RMK Problem

21 April 2010

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[1] `$Header: d:/0rmk/RCS/RMK.tex,v 1.3 2010-04-20 12:10:36-07 Hamilton Exp Hamilton $`
[4] `tocdepth = 4`

1 The RMK Problem

Durning December 2009 I was asked to "look into" the problems with the RMK when using an USB to RS-232 converter. I started to look at the problem and got the following accomplished:

1. I went over and discussed the problem with Tess around the 9th of December.
2. I then got a Spectra IV modified by Dan. The first attempt at this was not succesful. I asked Tua to check it out and he, with Dan's help, found that one of the added wires had been crushed and was shorted out.
3. On the 9th of December I went over to Tess's desk and did a preliminary data capture and to get a demonstration of the problem.
4. Tess demo-ed and I got data captures from the Belkin and Micro Innovations USB to RS-232 units that she had in her desk.
5. Next I went over to building 7 to see what exerience thay had had with USB systems. I found that they and a USB data analyzer that was not currently in use and that if I needed it I could probably borrow,
6. I then went back to Tess and got four data caputres from her lap top for PTZ actions and from her Palm. (Her Palm did not need an USB to RS-232 adapter.)
7. During my December testing I marked each data capture with a letter from A → H. From my notes these are the results from the testing:

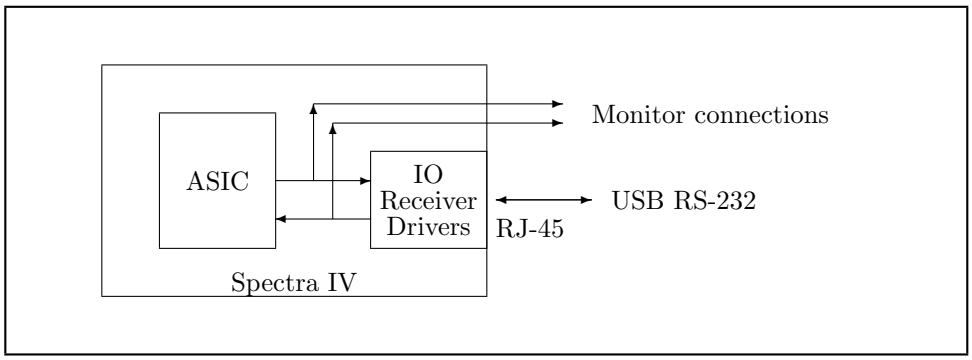
   7.1 Data captures from 09DEC09 for the USB-RS problem.

   7.1.1. **A** Micro Innovations unit PTZ work Bad
   7.1.2. **B** Belkin PTZ work OK
   7.1.3. **C** Belkin Download Bad
   7.1.4. **D** Micro Innovations unit Download OK

   7.2 Data captures from 09DEC14 with out the USB-RS adapters installed.

   7.2.1. **E** Laptop PTZ actions OK, Kinda
   7.2.2. **F** Laptop Download, took too long and terminated the run
   7.2.3. **G** Palm PTZ actions, OK no errors
   7.2.4. **H** Palm Download, OK no errors

[5] `$Header: d:/0rmk/RCS/Problem.inc,v 1.2 2010-03-23 14:50:15-08 Hamilton Exp Hamilton $`



$RCSfile: Problem.inc,v $

Figure 1: Location of monitoring wires in the Sectra IV

2 RMK Testing Results

2.1 December Testing

During December 2009, Tess and I did some preliminary testing of the RMK problem. The only results of this was a confirmation that "something was wrong". I got several data line captures showing both good and bad attempts at downloading a Spectra IV from a PC/Palm.

From the December testing we were able to draw the following conclusions:

1. The voltage levels from several USB/RS-232 converters were within specification.
2. Examining the serial output of the USB/RS-232 converter reveled that the timing of the signals was OK.
3. Through use of an internal data tap on the serial input circuits in the Spectra IV, we were able to verify that the Spectra IV receiver/driver chips were operating correctly.
4. The "problem" could be reproduced with quite short messages. The download messages are over 100 bytes in length. We were able to get failures with seven byte messages.

At this point I had to return to working on the Esprit 35X release.

2.2 RMK Testing Resumption in March

With a successful release of the Esprit software Annie and I (Tess was no longer with us) started to examine the RMK problem again.

At this point we had several USB/RS-232 converters which were "lettered" to help in identifying them:

1. **A**: A small USB/RS-232 converter with an install CD. Supplied by Steve Harris. The only model number is on the package and it is "ADL-USB-D9MS".
2. **B**: A similar to **A** USB/RS-232 converter with an install CD. This was found in Tess's old office. The only model number is on the package and it is "SBT-USC1M".
3. **C**: A Belkin USB/RS-232 converter with an install CD. It was found in Tess's office. The closest to a model number comes from the CD and it is "P73754-B F5U409-CU F5U109". The other model number might be "USB/Serial Portable Adapter".
4. **D**: A MicroInnovations USB/RS-232 converter, no CD or instructions. It was found in Tess's office. According to Steve Harris, it has the best reputation for being able to download with. No obvious model number is available.
5. **E**: An unknown USB/RS-232 converter with no CD or instructions. It was fond in Tess's office. There is no indicated manufacturer or model number.
6. **F**: An IO gear 2 port USB/RS-232 converter with an install CD. Eric brought this in from home. It is model number"GUC2322" and is made by "IO Gear". Craig Hannen used it with communicating to some hardware from Colorado. No other of our USB/RS-232 converters worked with the Colorado equipment.

[6] `$Header: d:/0rmk/RCS/Results.inc,v 1.1 2010-03-23 13:45:33-08 Hamilton Exp Hamilton $`

7. **G**: A small USB/RS-232 converter with an install CD. Is very similar to **A**. Eric bought it some time ago from a "CompUSA" going out of business sale. Model number is "Item # 60466".

8. **H**: This is identical to item **C** above which Eric brought from home. It has an install CD. At one point Siva used it for working with Linux and Windows on his system. He said that none of the other units worked at all.

9. **I**: A small USB/RS-232 converter with an install CD. It is very similar to item **A** above. Eric brought it from home for this testing. It is made by "IO Gear", the same manufacturer as item **F**. It is model number "Model GUC232A".

2.3 Results of RMK Testing Resumption

Annie carefully examined the Spectra IV source code and made several modifications for testing. We were able to get a successful download when we reduced the download speed to 57600 baud from the standard 115200 baud download speed. This testing was done with USB/RS-232 adapter **D**. (It did have the best reputation at test start.)

While Annie was working with the Spectra IV software, I started to look at the PC Version of the Downloader software. It took awhile but I finally found some apparent bugs. When the "first level" bugs were fixed, Annie and I could:

1. Download and PTZ functions were normal with USB/RS-232 converters: **B**, **D** and **E**.

2. We could get good PTZ control with USB/RS-232 converters **C** and **H**. But could not get a download to work.

3. USB/RS-232 Converters **A**, **H** and **I** just plain "didn't work" for any thing.

4. And USB/RS-232 converter **G** won the grand prize when it locked the computer up so badly that we had to reboot once and got the "blue screen of death" once.

2.4 Summary

1. USB/RS-232 converters **A**, **B**, **G** and **I**, appear to be physically identical, but have the widest range of operation. Some of them work with no reservations and one of them crashes the computer.

2. Looks do not determine the quality of operation and successful working on one project does not guarantee successful operation in a downloader application.

3. Two of the best units had no installation CD nor instructions and in one case it was impossible to determine the manufacturer's name.

   With the "easy" bug fixes in the downloader software, there should be no problems when using a "suitable" USB/RS-232 converter. It may be necessary to test each converter prior to shipping them to a customer.

4. No effort was made in testing non-PC compute platforms.

5. The PC version of the downloader has several internal problems that should be fixed. The most important of these problems relate to the human interface (GUI). At times it gets very frustrating attempting to determine what is going on when anything other than perfect conditions exist.

3 Serial Byte Timing

Communications messages are built up of several bits. These bits are sent asynchronisouly as a NRZ (Non Return to Zero) bit stream.

There are four attached scope pictures of various character streams. These are:

1. Figure 2, page 14 shows the letter "`c`" followed by a carrage return and a line feed for three bytes of data being sent at 1200 baud. This byte string was sent using USB/RS-232 converter **A**.
2. Figure 3, page 15 shows the letter "`c`" followed by a carrage return and a line feed for three bytes of data being sent at 115200 baud. This byte string was sent using USB/RS-232 converter **A**.
3. Figure 4, page 16 shows the numbers "`12345`" followed by a carrage return and a line feed for seven bytes of data being sent at 1200 baud. This byte string was sent using USB/RS-232 converter **A**.
4. Figure 5, page 17 shows the numbers "`12345`" followed by a carrage return and a line feed for seven bytes of data being sent at 115200 baud. This byte string was sent using USB/RS-232 converter **A**.

In the above scope pictures the letter `c` was chosen because it was convinent. The carrage return/line feed pair were appended by the operating system. And the string `12345` was choisen because that would give a seven byte string which is the same as is used in D Protocol.

A list of the available USB/RS-232 converters is shown in Table 1, page 7.

3.1 Contents of a character

Each character consists of:

1. One start bit,
2. Eight data bits, but the data bits may vary from $5 \rightarrow 8$ with 8 being the most common for use in CCTV control applications.
3. One parity bit of which there are five choices:
   - 3.1 Odd parity, a single bit that when added to the character provides for an odd total number of data+parity bits being sent.
   - 3.2 Even Parity, a single bit that when added to the character provides for an even total number of data+parity bits being sent.
   - 3.3 Mark Parity, a single bit that is added to the character as a "`1`" value.
   - 3.4 Space Parity, a single bit that is added to the character as a "`0`" value.
   - 3.5 No Parity, in this case the parity bit is not sent reducing the total number of bits sent by one.
4. One or two stop bits. Depending on the application each character has a stop period between characters. The stop state is what is being sent between messages, i.e. stop bits are being sent when "nothing" is being sent. Thus a UART has to be able to work correctly with stop bit counts varing from 1 to slightly less than ∞ bits. Traditional stop bit times provide for non-integer times with older values of 1.42 being a common value. The current closest value for this is 1.5 bit times for a stop bit and is supported by Windows (and most other operating systems).

[7] `$Header$`

Using the above rules for counting character bits we get, for D Protocol, 10 bit times minimum (10 = 1 start + 8 data + 0 parity + 1 stop bits) to 11 bit times maximum (10 = 1 start + 8 data + 0 parity + 2 stop bits), when bytes are in a message and many, many bit times in between messages.

The Table 2, page 7 lists timing, in μs, and Table 3, page 10, in ms, for various numbers of bits/bytes/messages at various baud rates.

