading a Spectra III

5.2.2 Downloading a Spectra IV

A Untested versions of the Downloader, etc.[untested]

A.1 Esprit PTZ control version

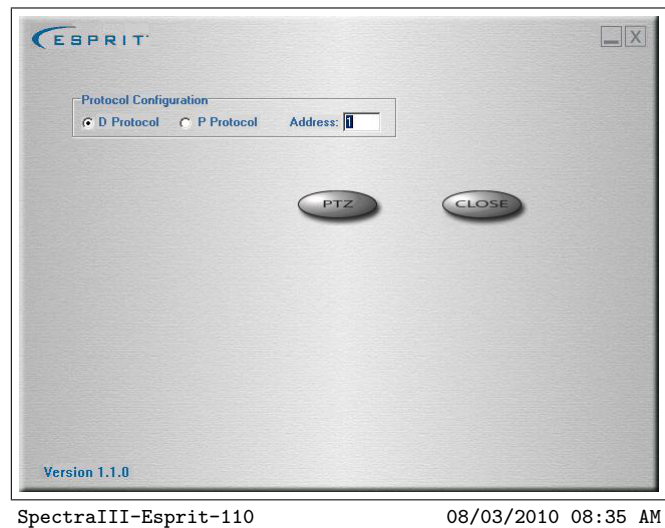


Figure 5: Initial Screen from SpectraIII_Esprit_110.exe[SpectraIII-Esprit-110]

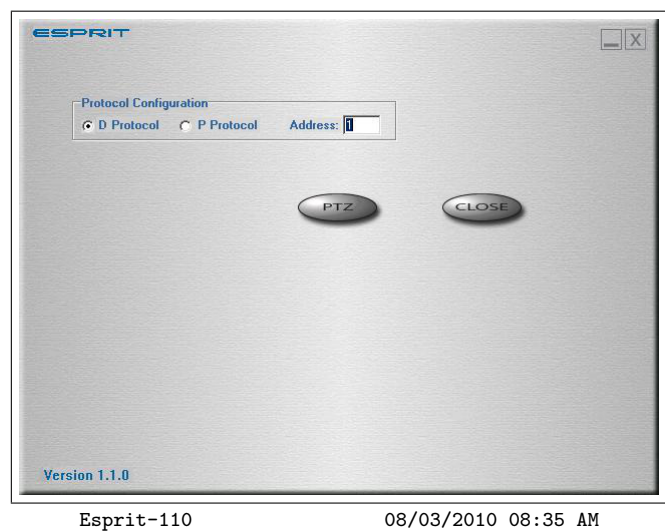


Figure 6: Initial Screen from Esprit_110.exe[Esprit-110]

A.2 ExSite downloader versions

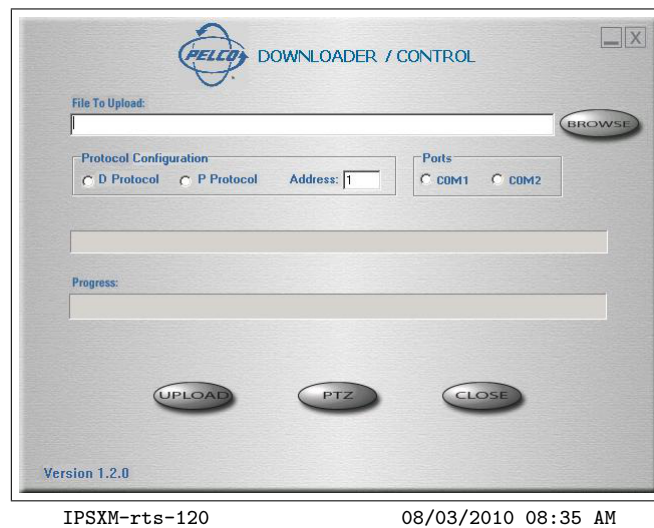


Figure 7: Initial Screen from IPSXM_rts_120.exe [IPSXM-rts-120]

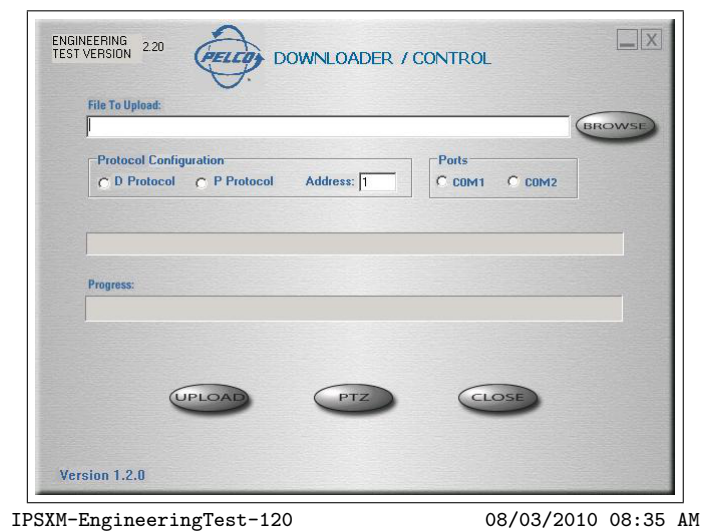


Figure 8: Initial Screen from IPSXM_EngineeringTest_120.exe [IPSXM-EngineeringTest-120]

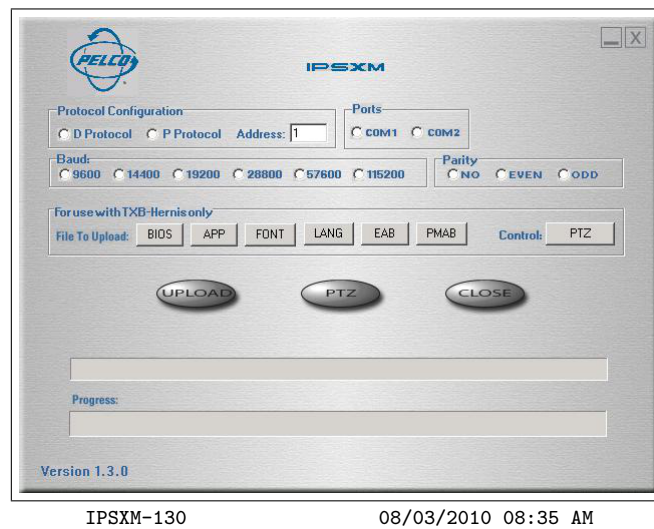


Figure 9: Initial Screen from IPSXM_130.exe [IPSM-130]

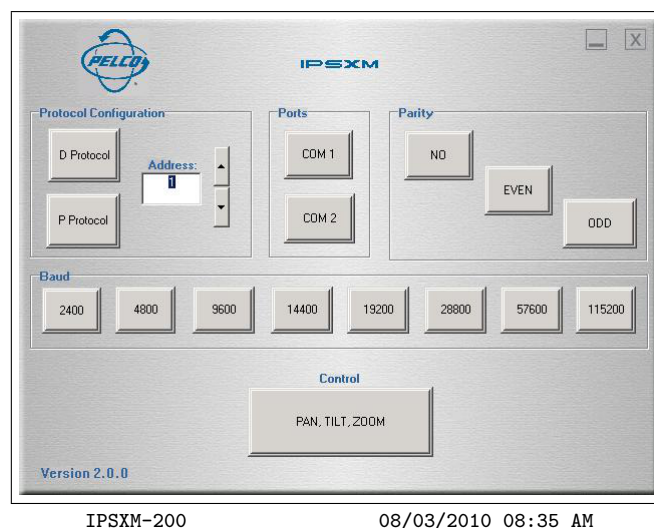


Figure 10: Initial Screen from IPSXM_200.exe [IPSM-200]