A	ADL-USB-D9MS, Pan Pacific
B	SBT-USC1M, Made in Taiwan
C	Belkin USB-to-Serial Portable Adapter
D	Micro Innovations (no paper work or driver)
E	"No obvious manfacturer" (no paper work or driver)

Table 1: USB/RS-232 Converters

3.2 Bit/Byte/Message durations in μs

Byte/Bit Times in μs							
Baud	1	7	8	9	10	11	12
300	3333.333	23333.333	26666.667	30000.000	33333.333	36666.667	40000.000
600	1666.667	11666.667	13333.333	15000.000	16666.667	18333.333	20000.000
1200	833.333	5833.333	6666.667	7500.000	8333.333	9166.667	10000.000
1800	555.556	3888.889	4444.444	5000.000	5555.556	6111.111	6666.667
2400	416.667	2916.667	3333.333	3750.000	4166.667	4583.333	5000.000
3600	277.778	1944.444	2222.222	2500.000	2777.778	3055.556	3333.333
4800	208.333	1458.333	1666.667	1875.000	2083.333	2291.667	2500.000
9600	104.167	729.167	833.333	937.500	1041.667	1145.833	1250.000
14400	69.444	486.111	555.556	625.000	694.444	763.889	833.333
19200	52.083	364.583	416.667	468.750	520.833	572.917	625.000
28800	34.722	243.056	277.778	312.500	347.222	381.944	416.667
38400	26.042	182.292	208.333	234.375	260.417	286.458	312.500
57600	17.361	121.528	138.889	156.250	173.611	190.972	208.333
115200	8.681	60.764	69.444	78.125	86.806	95.486	104.167

Table 2: Byte/Bit Times in μs

Message durations in μs at 300 baud							
	1	7	8	9	10	11	12
300	3333.333	23333.333	26666.667	30000.000	33333.333	36666.667	40000.000
4	13333.333	93333.333	106666.667	120000.000	133333.333	146666.667	160000.000
7	23333.333	163333.333	186666.667	210000.000	233333.333	256666.667	280000.000
18	60000.000	420000.000	480000.000	540000.000	600000.000	660000.000	720000.000

[8] `$Header: d:/0rmk/RCS/Tus.inc,v 1.2 2010-04-21 11:40:06-07 Hamilton Exp Hamilton $`

Message durations in μs at 600 baud							
	1	7	8	9	10	11	12
600	1666.667	11666.667	13333.333	15000.000	16666.667	18333.333	20000.000
4	6666.667	46666.667	53333.333	60000.000	66666.667	73333.333	80000.000
7	11666.667	81666.667	93333.333	105000.000	116666.667	128333.333	140000.000
18	30000.000	210000.000	240000.000	270000.000	300000.000	330000.000	360000.000

Message durations in μs at 1200 baud							
	1	7	8	9	10	11	12
1200	833.333	5833.333	6666.667	7500.000	8333.333	9166.667	10000.000
4	3333.333	23333.333	26666.667	30000.000	33333.333	36666.667	40000.000
7	5833.333	40833.333	46666.667	52500.000	58333.333	64166.667	70000.000
18	15000.000	105000.000	120000.000	135000.000	150000.000	165000.000	180000.000

Message durations in μs at 1800 baud							
	1	7	8	9	10	11	12
1800	555.556	3888.889	4444.444	5000.000	5555.556	6111.111	6666.667
4	2222.222	15555.556	17777.778	20000.000	22222.222	24444.444	26666.667
7	3888.889	27222.222	31111.111	35000.000	38888.889	42777.778	46666.667
18	10000.000	70000.000	80000.000	90000.000	100000.000	110000.000	120000.000

Message durations in μs at 2400 baud							
	1	7	8	9	10	11	12
2400	416.667	2916.667	3333.333	3750.000	4166.667	4583.333	5000.000
4	1666.667	11666.667	13333.333	15000.000	16666.667	18333.333	20000.000
7	2916.667	20416.667	23333.333	26250.000	29166.667	32083.333	35000.000
18	7500.000	52500.000	60000.000	67500.000	75000.000	82500.000	90000.000

Message durations in μs at 3600 baud							
	1	7	8	9	10	11	12
3600	277.778	1944.444	2222.222	2500.000	2777.778	3055.556	3333.333
4	1111.111	7777.778	8888.889	10000.000	11111.111	12222.222	13333.333
7	1944.444	13611.111	15555.556	17500.000	19444.444	21388.889	23333.333
18	5000.000	35000.000	40000.000	45000.000	50000.000	55000.000	60000.000

Message durations in μs at 4800 baud							
	1	7	8	9	10	11	12
4800	208.333	1458.333	1666.667	1875.000	2083.333	2291.667	2500.000
4	833.333	5833.333	6666.667	7500.000	8333.333	9166.667	10000.000
7	1458.333	10208.333	11666.667	13125.000	14583.333	16041.667	17500.000
18	3750.000	26250.000	30000.000	33750.000	37500.000	41250.000	45000.000

Message durations in μs at 9600 baud							
	1	7	8	9	10	11	12
9600	104.167	729.167	833.333	937.500	1041.667	1145.833	1250.000
4	416.667	2916.667	3333.333	3750.000	4166.667	4583.333	5000.000
7	729.167	5104.167	5833.333	6562.500	7291.667	8020.833	8750.000
18	1875.000	13125.000	15000.000	16875.000	18750.000	20625.000	22500.000

Message durations in µs at 14400 baud							
	1	7	8	9	10	11	12
14400	69.444	486.111	555.556	625.000	694.444	763.889	833.333
4	277.778	1944.444	2222.222	2500.000	2777.778	3055.556	3333.333
7	486.111	3402.778	3888.889	4375.000	4861.111	5347.222	5833.333
18	1250.000	8750.000	10000.000	11250.000	12500.000	13750.000	15000.000

Message durations in µs at 19200 baud							
	1	7	8	9	10	11	12
19200	52.083	364.583	416.667	468.750	520.833	572.917	625.000
4	208.333	1458.333	1666.667	1875.000	2083.333	2291.667	2500.000
7	364.583	2552.083	2916.667	3281.250	3645.833	4010.417	4375.000
18	937.500	6562.500	7500.000	8437.500	9375.000	10312.500	11250.000

Message durations in µs at 28800 baud							
	1	7	8	9	10	11	12
28800	34.722	243.056	277.778	312.500	347.222	381.944	416.667
4	138.889	972.222	1111.111	1250.000	1388.889	1527.778	1666.667
7	243.056	1701.389	1944.444	2187.500	2430.556	2673.611	2916.667
18	625.000	4375.000	5000.000	5625.000	6250.000	6875.000	7500.000

Message durations in µs at 38400 baud							
	1	7	8	9	10	11	12
38400	26.042	182.292	208.333	234.375	260.417	286.458	312.500
4	104.167	729.167	833.333	937.500	1041.667	1145.833	1250.000
7	182.292	1276.042	1458.333	1640.625	1822.917	2005.208	2187.500
18	468.750	3281.250	3750.000	4218.750	4687.500	5156.250	5625.000

Message durations in µs at 57600 baud							
	1	7	8	9	10	11	12
57600	17.361	121.528	138.889	156.250	173.611	190.972	208.333
4	69.444	486.111	555.556	625.000	694.444	763.889	833.333
7	121.528	850.694	972.222	1093.750	1215.278	1336.806	1458.333
18	312.500	2187.500	2500.000	2812.500	3125.000	3437.500	3750.000

Message durations in µs at 115200 baud							
	1	7	8	9	10	11	12
115200	8.681	60.764	69.444	78.125	86.806	95.486	104.167
4	34.722	243.056	277.778	312.500	347.222	381.944	416.667
7	60.764	425.347	486.111	546.875	607.639	668.403	729.167
18	156.250	1093.750	1250.000	1406.250	1562.500	1718.750	1875.000

3.3 Bit/Byte/Message durations in ms

Byte/Bit Times in ms							
Baud	1	7	8	9	10	11	12
300	3.333	23.333	26.667	30.000	33.333	36.667	40.000
600	1.667	11.667	13.333	15.000	16.667	18.333	20.000
1200	0.833	5.833	6.667	7.500	8.333	9.167	10.000
1800	0.556	3.889	4.444	5.000	5.556	6.111	6.667
2400	0.417	2.917	3.333	3.750	4.167	4.583	5.000
3600	0.278	1.944	2.222	2.500	2.778	3.056	3.333
4800	0.208	1.458	1.667	1.875	2.083	2.292	2.500
9600	0.104	0.729	0.833	0.938	1.042	1.146	1.250
14400	0.069	0.486	0.556	0.625	0.694	0.764	0.833
19200	0.052	0.365	0.417	0.469	0.521	0.573	0.625
28800	0.035	0.243	0.278	0.313	0.347	0.382	0.417
38400	0.026	0.182	0.208	0.234	0.260	0.286	0.313
57600	0.017	0.122	0.139	0.156	0.174	0.191	0.208
115200	0.009	0.061	0.069	0.078	0.087	0.095	0.104

Table 3: Byte/Bit Times in ms

Message durations in ms at 300 baud							
	1	7	8	9	10	11	12
300	3.333	23.333	26.667	30.000	33.333	36.667	40.000
4	13.333	93.333	106.667	120.000	133.333	146.667	160.000
7	23.333	163.333	186.667	210.000	233.333	256.667	280.000
18	60.000	420.000	480.000	540.000	600.000	660.000	720.000

Message durations in ms at 600 baud							
	1	7	8	9	10	11	12
600	1.667	11.667	13.333	15.000	16.667	18.333	20.000
4	6.667	46.667	53.333	60.000	66.667	73.333	80.000
7	11.667	81.667	93.333	105.000	116.667	128.333	140.000
18	30.000	210.000	240.000	270.000	300.000	330.000	360.000

Message durations in ms at 1200 baud							
	1	7	8	9	10	11	12
1200	0.833	5.833	6.667	7.500	8.333	9.167	10.000
4	3.333	23.333	26.667	30.000	33.333	36.667	40.000
7	5.833	40.833	46.667	52.500	58.333	64.167	70.000
18	15.000	105.000	120.000	135.000	150.000	165.000	180.000

[9] `$Header: d:/0rmk/RCS/Tms.inc,v 1.2 2010-04-21 11:40:06-07 Hamilton Exp Hamilton $`

Message durations in ms at 1800 baud							
	1	7	8	9	10	11	12
1800	0.556	3.889	4.444	5.000	5.556	6.111	6.667
4	2.222	15.556	17.778	20.000	22.222	24.444	26.667
7	3.889	27.222	31.111	35.000	38.889	42.778	46.667
18	10.000	70.000	80.000	90.000	100.000	110.000	120.000

Message durations in ms at 2400 baud							
	1	7	8	9	10	11	12
2400	0.417	2.917	3.333	3.750	4.167	4.583	5.000
4	1.667	11.667	13.333	15.000	16.667	18.333	20.000
7	2.917	20.417	23.333	26.250	29.167	32.083	35.000
18	7.500	52.500	60.000	67.500	75.000	82.500	90.000

Message durations in ms at 3600 baud							
	1	7	8	9	10	11	12
3600	0.278	1.944	2.222	2.500	2.778	3.056	3.333
4	1.111	7.778	8.889	10.000	11.111	12.222	13.333
7	1.944	13.611	15.556	17.500	19.444	21.389	23.333
18	5.000	35.000	40.000	45.000	50.000	55.000	60.000

Message durations in ms at 4800 baud							
	1	7	8	9	10	11	12
4800	0.208	1.458	1.667	1.875	2.083	2.292	2.500
4	0.833	5.833	6.667	7.500	8.333	9.167	10.000
7	1.458	10.208	11.667	13.125	14.583	16.042	17.500
18	3.750	26.250	30.000	33.750	37.500	41.250	45.000

Message durations in ms at 9600 baud							
	1	7	8	9	10	11	12
9600	0.104	0.729	0.833	0.938	1.042	1.146	1.250
4	0.417	2.917	3.333	3.750	4.167	4.583	5.000
7	0.729	5.104	5.833	6.563	7.292	8.021	8.750
18	1.875	13.125	15.000	16.875	18.750	20.625	22.500

Message durations in ms at 14400 baud							
	1	7	8	9	10	11	12
14400	0.069	0.486	0.556	0.625	0.694	0.764	0.833
4	0.278	1.944	2.222	2.500	2.778	3.056	3.333
7	0.486	3.403	3.889	4.375	4.861	5.347	5.833
18	1.250	8.750	10.000	11.250	12.500	13.750	15.000

Message durations in ms at 19200 baud							
	1	7	8	9	10	11	12
19200	0.052	0.365	0.417	0.469	0.521	0.573	0.625
4	0.208	1.458	1.667	1.875	2.083	2.292	2.500
7	0.365	2.552	2.917	3.281	3.646	4.010	4.375
18	0.938	6.563	7.500	8.438	9.375	10.313	11.250

Message durations in ms at 28800 baud							
	1	7	8	9	10	11	12
28800	0.035	0.243	0.278	0.313	0.347	0.382	0.417
4	0.139	0.972	1.111	1.250	1.389	1.528	1.667
7	0.243	1.701	1.944	2.188	2.431	2.674	2.917
18	0.625	4.375	5.000	5.625	6.250	6.875	7.500

Message durations in ms at 38400 baud							
	1	7	8	9	10	11	12
38400	0.026	0.182	0.208	0.234	0.260	0.286	0.313
4	0.104	0.729	0.833	0.938	1.042	1.146	1.250
7	0.182	1.276	1.458	1.641	1.823	2.005	2.188
18	0.469	3.281	3.750	4.219	4.688	5.156	5.625

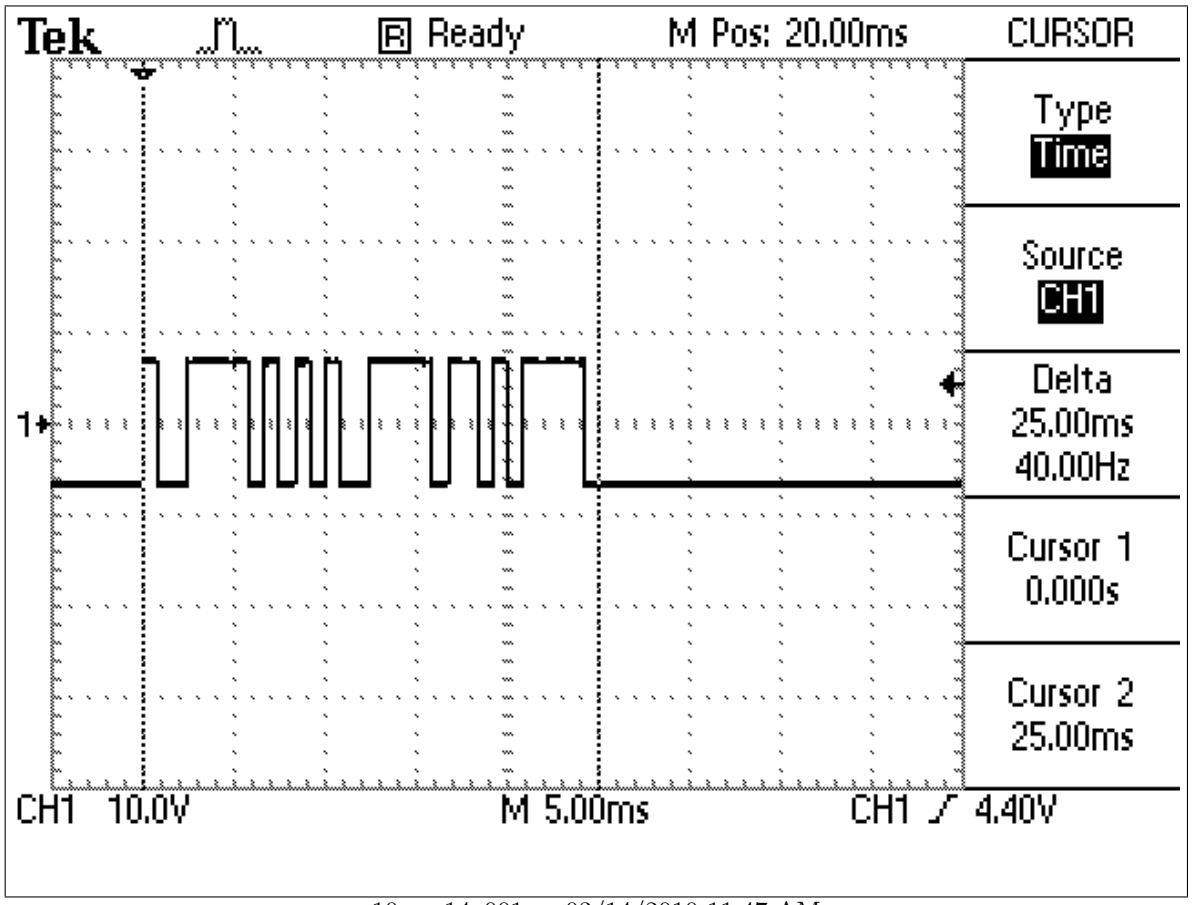
Message durations in ms at 57600 baud							
	1	7	8	9	10	11	12
57600	0.017	0.122	0.139	0.156	0.174	0.191	0.208
4	0.069	0.486	0.556	0.625	0.694	0.764	0.833
7	0.122	0.851	0.972	1.094	1.215	1.337	1.458
18	0.313	2.188	2.500	2.813	3.125	3.438	3.750

Message durations in ms at 115200 baud							
	1	7	8	9	10	11	12
115200	0.009	0.061	0.069	0.078	0.087	0.095	0.104
4	0.035	0.243	0.278	0.313	0.347	0.382	0.417
7	0.061	0.425	0.486	0.547	0.608	0.668	0.729
18	0.156	1.094	1.250	1.406	1.563	1.719	1.875

3.4 Scope pictures of byte strings

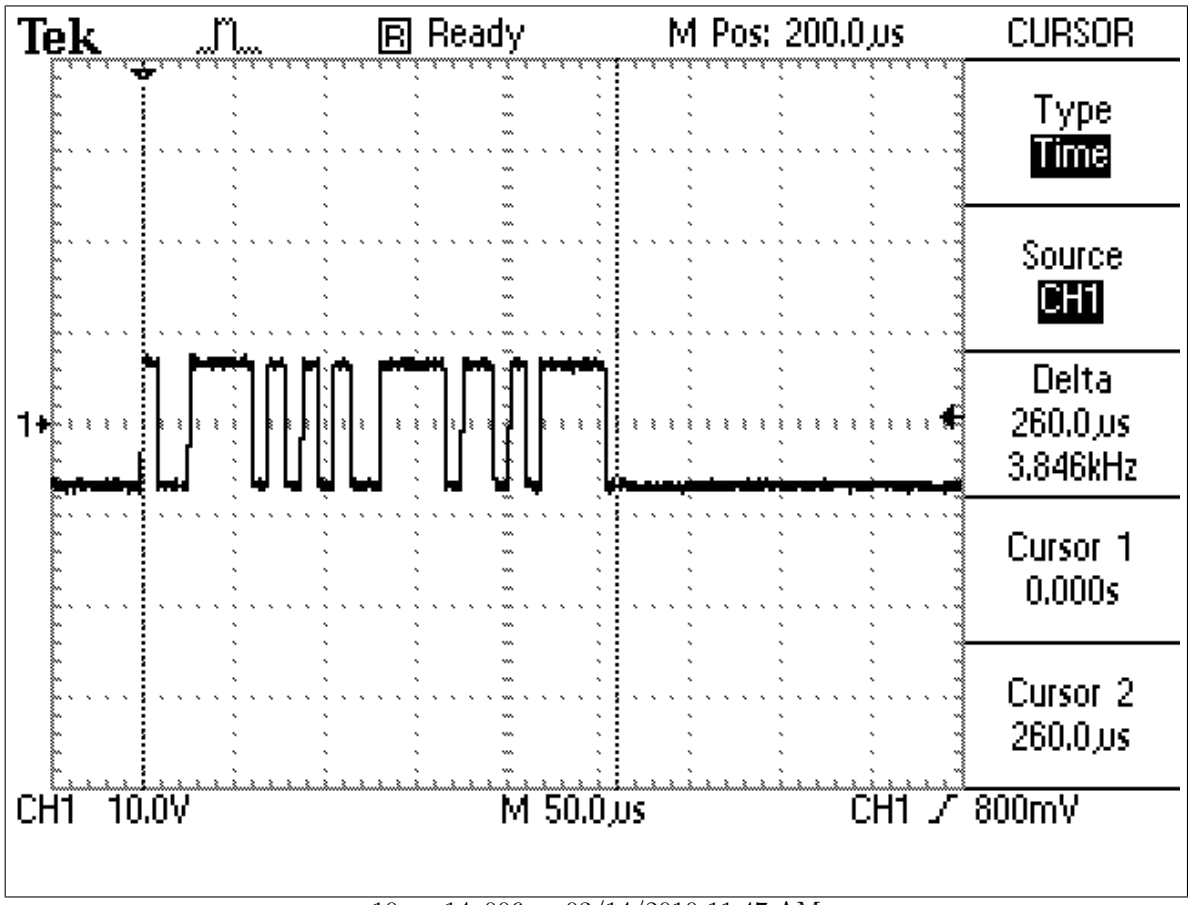
Note

These pictures were taken using a Tektronics model TDS-224 digital oscillscope on March 14^{th}, 2010.