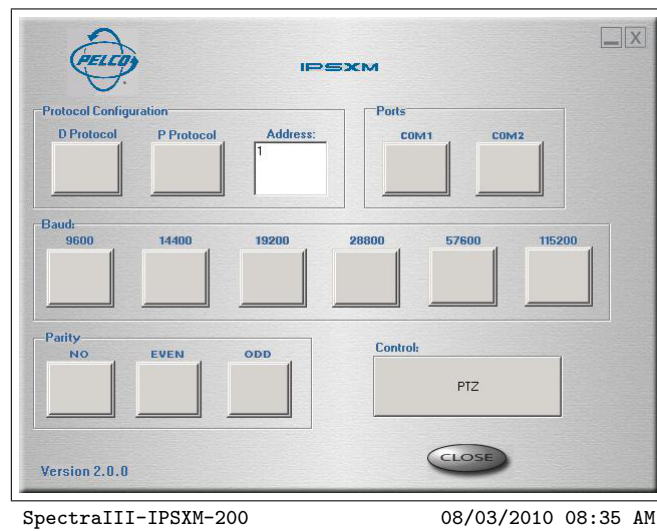


Figure 11: Initial Screen from SpectraIII_IPSM_200.exe[SpectraIII-IPSM-200]

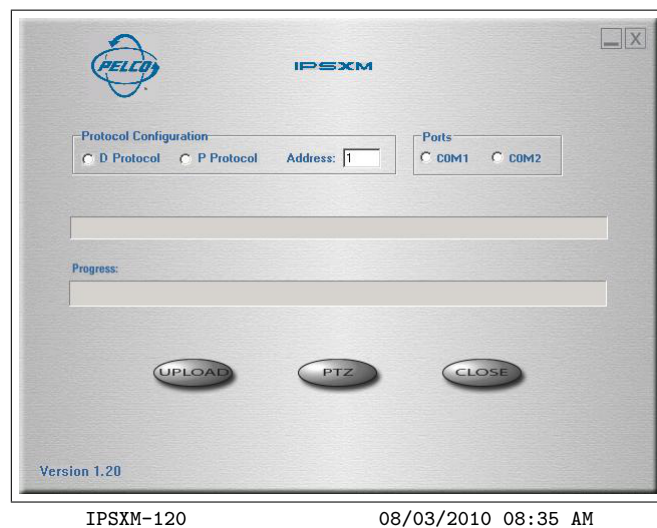


Figure 12: Initial Screen from IPSXM_120.exe[IPSM-120]

A.3 Spectra III only downloader version

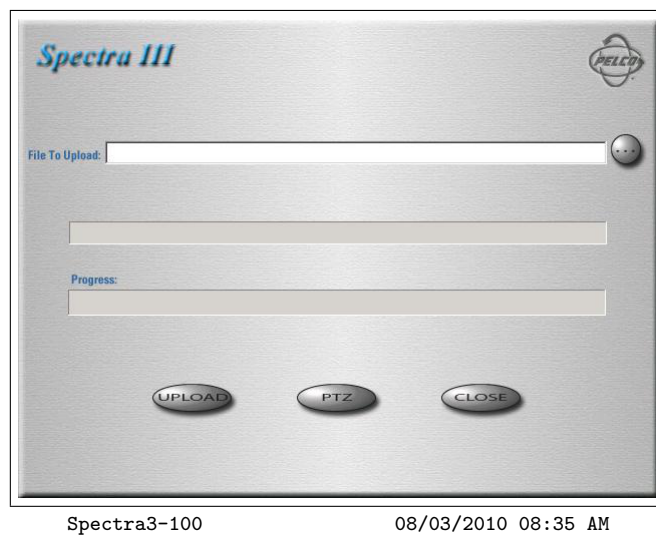


Figure 13: Initial Screen from Spectra_-100.exe[Spectra3-100]

B Description of the new `txb_sw_update` application [hanen1]

`txb_sw_update` Application Notes

Craig Hannen, 08/03/2010

The `txb_sw_update` application normally won't do very much on the TXB-N platform. In a nutshell all the app is intended to do is query the version of the image files in the Spectra 4 dome that the TXB-N is connected to. In the event that the version is different from what the TXB-N has, the `txb_sw_update` app will then go through the necessary serial port protocol used to transfer an image file over to the dome.