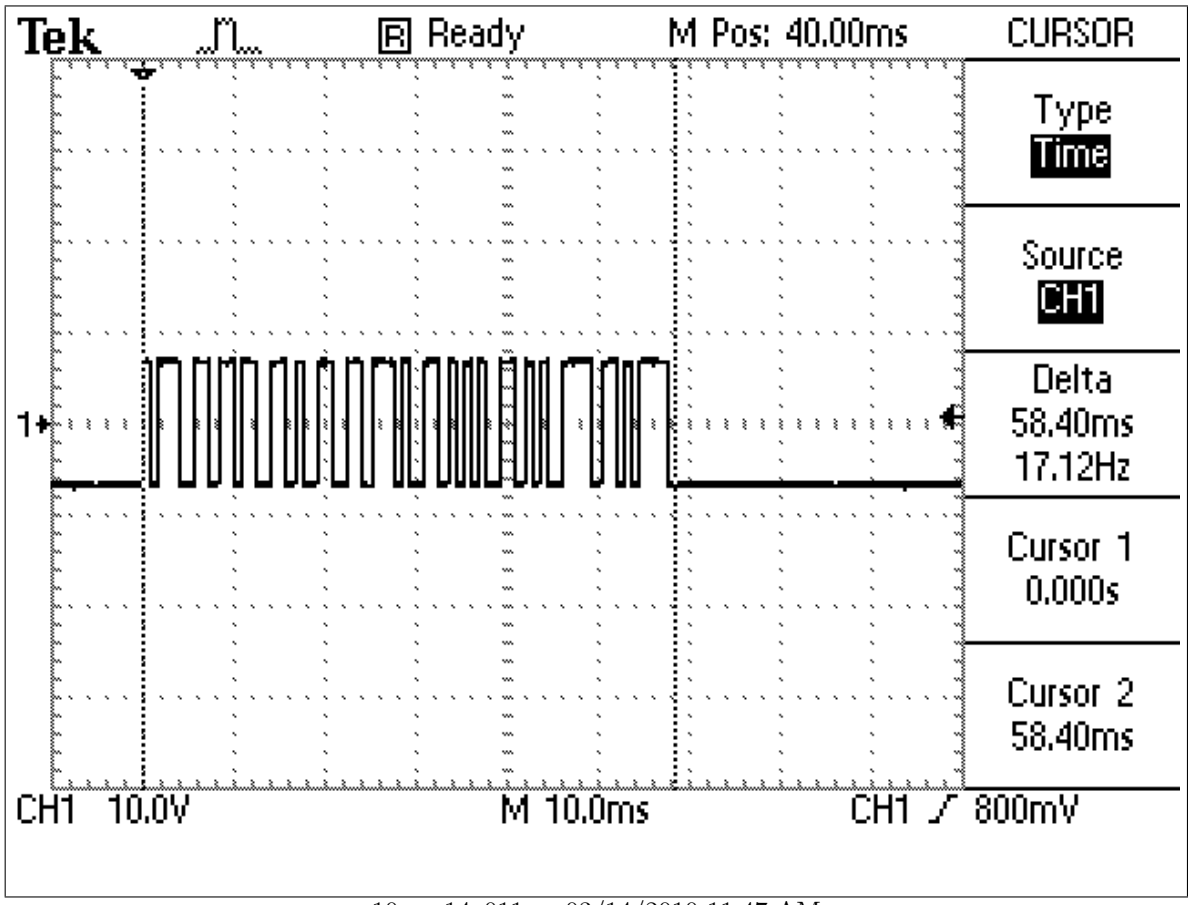
10mar14a001.ps 03/14/2010 11:47 AM

Figure 2: **com3: A 1200, 8,** `C`



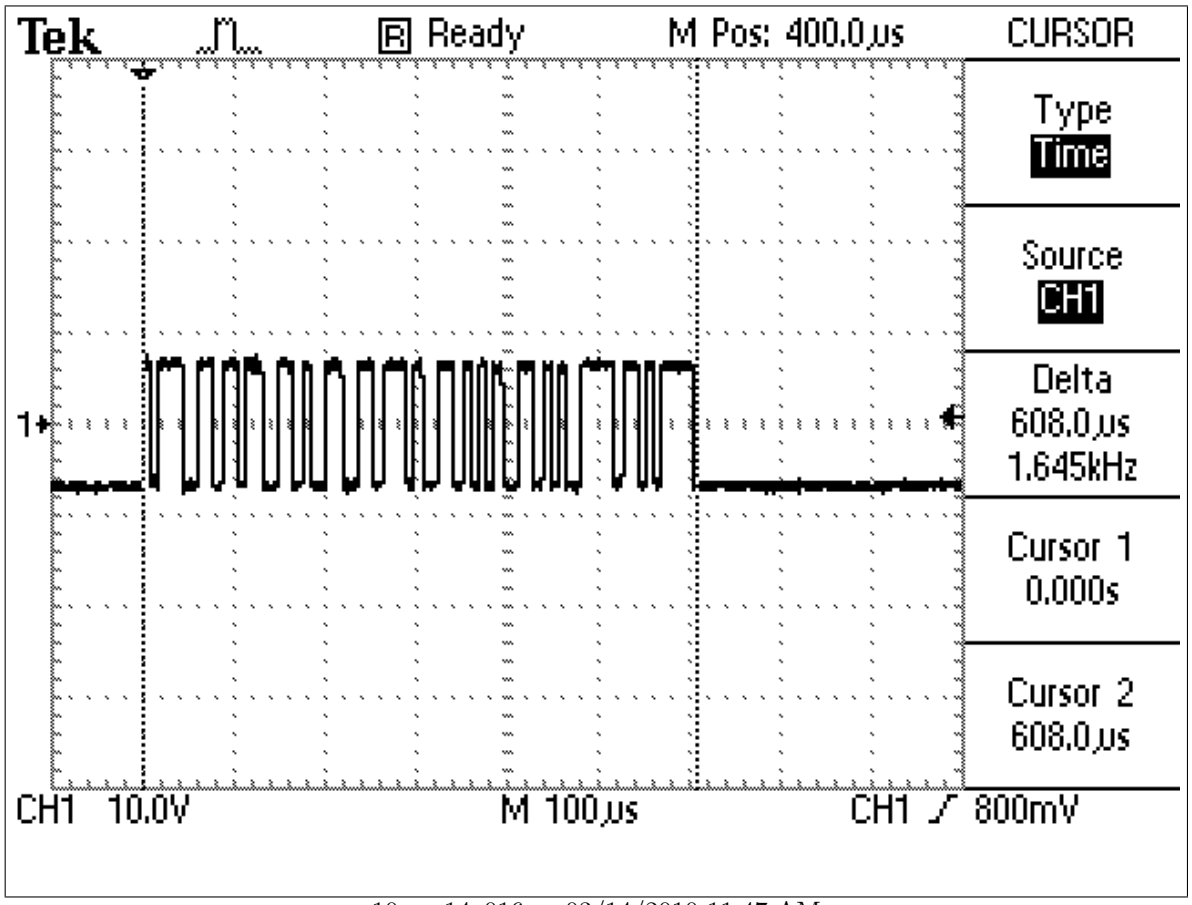
10mar14a006.ps 03/14/2010 11:47 AM

Figure 3: **com3: A 115200, 8,** `C`



10mar14a011.ps 03/14/2010 11:47 AM

Figure 4: **com3: A 1200, 8,** 12345



10mar14a016.ps 03/14/2010 11:47 AM

Figure 5: **com3: A 115200, 8,** 12345

A Serial Data Captures

A.1 Bad Download 09DEC09D.TXT

```
  1  # $ Header: d:/Tess/RCS/DnldDump.l,v 1.2 2009-12-10 14:51:36-08 Hamilton Exp Hamilton $
  2  # $Header: d:/0rmk/RCS/09DEC09D.txt,v 1.1 2010-03-14 12:27:22-08 Hamilton Exp Hamilton $
  3  # Fri Dec 11 07:57:12 2009
  4
  5
  6  # $ Header: d:/Tess/RCS/JustDlta.l,v 1.1 2009-12-10 13:26:17-08 Hamilton Exp Hamilton $
  7  # $Header: d:/0rmk/RCS/09DEC09D.txt,v 1.1 2010-03-14 12:27:22-08 Hamilton Exp Hamilton $
  8  # Fri Dec 11 07:57:06 2009
  9  # FTS capture buffer (12/9/2009 2:47:43 PM)
 10  # Event 1 (12/9/2009 2:40:47.446188 PM) through
 11  # Event 1,688,796 (12/9/2009 2:47:09.280484 PM)
 12         5   0.000000 #  03
 13         5   0.500748 #  03
 14         5   0.500811 #  03
 15         5   0.501166 #  03
 16         5   0.500868 #  ff  01  00  57  00  00  58
 17
 18        10   0.000278 #  ff  01  00  58
 19
 20        15   0.001961 #  03
 21        20   0.001961 #  01
 22        25   0.001961 #  53  30  30  46  30  30  30  30  36  36  36  46  36  45  37  34  35  46  37  34  36  31  36  32
36  43  36  35  30  30  30  30  44  32  0d,     1165
 23        30   0.008885 #  02
 24        35   0.000869 #  53  30  30  46  30  30  30  30  36  36  36  46  36  45  37  34  35  46  37  34  36  31  36  32
36  43  36  35  30  30  30  30  44  32  0d,     1165
 25        40   0.000011 #  02
 26  < Identical lines deleted here >
 27        85   0.000011 #  53  30  30  46  30  30  30  30  36  36  36  46  36  45  37  34  35  46  37  34  36  31  36  32
36  43  36  35  30  30  30  30  44  32  0d,     1165
 28        90   0.000008 #  01
 29        95   0.000773 #  53  32  32  30  30  30  30  30  30  30  44  45  43  30  46  45  43  41  30  34  30  30  30  30
30  30  30  30  30  30  30  43  30  30  45  30  37  41  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  46  0d,     2177
 30       100   0.000011 #  02
 31       105   0.000011 #  53  32  32  30  30  30  30  30  30  30  44  45  43  30  46  45  43  41  30  34  30  30  30  30
30  30  30  30  30  30  30  43  30  30  45  30  37  41  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  46  0d,     2177
 32       110   0.008084 #  02
 33  < Identical lines deleted here >
 34       155   0.001007 #  53  32  32  30  30  30  30  30  30  30  44  45  43  30  46  45  43  41  30  34  30  30  30  30
30  30  30  30  30  30  30  43  30  30  45  30  37  41  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  46  0d,     2177
 35       160   0.000279 #  02
 36       165   0.000279 #  53  32  32  30  30  30  30  30  30  30  44  45  43  30  46  45  43  41  30  34  30  30  30  30
30  30  30  30  30  30  30  43  30  30  45  30  37  41  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  46  0d,     2177
 37       170   0.000717 #  01
 38       175   0.000882 #  53  32  32  30  30  30  30  30  31  43  30  30  30  30  30  30  30  30  36  35  30  30  30  30
30  30  39  41  46  46  46  46  46  46  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  43  37  0d,     2175
 39       180   0.000010 #  02
 40       185   0.000010 #  53  32  32  30  30  30  30  30  31  43  30  30  30  30  30  30  30  30  36  35  30  30  30  30
30  30  39  41  46  46  46  46  46  46  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  43  37  0d,     2175
 41       190   0.008082 #  02
 42  < Many, Many identical lines deleted here >
 43
```

A.2 Good Download 09DEC14H.TXT

```
  1  # $ Header: d:/Tess/RCS/DnldDump.l,v 1.2 2009-12-10 14:51:36-08 Hamilton Exp Hamilton $
  2  # $Header: d:/0rmk/RCS/09DEC14H.txt,v 1.2 2010-03-25 07:01:59-08 Hamilton Exp Hamilton $
  3  # Mon Dec 14 12:08:42 2009
  4
  5  # $ Header: d:/Tess/RCS/JustDlta.l,v 1.1 2009-12-10 13:26:17-08 Hamilton Exp Hamilton $
  6  # $Header: d:/0rmk/RCS/09DEC14H.txt,v 1.2 2010-03-25 07:01:59-08 Hamilton Exp Hamilton $
  7  # Mon Dec 14 12:08:41 2009
  8  # FTS capture buffer (12/14/2009 12:04:35 PM)
  9  # Event 1 (12/14/2009 12:03:33.877690 PM) through
 10  # Event 78,894 (12/14/2009 12:03:54.775643 PM)
 11         5  0.000000  # 03
 12         5  0.203021  # 03
 13         5  0.202756  # 03
 14         5  0.201976  # 03
 15         5  0.202036  # ff 01 00 57 00 00 58
 16
 17        10  0.000024  # ff 01 00 58
 18
 19        15  0.000574  # 03
 20        20  0.000574  # 01
 21        25  0.000574  # 53 30 30 46 30 30 30 30 36 36 36 46 36 45 37 34 35 46 37 34 36 31 36 32 36 43 36 35 30 30 30 30 44
32 0d,     1165
 22        30  0.000314  # 01
 23        35  0.001364  # 53 32 32 30 30 30 30 30 30 30 30 44 45 43 30 46 45 43 41 30 34 30 30 30 30 30 30 30 30 30 30 43 30
30 45 30 37 41 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 46 0d,     2177
 24        40  0.000278  # 01
 25        45  0.000278  # 53 32 32 30 30 30 30 30 31 43 30 30 30 30 30 30 30 30 36 35 30 30 30 30 30 30 39 41 46 46 46 46 46
46 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 43 37 0d,     2175
 26        50  0.000281  # 01
 27        55  0.001276  # 53 32 32 30 30 30 30 30 30 33 38 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 34 33 34 39 35 33 34
31 30 31 30 30 30 31 30 30 39 39 30 30 31 30 31 30 30 30 30 30 34 35 36 45 36 37 36 43 36 39 37 33 36 41 0d,     2184
 28        60  0.000288  # 01
 29        65  0.000288  # 53 32 32 30 30 30 30 30 35 34 36 38 30 30 36 43 36 31 36 45 36 37 35 46 36 35 36 45 36 37 32 45 36
32 36 39 36 45 30 30 33 30 33 34 32 46 33 31 33 33 32 46 33 30 33 37 30 30 33 31 33 35 33 41 33 30 32 34 0d,     2328
 30  < Very much following, good, data delted >
```

A.3 Bad PTZ Commands

09DEC09E.OUT

```
  1 # FTS capture buffer (12/14/2009 11:22:45 AM)
  2 # Event 1 (12/14/2009 11:22:07.532847 AM) through
  3 # Event 446 (12/14/2009 11:22:29.590331 AM)
  4
  5       1,        1: DCE      1     0.000000   0.000000 ff
  6       1,        2: DCE      2     0.000010   0.000010 01
  7       1,        3: DCE      3     0.000020   0.000010 00
  8       1,        4: DCE      4     0.000302   0.000282 02
  9       1,        5: DCE      5     0.000312   0.000010 0c
 10       1,        6: DCE      6     0.000323   0.000011 25
 11       1,        7: DCE      7     0.000601   0.000278 34
 12
 13       1,        1:  DTE     8     0.001493   0.000278 ff
 14       1,        2:  DTE     9     0.001504   0.000011 01
 15       1,        3:  DTE    10     0.001514   0.000010 00
 16       1,        4:  DTE    11     0.001792   0.000278 34
 17
 18       2,        8: DCE     12     0.007996   0.006204 ff
 19       2,        9: DCE     13     0.008006   0.000010 01
 20       2,       10: DCE     14     0.008017   0.000011 00
 21       2,       11: DCE     15     0.008296   0.000279 02
 22       2,       12: DCE     16     0.008306   0.000010 0c
 23       2,       13: DCE     17     0.008316   0.000010 25
 24       2,       14: DCE     18     0.008595   0.000279 34
 25       2,       15: DCE     19     1.007977   0.999382 ff
 26       2,       16: DCE     20     1.007988   0.000011 01
 27       2,       17: DCE     21     1.007998   0.000010 00
 28       2,       18: DCE     22     1.008316   0.000318 02
 29       2,       19: DCE     23     1.008326   0.000010 0c
 30       2,       20: DCE     24     1.008337   0.000011 25
 31       2,       21: DCE     25     1.008614   0.000277 34
 32
 33       2,        5:  DTE    26     1.008932   0.000277 ff
 34       2,        6:  DTE    27     1.008943   0.000011 01
 35       2,        7:  DTE    28     1.008953   0.000010 00
 36       2,        8:  DTE    29     1.009232   0.000279 34
 37
 38       3,       22: DCE     30     1.010855   0.001623 ff
 39       3,       23: DCE     31     1.010866   0.000011 01
 40       3,       24: DCE     32     1.010876   0.000010 00
 41       3,       25: DCE     33     1.011154   0.000278 02
 42       3,       26: DCE     34     1.011164   0.000010 3a
 43       3,       27: DCE     35     1.011175   0.000011 25
 44       3,       28: DCE     36     1.011452   0.000277 62
 45       3,       29: DCE     37     2.010866   0.999414 ff
 46       3,       30: DCE     38     2.010876   0.000010 01
 47       3,       31: DCE     39     2.010887   0.000011 00
 48       3,       32: DCE     40     2.011166   0.000279 02
 49       3,       33: DCE     41     2.011176   0.000010 3a
 50       3,       34: DCE     42     2.011187   0.000011 25
 51       3,       35: DCE     43     2.011465   0.000278 62
 52
 53       3,        9:  DTE    44     2.013642   0.000278 ff
 54       3,       10:  DTE    45     2.013652   0.000010 01
 55       3,       11:  DTE    46     2.013662   0.000010 00
 56       3,       12:  DTE    47     2.013940   0.000278 62
 57
 58       4,       36: DCE     48     2.015075   0.001135 ff
 59       4,       37: DCE     49     2.015085   0.000010 01
 60       4,       38: DCE     50     2.015096   0.000011 00
 61       4,       39: DCE     51     2.015374   0.000278 00
 62       4,       40: DCE     52     2.015384   0.000010 00
 63       4,       41: DCE     53     2.015394   0.000010 00
 64       4,       42: DCE     54     2.015672   0.000278 01
 65       4,       43: DCE     55     3.014698   0.999026 ff
 66       4,       44: DCE     56     3.014709   0.000011 01
 67       4,       45: DCE     57     3.014719   0.000010 00
 68       4,       46: DCE     58     3.014999   0.000280 00
 69       4,       47: DCE     59     3.015009   0.000010 00
 70       4,       48: DCE     60     3.015020   0.000011 00
 71       4,       49: DCE     61     3.015299   0.000279 01
 72       4,       50: DCE     62     4.014645   0.999346 ff
 73       4,       51: DCE     63     4.014655   0.000010 01
 74       4,       52: DCE     64     4.014666   0.000011 00
 75       4,       53: DCE     65     4.014946   0.000280 00
 76       4,       54: DCE     66     4.014957   0.000011 00
 77       4,       55: DCE     67     4.014968   0.000011 00
 78       4,       56: DCE     68     4.015245   0.000277 01
 79
 80       4,       13:  DTE    69     4.021469   0.000277 ff
 81       4,       14:  DTE    70     4.021480   0.000011 01
 82       4,       15:  DTE    71     4.021491   0.000011 00
 83       4,       16:  DTE    72     4.021768   0.000277 01
 84
 85       5,       57: DCE     73     4.024292   0.002524 ff
 86       5,       58: DCE     74     4.024303   0.000011 01
 87       5,       59: DCE     75     4.024313   0.000010 00
 88       5,       60: DCE     76     4.024592   0.000279 04
 89       5,       61: DCE     77     4.024603   0.000011 3f
 90       5,       62: DCE     78     4.024614   0.000011 25
 91       5,       63: DCE     79     4.024893   0.000279 69
 92
 93       5,       17:  DTE    80     4.032620   0.000279 ff
 94       5,       18:  DTE    81     4.032706   0.000086 01
 95       5,       19:  DTE    82     4.032792   0.000086 00
 96       5,       20:  DTE    83     4.032880   0.000088 69
 97
 98       6,       64: DCE     84     4.034014   0.001134 ff
 99       6,       65: DCE     85     4.034025   0.000011 01
100       6,       66: DCE     86     4.034035   0.000010 00
101       6,       67: DCE     87     4.034314   0.000279 00
102       6,       68: DCE     88     4.034325   0.000011 00
103       6,       69: DCE     89     4.034335   0.000010 00
104       6,       70: DCE     90     4.034612   0.000277 01
105       6,       71: DCE     91     5.033953   0.999341 ff
106       6,       72: DCE     92     5.034044   0.000091 01
107       6,       73: DCE     93     5.034140   0.000096 00
108       6,       74: DCE     94     5.034235   0.000095 00
109       6,       75: DCE     95     5.034331   0.000096 00
110       6,       76: DCE     96     5.034426   0.000095 00
111       6,       77: DCE     97     5.034521   0.000095 01
112       6,       78: DCE     98     6.034060   0.999539 ff
113       6,       79: DCE     99     6.034070   0.000010 01
114       6,       80: DCE    100     6.034081   0.000011 00
115       6,       81: DCE    101     6.034361   0.000280 00
116       6,       82: DCE    102     6.034371   0.000010 00
117       6,       83: DCE    103     6.034382   0.000011 00
118       6,       84: DCE    104     6.034659   0.000277 01
119
120       6,       21:  DTE    105     6.040617   0.000277 ff
121       6,       22:  DTE    106     6.040628   0.000011 01
122       6,       23:  DTE    107     6.040639   0.000011 00
123       6,       24:  DTE    108     6.040918   0.000279 01
124
125       7,       85: DCE     109     6.043430   0.002512 ff
126       7,       86: DCE     110     6.043440   0.000010 01
127       7,       87: DCE     111     6.043450   0.000010 00
128       7,       88: DCE     112     6.043729   0.000279 02
129       7,       89: DCE     113     6.043739   0.000010 35
130       7,       90: DCE     114     6.043750   0.000011 25
131       7,       91: DCE     115     6.044027   0.000277 5d
132       7,       92: DCE     116     7.042793   0.998766 ff
133       7,       93: DCE     117     7.042803   0.000010 01
134       7,       94: DCE     118     7.042814   0.000011 00
135       7,       95: DCE     119     7.043094   0.000280 02
136       7,       96: DCE     120     7.043105   0.000011 35
137       7,       97: DCE     121     7.043116   0.000011 25
138       7,       98: DCE     122     7.043393   0.000277 5d
139
140       7,       25:  DTE    123     7.045334   0.000277 ff
141       7,       26:  DTE    124     7.045345   0.000011 01
142       7,       27:  DTE    125     7.045355   0.000010 00
143       7,       28:  DTE    126     7.045633   0.000278 5d
144
145       8,       99: DCE     127     7.046570   0.000937 ff
146       8,      100: DCE     128     7.046580   0.000010 01
147       8,      101: DCE     129     7.046591   0.000011 00
148       8,      102: DCE     130     7.046679   0.000088 00
149       8,      103: DCE     131     7.046979   0.000300 00
150       8,      104: DCE     132     7.046989   0.000010 00
151       8,      105: DCE     133     7.047000   0.000011 01
152
153       8,       29:  DTE    134     7.051331   0.000011 ff
154       8,       30:  DTE    135     7.051341   0.000010 01
155       8,       31:  DTE    136     7.051351   0.000010 00
156       8,       32:  DTE    137     7.051630   0.000279 01
157
158       9,      106: DCE     138     7.054070   0.002440 ff
159       9,      107: DCE     139     7.054081   0.000011 01
160       9,      108: DCE     140     7.054091   0.000010 00
161       9,      109: DCE     141     7.054369   0.000278 04
162       9,      110: DCE     142     7.054380   0.000011 3f
163       9,      111: DCE     143     7.054390   0.000010 25
164       9,      112: DCE     144     7.054668   0.000278 69
165
166       9,       33:  DTE    145     7.058367   0.000278 ff
167       9,       34:  DTE    146     7.058377   0.000010 01
168       9,       35:  DTE    147     7.058388   0.000011 00
169       9,       36:  DTE    148     7.058666   0.000278 69
170
171      10,      113: DCE     149     7.079869   0.021203 ff
172      10,      114: DCE     150     7.079879   0.000010 01
173      10,      115: DCE     151     7.079890   0.000011 00
174      10,      116: DCE     152     7.080168   0.000278 04
175      10,      117: DCE     153     7.080179   0.000011 3f
176      10,      118: DCE     154     7.080190   0.000011 25
177      10,      119: DCE     155     7.080468   0.000278 69
178
179      10,       37:  DTE    156     7.081339   0.000278 ff
180      10,       38:  DTE    157     7.081349   0.000010 01
181      10,       39:  DTE    158     7.081359   0.000010 00
182      10,       40:  DTE    159     7.081638   0.000279 69
183