The `txb_sw_update` application doesn't know the baud rate or the D address used by the Spectra 4 dome, so the first thing that the app always has to do is auto-detect this information. The D Protocol query command is sent at each baud rate until a response is received (this response will also contain the dome address).

Detecting the version of an image file running on a Spectra 4 dome is simple. The D Protocol command for doing this looks something like the following:

```
[0xFF] [address] [VER_REQ_TYPE] [0x73] [0x00] [0x00] [checksum]
```

Where `VER_REQ_TYPE` can range from 0 to 12. The response to this command is always expected to look like the following:

```
[0xFF] [address] [VER_REQ_TYPE+1] [0x73] [ver-high-byte] [ver-low-byte] [checksum]
```

The `ver-high-byte` and `ver-low-byte` combine to form a 16-bit version number. An example of this would be the current Spectra 4 app file (V2.110). This version is reported as 2110 (decimal) via the protocol exchange.

The values of `VER_REQ_TYPE` represent the following:

0x00 -> app image file version request

0x02 -> app image file build number request

0x04 -> bootloader image file version request

0x06 -> font image file version request

0x08 -> string image file version request

0x0A -> wb latitude image file version request

0x0C -> wb longitude image file version request

In the event that the `txb_sw_update` application has to update an image file on the Spectra 4 dome, the app runs a state machine that will first negotiate the most reliable serial connection. Following this the app will send a D Protocol command indicating that a file transfer is about to take place. At this point the app will send Motorola S-Records line by line to the dome. The dome is always checking the validity of each S-Record. The dome will request re-sends in the event that the S-Record checksum doesn't match the expected checksum. It is expected that the dome will send the 0x01 byte to the app to acknowledge each successfully sent S-Record. Any S-Record that was received in error will cause the dome to send back a 0x02 byte indicating to re-send. After all S-Records have been sent to the dome, the app sends a 0x85 byte indicating that the full file transfer has been completed.

I should state for the record that the `txb_sw_update` app isn't perfect. I have seen file transfers fail in mid transfer. Fortunately this sort of thing doesn't happen very often, and it doesn't cause the dome to crash. The dome stores the file image outside of flash memory until the full image file transfer has completed. The file transfer that is most likely to fail is the application image file transfer. The Spectra 4 application image file is 1.2MB in size and requires about 3 minutes to transfer to the dome. Once in a while I see this file

¹⁰\$Header: d:/OORMKb/Downloading/RCS/Hanen1.inc,v 1.3 2010-08-12 12:59:43-07 Hamilton Exp Hamilton \$

transfer fail for reasons unknown. The file transfer only has to work one time assuming that the TXB-N doesn't receive new files for the update process.

txb_sw_update App Usage

So how is the app put to use? The app is stored in `/user/bin`. The image files that the app uses are stored in a zipped tarball located at `/var/local/spectra4`. This tarball contains 4 image files (application, bootloader, font and string files). The tarball also contains a brief text file summarizing version information for these four files. An init script can run `awk` to extract version information from the text file. The **txb_sw_update** app can then be called to compare the version information from the version text file with the version information stored in the Spectra 4 dome. In the init script I'm using for testing, the **txb_sw_update** application is called with the following command line options to check the app image file version info:

```
txb_sw_update -d"$sp4_folder/" -f$app_file_name -v$expected_version_number
```

In this example `-d` specifies the path name of the image file. `-f` specifies the name of the image file. `-v` specifies the expected version read from the version summary text file. The **txb_sw_update** app is expected to return 0 if the version check reveals a match. If the app returns something other than 0, then a file update becomes necessary.

An app image file can be updated with the following command line call:

```
txb_sw_update -d"$sp4_folder/" -f$app_file_name
```

In the previous two command line examples `$sp4_folder` refers to the path where the tarball resides; `/var/loca/spectra4`.

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