184      11,      120: DCE     160     7.184015   0.102377 ff
185      11,      121: DCE     161     7.184026   0.000011 01
186      11,      122: DCE     162     7.184036   0.000010 00
```

```
187     11,     123: DCE    163     7.184314   0.000278 04
188     11,     124: DCE    164     7.184325   0.000011 3f
189     11,     125: DCE    165     7.184336   0.000011 25
190     11,     126: DCE    166     7.184614   0.000278 69
191     11,     127: DCE    167     8.183334   0.998720 ff
192     11,     128: DCE    168     8.183345   0.000011 01
193     11,     129: DCE    169     8.183355   0.000010 00
194     11,     130: DCE    170     8.183636   0.000281 04
195     11,     131: DCE    171     8.183646   0.000010 3f
196     11,     132: DCE    172     8.183657   0.000011 25
197     11,     133: DCE    173     8.183936   0.000279 69
198
199     11,      41:  DTE   174     8.184281   0.000279 ff
200     11,      42:  DTE   175     8.184292   0.000011 01
201     11,      43:  DTE   176     8.184302   0.000010 00
202     11,      44:  DTE   177     8.184581   0.000279 69
203
204     12,     134: DCE    178     8.185495   0.000914 ff
205     12,     135: DCE    179     8.185505   0.000010 01
206     12,     136: DCE    180     8.185516   0.000011 00
207     12,     137: DCE    181     8.185793   0.000277 00
208     12,     138: DCE    182     8.185804   0.000011 00
209     12,     139: DCE    183     8.185814   0.000010 00
210     12,     140: DCE    184     8.186092   0.000278 01
211
212     12,      45:  DTE   185     8.191932   0.000278 ff
213     12,      46:  DTE   186     8.191943   0.000011 01
214     12,      47:  DTE   187     8.191953   0.000010 00
215     12,      48:  DTE   188     8.192232   0.000279 01
216
217     13,     141: DCE    189     8.328492   0.136260 ff
218     13,     142: DCE    190     8.328503   0.000011 01
219     13,     143: DCE    191     8.328513   0.000010 00
220     13,     144: DCE    192     8.328599   0.000086 04
221     13,     145: DCE    193     8.328693   0.000094 25
222     13,     146: DCE    194     8.329005   0.000312 25
223     13,     147: DCE    195     8.329015   0.000010 4f
224
225     13,      49:  DTE   196     8.331048   0.000010 ff
226     13,      50:  DTE   197     8.331059   0.000011 01
227     13,      51:  DTE   198     8.331069   0.000010 00
228     13,      52:  DTE   199     8.331347   0.000278 4f
229
230     14,     148: DCE    200     8.343984   0.012637 ff
231     14,     149: DCE    201     8.343995   0.000011 01
232     14,     150: DCE    202     8.344005   0.000010 00
233     14,     151: DCE    203     8.344284   0.000279 04
234     14,     152: DCE    204     8.344295   0.000011 25
235     14,     153: DCE    205     8.344305   0.000010 25
236     14,     154: DCE    206     8.344584   0.000279 4f
237
238     14,      53:  DTE   207     8.344930   0.000279 ff
239     14,      54:  DTE   208     8.344941   0.000011 01
240     14,      55:  DTE   209     8.344952   0.000011 00
241     14,      56:  DTE   210     8.345230   0.000278 4f
242
243     15,     155: DCE    211     8.359862   0.014632 ff
244     15,     156: DCE    212     8.359873   0.000011 01
245     15,     157: DCE    213     8.359931   0.000058 00
246     15,     158: DCE    214     8.360030   0.000099 04
247     15,     159: DCE    215     8.360310   0.000280 25
248     15,     160: DCE    216     8.360320   0.000010 25
249     15,     161: DCE    217     8.360331   0.000011 4f
250
251     15,      57:  DTE   218     8.362069   0.000011 ff
252     15,      58:  DTE   219     8.362080   0.000011 01
253     15,      59:  DTE   220     8.362091   0.000011 00
254     15,      60:  DTE   221     8.362368   0.000277 4f
255
256     16,     162: DCE    222     8.367875   0.005507 ff
257     16,     163: DCE    223     8.367886   0.000011 01
258     16,     164: DCE    224     8.367896   0.000010 00
259     16,     165: DCE    225     8.368174   0.000278 02
260     16,     166: DCE    226     8.368184   0.000010 0c
261     16,     167: DCE    227     8.368195   0.000011 25
262     16,     168: DCE    228     8.368484   0.000289 34
263     16,     169: DCE    229     9.367862   0.999378 ff
264     16,     170: DCE    230     9.367873   0.000011 01
265     16,     171: DCE    231     9.367883   0.000010 00
266     16,     172: DCE    232     9.368164   0.000281 02
267     16,     173: DCE    233     9.368175   0.000011 0c
268     16,     174: DCE    234     9.368185   0.000010 25
269     16,     175: DCE    235     9.368464   0.000279 34
270     16,     176: DCE    236    10.367828   0.999364 ff
271     16,     177: DCE    237    10.367838   0.000010 01
272     16,     178: DCE    238    10.367849   0.000011 00
273     16,     179: DCE    239    10.368129   0.000280 02
274     16,     180: DCE    240    10.368139   0.000010 0c
275     16,     181: DCE    241    10.368150   0.000011 25
276     16,     182: DCE    242    10.368428   0.000278 34
277     16,     183: DCE    243    11.367749   0.999321 ff
278     16,     184: DCE    244    11.367760   0.000011 01
279     16,     185: DCE    245    11.367770   0.000010 00
280     16,     186: DCE    246    11.368050   0.000280 02
281     16,     187: DCE    247    11.368061   0.000011 0c
282     16,     188: DCE    248    11.368071   0.000010 25
283     16,     189: DCE    249    11.368349   0.000278 34
284     16,     190: DCE    250    12.368583   1.000234 ff
285     16,     191: DCE    251    12.368594   0.000011 01
286     16,     192: DCE    252    12.368604   0.000010 00
287     16,     193: DCE    253    12.368883   0.000279 02
288     16,     194: DCE    254    12.368894   0.000011 3a
289     16,     195: DCE    255    12.368904   0.000010 25
290     16,     196: DCE    256    12.369181   0.000277 62
291
292     16,      61:  DTE   257    12.371815   0.000277 ff
293     16,      62:  DTE   258    12.371826   0.000011 01
294     16,      63:  DTE   259    12.371837   0.000011 00
295     16,      64:  DTE   260    12.372114   0.000277 62
296
297     17,     197: DCE    261    12.373038   0.000924 ff
298     17,     198: DCE    262    12.373048   0.000010 01
299     17,     199: DCE    263    12.373059   0.000011 00
300     17,     200: DCE    264    12.373336   0.000277 00
301     17,     201: DCE    265    12.373347   0.000011 00
302     17,     202: DCE    266    12.373357   0.000010 00
303     17,     203: DCE    267    12.373636   0.000279 01
304
305     17,      65:  DTE   268    12.378652   0.000279 ff
306     17,      66:  DTE   269    12.378663   0.000011 01
307     17,      67:  DTE   270    12.378673   0.000010 00
308     17,      68:  DTE   271    12.378950   0.000277 01
309
310     18,     204: DCE    272    12.381342   0.002392 ff
311     18,     205: DCE    273    12.381352   0.000010 01
312     18,     206: DCE    274    12.381363   0.000011 00
313     18,     207: DCE    275    12.381642   0.000279 02
314     18,     208: DCE    276    12.381653   0.000011 3f
315     18,     209: DCE    277    12.381663   0.000010 25
316     18,     210: DCE    278    12.381940   0.000277 67
317     18,     211: DCE    279    13.381119   0.999179 ff
318     18,     212: DCE    280    13.381129   0.000010 01
319     18,     213: DCE    281    13.381140   0.000011 00
320     18,     214: DCE    282    13.381420   0.000280 02
321     18,     215: DCE    283    13.381431   0.000011 3f
322     18,     216: DCE    284    13.381441   0.000010 25
323     18,     217: DCE    285    13.381719   0.000278 67
324     18,     218: DCE    286    14.381251   0.999532 ff
325     18,     219: DCE    287    14.381262   0.000011 01
326     18,     220: DCE    288    14.381272   0.000010 00
327     18,     221: DCE    289    14.381551   0.000279 02
328     18,     222: DCE    290    14.381561   0.000010 3f
329     18,     223: DCE    291    14.381572   0.000011 25
330     18,     224: DCE    292    14.381849   0.000277 67
331
332     18,      69:  DTE   293    14.383767   0.000277 ff
333     18,      70:  DTE   294    14.383777   0.000010 01
334     18,      71:  DTE   295    14.383788   0.000011 00
335     18,      72:  DTE   296    14.384064   0.000276 67
336
337     19,     225: DCE    297    14.384999   0.000935 ff
338     19,     226: DCE    298    14.385009   0.000010 01
339     19,     227: DCE    299    14.385020   0.000011 00
340     19,     228: DCE    300    14.385296   0.000276 00
341     19,     229: DCE    301    14.385307   0.000011 00
342     19,     230: DCE    302    14.385317   0.000010 00
343     19,     231: DCE    303    14.385595   0.000278 01
344
345     19,      73:  DTE   304    14.387239   0.000278 ff
346     19,      74:  DTE   305    14.387324   0.000085 01
347     19,      75:  DTE   306    14.387605   0.000281 00
348     19,      76:  DTE   307    14.387616   0.000011 01
349
350     20,     232: DCE    308    14.390315   0.002699 ff
351     20,     233: DCE    309    14.390326   0.000011 01
352     20,     234: DCE    310    14.390336   0.000010 00
353     20,     235: DCE    311    14.390613   0.000277 04
354     20,     236: DCE    312    14.390624   0.000011 3a
355     20,     237: DCE    313    14.390634   0.000010 25
356     20,     238: DCE    314    14.390910   0.000276 64
357
358     20,      77:  DTE   315    14.392907   0.000276 ff
359     20,      78:  DTE   316    14.392918   0.000011 01
360     20,      79:  DTE   317    14.392928   0.000010 00
361     20,      80:  DTE   318    14.393206   0.000278 64
362
363  < Further data has been deleted >
364
365  # There were a total of     446 bytes transferred
366
367  # There were a total of     338 DCE bytes transferred
368  # The first DCE byte came in at 0.000000 seconds from the start of data
collection
369  # The last DCE byte was at 22.057484 seconds from the start of data collection
370
371  # There were a total of     108 DTE bytes transferred
372  # The first DTE byte came in at 0.001493 seconds from the start of data
collection
373  # The last DTE byte was at 21.923467 seconds from the start of data collection
374
```

A.4 Good PTZ Commands

09DEC14G.OUT

```
  1 # FTS capture buffer (12/14/2009 12:03:20 PM)
  2 # Event 1 (12/14/2009 12:02:36.807644 PM) through
  3 # Event 1,595 (12/14/2009 12:03:03.648448 PM)
  4
  5       1,        1: DCE      1     0.000000   0.000000 ff
  6       1,        2: DCE      2     0.000010   0.000010 01
  7       1,        3: DCE      3     0.000021   0.000011 00
  8       1,        4: DCE      4     0.000302   0.000281 00
  9       1,        5: DCE      5     0.000312   0.000010 00
 10       1,        6: DCE      6     0.000323   0.000011 00
 11       1,        7: DCE      7     0.000333   0.000010 01
 12
 13       1,        1:  DTE     8     0.000833   0.000010 ff
 14       1,        2:  DTE     9     0.000843   0.000010 01
 15       1,        3:  DTE    10     0.000854   0.000011 00
 16       1,        4:  DTE    11     0.001132   0.000278 01
 17
 18       2,        8: DCE     12     2.534426   2.533294 ff
 19       2,        9: DCE     13     2.534437   0.000011 01
 20       2,       10: DCE     14     2.534447   0.000010 00
 21       2,       11: DCE     15     2.534727   0.000280 02
 22       2,       12: DCE     16     2.534737   0.000010 2d
 23       2,       13: DCE     17     2.534747   0.000010 32
 24       2,       14: DCE     18     2.534771   0.000024 62
 25
 26       2,        5:  DTE    19     2.535991   0.000024 ff
 27       2,        6:  DTE    20     2.536002   0.000011 01
 28       2,        7:  DTE    21     2.536012   0.000010 00
 29       2,        8:  DTE    22     2.536290   0.000278 62
 30
 31       3,       15: DCE     23     2.542048   0.005758 ff
 32       3,       16: DCE     24     2.542059   0.000011 01
 33       3,       17: DCE     25     2.542069   0.000010 00
 34       3,       18: DCE     26     2.542347   0.000278 02
 35       3,       19: DCE     27     2.542358   0.000011 2d
 36       3,       20: DCE     28     2.542368   0.000010 32
 37       3,       21: DCE     29     2.542392   0.000024 62
 38
 39       3,        9:  DTE    30     2.542914   0.000024 ff
 40       3,       10:  DTE    31     2.542924   0.000010 01
 41       3,       11:  DTE    32     2.542935   0.000011 00
 42       3,       12:  DTE    33     2.543214   0.000279 62
 43
 44       4,       22: DCE     34     2.549675   0.006461 ff
 45       4,       23: DCE     35     2.549685   0.000010 01
 46       4,       24: DCE     36     2.549696   0.000011 00
 47       4,       25: DCE     37     2.549973   0.000277 02
 48       4,       26: DCE     38     2.549984   0.000011 35
 49       4,       27: DCE     39     2.549994   0.000010 32
 50       4,       28: DCE     40     2.550018   0.000024 6a
 51
 52       4,       13:  DTE    41     2.550705   0.000024 ff
 53       4,       14:  DTE    42     2.550716   0.000011 01
 54       4,       15:  DTE    43     2.550727   0.000011 00
 55       4,       16:  DTE    44     2.551005   0.000278 6a
 56
 57       5,       29: DCE     45     2.557328   0.006323 ff
 58       5,       30: DCE     46     2.557338   0.000010 01
 59       5,       31: DCE     47     2.557349   0.000011 00
 60       5,       32: DCE     48     2.557627   0.000278 02
 61       5,       33: DCE     49     2.557637   0.000010 35
 62       5,       34: DCE     50     2.557648   0.000011 32
 63       5,       35: DCE     51     2.557672   0.000024 6a
 64
 65       5,       17:  DTE    52     2.558139   0.000024 ff
 66       5,       18:  DTE    53     2.558150   0.000011 01
 67       5,       19:  DTE    54     2.558161   0.000011 00
 68       5,       20:  DTE    55     2.558438   0.000277 6a
 69
 70       6,       36: DCE     56     2.564939   0.006501 ff
 71       6,       37: DCE     57     2.564950   0.000011 01
 72       6,       38: DCE     58     2.564961   0.000011 00
 73       6,       39: DCE     59     2.565241   0.000280 02
 74       6,       40: DCE     60     2.565252   0.000011 35
 75       6,       41: DCE     61     2.565262   0.000010 32
 76       6,       42: DCE     62     2.565287   0.000025 6a
 77
 78       6,       21:  DTE    63     2.565799   0.000025 ff
 79       6,       22:  DTE    64     2.565810   0.000011 01
 80       6,       23:  DTE    65     2.565821   0.000011 00
 81       6,       24:  DTE    66     2.566099   0.000278 6a
 82
 83       7,       43: DCE     67     2.572571   0.006472 ff
 84       7,       44: DCE     68     2.572582   0.000011 01
 85       7,       45: DCE     69     2.572592   0.000010 00
 86       7,       46: DCE     70     2.572871   0.000279 02
 87       7,       47: DCE     71     2.572881   0.000010 3a
 88       7,       48: DCE     72     2.572892   0.000011 32
 89       7,       49: DCE     73     2.572916   0.000024 6f
 90
 91       7,       25:  DTE    74     2.573667   0.000024 ff
 92       7,       26:  DTE    75     2.573678   0.000011 01
 93       7,       27:  DTE    76     2.573688   0.000010 00
 94       7,       28:  DTE    77     2.573966   0.000278 6f
 95
 96       8,       50: DCE     78     2.580224   0.006258 ff
 97       8,       51: DCE     79     2.580235   0.000011 01
 98       8,       52: DCE     80     2.580245   0.000010 00
 99       8,       53: DCE     81     2.580521   0.000276 02
100       8,       54: DCE     82     2.580532   0.000011 3a
101       8,       55: DCE     83     2.580542   0.000010 32
102       8,       56: DCE     84     2.580566   0.000024 6f
103
104       8,       29:  DTE    85     2.581042   0.000024 ff
105       8,       30:  DTE    86     2.581053   0.000011 01
106       8,       31:  DTE    87     2.581063   0.000010 00
107       8,       32:  DTE    88     2.581342   0.000279 6f
108
109       9,       57: DCE     89     2.587851   0.006509 ff
110       9,       58: DCE     90     2.587862   0.000011 01
111       9,       59: DCE     91     2.587873   0.000011 00
112       9,       60: DCE     92     2.588152   0.000279 02
113       9,       61: DCE     93     2.588163   0.000011 3a
114       9,       62: DCE     94     2.588173   0.000010 32
115       9,       63: DCE     95     2.588198   0.000025 6f
116
117       9,       33:  DTE    96     2.588746   0.000025 ff
118       9,       34:  DTE    97     2.588757   0.000011 01
119       9,       35:  DTE    98     2.588767   0.000010 00
120       9,       36:  DTE    99     2.588830   0.000063 6f
121
122      10,       64: DCE    100     2.603053   0.014223 ff
123      10,       65: DCE    101     2.603064   0.000011 01
124      10,       66: DCE    102     2.603074   0.000010 00
125      10,       67: DCE    103     2.603353   0.000279 02
126      10,       68: DCE    104     2.603363   0.000010 3a
127      10,       69: DCE    105     2.603374   0.000011 32
128      10,       70: DCE    106     2.603398   0.000024 6f
129
130      10,       37:  DTE    107     2.603937   0.000024 ff
131      10,       38:  DTE    108     2.603947   0.000010 01
132      10,       39:  DTE    109     2.603958   0.000011 00
133      10,       40:  DTE    110     2.604236   0.000278 6f
134
135      11,       71: DCE    111     2.618263   0.014027 ff
136      11,       72: DCE    112     2.618274   0.000011 01
137      11,       73: DCE    113     2.618285   0.000011 00
138      11,       74: DCE    114     2.618565   0.000280 02
139      11,       75: DCE    115     2.618575   0.000010 3f
140      11,       76: DCE    116     2.618586   0.000011 32
141      11,       77: DCE    117     2.618611   0.000025 74
142
143      11,       41:  DTE    118     2.621468   0.000025 ff
144      11,       42:  DTE    119     2.621479   0.000011 01
145      11,       43:  DTE    120     2.621490   0.000011 00
146      11,       44:  DTE    121     2.621768   0.000278 74
147
148      12,       78: DCE    122     2.648587   0.026819 ff
149      12,       79: DCE    123     2.648598   0.000011 01
150      12,       80: DCE    124     2.648609   0.000011 00
151      12,       81: DCE    125     2.648899   0.000290 02
152      12,       82: DCE    126     2.648909   0.000010 3f
153      12,       83: DCE    127     2.648919   0.000010 32
154      12,       84: DCE    128     2.648930   0.000011 74
155
156      12,       45:  DTE    129     2.649324   0.000011 ff
157      12,       46:  DTE    130     2.649624   0.000300 01
158      12,       47:  DTE    131     2.649634   0.000010 00
159      12,       48:  DTE    132     2.649645   0.000011 74
160
161      13,       85: DCE    133     2.663771   0.014126 ff
162      13,       86: DCE    134     2.663782   0.000011 01
163      13,       87: DCE    135     2.663792   0.000010 00
164      13,       88: DCE    136     2.664070   0.000278 02
165      13,       89: DCE    137     2.664081   0.000011 3f
166      13,       90: DCE    138     2.664092   0.000011 32
167      13,       91: DCE    139     2.664116   0.000024 74
168
169      13,       49:  DTE    140     2.664681   0.000024 ff
170      13,       50:  DTE    141     2.664692   0.000011 01
171      13,       51:  DTE    142     2.664702   0.000010 00
172      13,       52:  DTE    143     2.664982   0.000280 74
173
174      14,       92: DCE    144     2.678956   0.013974 ff
175      14,       93: DCE    145     2.678966   0.000010 01
176      14,       94: DCE    146     2.678977   0.000011 00
177      14,       95: DCE    147     2.679039   0.000062 02
178      14,       96: DCE    148     2.679125   0.000086 3f
179      14,       97: DCE    149     2.679419   0.000294 32
180      14,       98: DCE    150     2.679429   0.000010 74
181
182      14,       53:  DTE    151     2.679795   0.000010 ff
183      14,       54:  DTE    152     2.679806   0.000011 01
184      14,       55:  DTE    153     2.679816   0.000010 00
185      14,       56:  DTE    154     2.680093   0.000277 74
186
```

```
187     15,      99: DCE    155     2.694136   0.014043 ff
188     15,     100: DCE    156     2.694147   0.000011 01
189     15,     101: DCE    157     2.694158   0.000011 00
190     15,     102: DCE    158     2.694249   0.000091 02
191     15,     103: DCE    159     2.694549   0.000300 3f
192     15,     104: DCE    160     2.694559   0.000010 32
193     15,     105: DCE    161     2.694569   0.000010 74
194
195     15,      57:  DTE   162     2.695036   0.000010 ff
196     15,      58:  DTE   163     2.695046   0.000010 01
197     15,      59:  DTE   164     2.695057   0.000011 00
198     15,      60:  DTE   165     2.695334   0.000277 74
199
200     16,     106: DCE    166     2.717012   0.021678 ff
201     16,     107: DCE    167     2.717023   0.000011 01
202     16,     108: DCE    168     2.717033   0.000010 00
203     16,     109: DCE    169     2.717311   0.000278 02
204     16,     110: DCE    170     2.717322   0.000011 3f
205     16,     111: DCE    171     2.717332   0.000010 32
206     16,     112: DCE    172     2.717356   0.000024 74
207
208     16,      61:  DTE   173     2.717930   0.000024 ff
209     16,      62:  DTE   174     2.717941   0.000011 01
210     16,      63:  DTE   175     2.717951   0.000010 00
211     16,      64:  DTE   176     2.718229   0.000278 74
212
213     17,     113: DCE    177     2.747388   0.029159 ff
214     17,     114: DCE    178     2.747399   0.000011 01
215     17,     115: DCE    179     2.747409   0.000010 00
216     17,     116: DCE    180     2.747689   0.000280 02
217     17,     117: DCE    181     2.747699   0.000010 3f
218     17,     118: DCE    182     2.747709   0.000010 32
219     17,     119: DCE    183     2.747734   0.000025 74
220
221     17,      65:  DTE   184     2.748250   0.000025 ff
222     17,      66:  DTE   185     2.748261   0.000011 01
223     17,      67:  DTE   186     2.748271   0.000010 00
224     17,      68:  DTE   187     2.748550   0.000279 74
225
226     18,     120: DCE    188     2.762555   0.014005 ff
227     18,     121: DCE    189     2.762566   0.000011 01
228     18,     122: DCE    190     2.762576   0.000010 00
229     18,     123: DCE    191     2.762857   0.000281 02
230     18,     124: DCE    192     2.762867   0.000010 3f
231     18,     125: DCE    193     2.762878   0.000011 32
232     18,     126: DCE    194     2.762902   0.000024 74
233
234     18,      69:  DTE   195     2.763537   0.000024 ff
235     18,      70:  DTE   196     2.763548   0.000011 01
236     18,      71:  DTE   197     2.763558   0.000010 00
237     18,      72:  DTE   198     2.763837   0.000279 74
238
239     19,     127: DCE    199     2.792854   0.029017 ff
240     19,     128: DCE    200     2.792865   0.000011 01
241     19,     129: DCE    201     2.792876   0.000011 00
242     19,     130: DCE    202     2.793154   0.000278 02
243     19,     131: DCE    203     2.793165   0.000011 3f
244     19,     132: DCE    204     2.793176   0.000011 32
245     19,     133: DCE    205     2.793200   0.000024 74
246
247     19,      73:  DTE   206     2.793763   0.000024 ff
248     19,      74:  DTE   207     2.793773   0.000010 01
249     19,      75:  DTE   208     2.793784   0.000011 00
250     19,      76:  DTE   209     2.794061   0.000277 74
251
252     20,     134: DCE    210     2.845794   0.051733 ff
253     20,     135: DCE    211     2.845805   0.000011 01
254     20,     136: DCE    212     2.845816   0.000011 00
255     20,     137: DCE    213     2.846095   0.000279 02
256     20,     138: DCE    214     2.846106   0.000011 3f
257     20,     139: DCE    215     2.846116   0.000010 32
258     20,     140: DCE    216     2.846140   0.000024 74
259
260     20,      77:  DTE   217     2.846692   0.000024 ff
261     20,      78:  DTE   218     2.846703   0.000011 01
262     20,      79:  DTE   219     2.846713   0.000010 00
263     20,      80:  DTE   220     2.846991   0.000278 74
264
265     21,     141: DCE    221     3.042108   0.195117 ff
266     21,     142: DCE    222     3.042119   0.000011 01
267     21,     143: DCE    223     3.042130   0.000011 00
268     21,     144: DCE    224     3.042409   0.000279 02
269     21,     145: DCE    225     3.042419   0.000010 3f
270     21,     146: DCE    226     3.042430   0.000011 32
271     21,     147: DCE    227     3.042440   0.000010 74
272
273     21,      81:  DTE   228     3.043014   0.000010 ff
274     21,      82:  DTE   229     3.043025   0.000011 01
275     21,      83:  DTE   230     3.043036   0.000011 00
276     21,      84:  DTE   231     3.043312   0.000276 74
277
278     22,     148: DCE    232     3.155416   0.112104 ff
279     22,     149: DCE    233     3.155427   0.000011 01
280     22,     150: DCE    234     3.155437   0.000010 00
281     22,     151: DCE    235     3.155718   0.000281 02
282     22,     152: DCE    236     3.155729   0.000011 32
283     22,     153: DCE    237     3.155739   0.000010 32
284     22,     154: DCE    238     3.155763   0.000024 67
285
286     22,      85:  DTE   239     3.157330   0.000024 ff
287     22,      86:  DTE   240     3.157340   0.000010 01
288     22,      87:  DTE   241     3.157351   0.000011 00
289     22,      88:  DTE   242     3.157629   0.000278 67
290
291     23,     155: DCE    243     3.230904   0.073275 ff
292     23,     156: DCE    244     3.230915   0.000011 01
293     23,     157: DCE    245     3.230926   0.000011 00
294     23,     158: DCE    246     3.231205   0.000279 02
295     23,     159: DCE    247     3.231216   0.000011 32
296     23,     160: DCE    248     3.231226   0.000010 32
297     23,     161: DCE    249     3.231250   0.000024 67
298
299     23,      89:  DTE   250     3.231923   0.000024 ff
300     23,      90:  DTE   251     3.231933   0.000010 01
301     23,      91:  DTE   252     3.231944   0.000011 00
302     23,      92:  DTE   253     3.232222   0.000278 67
303
304     24,     162: DCE    254     3.268768   0.036546 ff
305     24,     163: DCE    255     3.268779   0.000011 01
306     24,     164: DCE    256     3.268789   0.000010 00
307     24,     165: DCE    257     3.269067   0.000278 02
308     24,     166: DCE    258     3.269077   0.000010 32
309     24,     167: DCE    259     3.269088   0.000011 32
310     24,     168: DCE    260     3.269113   0.000025 67
311
312     24,      93:  DTE   261     3.269618   0.000025 ff
313     24,      94:  DTE   262     3.269628   0.000010 01
314     24,      95:  DTE   263     3.269639   0.000011 00
315     24,      96:  DTE   264     3.269927   0.000288 67
316
317     25,     169: DCE    265     3.352039   0.082112 ff
318     25,     170: DCE    266     3.352049   0.000010 01
319     25,     171: DCE    267     3.352060   0.000011 00
320     25,     172: DCE    268     3.352340   0.000280 02
321     25,     173: DCE    269     3.352351   0.000011 32
322     25,     174: DCE    270     3.352361   0.000010 32
323     25,     175: DCE    271     3.352385   0.000024 67
324
325     25,      97:  DTE   272     3.352953   0.000024 ff
326     25,      98:  DTE   273     3.352964   0.000011 01
327     25,      99:  DTE   274     3.352974   0.000010 00
328     25,     100:  DTE   275     3.353253   0.000279 67
329
330     26,     176: DCE    276     3.419964   0.066711 ff
331     26,     177: DCE    277     3.419975   0.000011 01
332     26,     178: DCE    278     3.419986   0.000011 00
333     26,     179: DCE    279     3.420042   0.000056 02
334     26,     180: DCE    280     3.420130   0.000088 32
335     26,     181: DCE    281     3.420410   0.000280 32
336     26,     182: DCE    282     3.420421   0.000011 67
337
338     26,     101:  DTE   283     3.420830   0.000011 ff
339     26,     102:  DTE   284     3.420841   0.000011 01
340     26,     103:  DTE   285     3.420852   0.000011 00
341     26,     104:  DTE   286     3.421129   0.000277 67
342
343     27,     183: DCE    287     3.503096   0.081967 ff
344     27,     184: DCE    288     3.503107   0.000011 01
345     27,     185: DCE    289     3.503118   0.000011 00
346     27,     186: DCE    290     3.503396   0.000278 02
347     27,     187: DCE    291     3.503407   0.000011 32
348     27,     188: DCE    292     3.503418   0.000011 32
349     27,     189: DCE    293     3.503428   0.000010 67
350
351     27,     105:  DTE   294     3.504008   0.000010 ff
352     27,     106:  DTE   295     3.504019   0.000011 01
353     27,     107:  DTE   296     3.504030   0.000011 00
354     27,     108:  DTE   297     3.504306   0.000276 67
355
356  < Further data has been delted >
357
358  # There were a total of    1595 bytes transferred
359
360  # There were a total of    1015 DCE bytes transferred
361  # The first DCE byte came in at 0.000000 seconds from the start of data
collection
362  # The last DCE byte was at 26.836752 seconds from the start of data collection
363
364  # There were a total of     580 DTE bytes transferred
365  # The first DTE byte came in at 0.000833 seconds from the start of data
collection
366  # The last DTE byte was at 26.840804 seconds from the start of data collection
367
```

B E-Mails relating to the RMK problem

$Header: d:/0rmk/RCS/Part1.txt,v 1.1 2010-04-20 08:19:11-07 Hamilton Exp Hamilton $

From: Hamilton, Eric
To: Wright, David; Giroux, Gregory
Cc: Vang, Annie
Sent: Wed Mar 24 11:29:40 2010
Subject: RE: RMK Problem

Hi

There is a difference between what I think of a "release quality" and others may think is "OK to ship". The code has several problems that are still there:

1. If communications are lost when in PTZ mode, the software continues operating as though every thing is OK.

2. On the main menu there is a radio button for 28800 baud. This baud rate is not supported by Windows. I made an attempt to delete the button and was unsuccessful. I asked Michael Springer and Todd Johnson for help. Todd helped me edit the image. It is unclear how to generate the image, so I left the button "there" and deleted support for it. (It doesn't do anything, but also does not crash.)

3. In the land of Windows they seem to use Device Control Blocks (dcb) for IO control. For some reason the software uses a different one in one place and the common one everywhere else. I don't know what the effect of the dcb switching has on the system.

4. If an invalid entry is made, the software appears to "lock up" for awhile. I have no idea of what the program is doing and how to get around the problem.

5. On the main menu there were two radio buttons that had no support for them. I added support for them yesterday and have not had a chance to test them.

6. On the main menu there are options for Even and Odd parity. Yesterday I could not prove that either of them actually did something. As far as I can tell the software is "doing the right thing".

7. The software has a hardcoded COM ID limit of 10. When installing many USB/RS-232 converters that limit is passed and it was difficult to get around it. I don't expect that a user will have an easy time either. I'll make an effort to get past 10 later on today.

8. Sometimes the software starts to go into baud rate changing mode and it is unclear what causes this.

Someone has to decide the importance of fixing these problems. Some require detailed knowledge of Windows and how it works with IO. I am willing to do this, but I have no idea of how long it might take. What are your choices?

In my e-mail from yesterday I indicated that three USB/RS-232 converters worked. They were converters B, D and E. Before blessing these three converters I think that T+V should verify that they will do as predicted with current SP4 release version. (And they have only been tested on a PC.)

bye.....eric
559-292-1981 x3375

From: Wright, David
Sent: Wednesday, March 24, 2010 10:09 AM
To: Hamilton, Eric; Giroux, Gregory
Cc: Vang, Annie
Subject: Re: RMK Problem

Hi,

As we previously discussed, please complete the connector qualifications, and solidify the PC downloader to release quality. The RMKs will be looked at next week.

Thanks,

David

From: Hamilton, Eric
To: Wright, David; Giroux, Gregory
Cc: Vang, Annie
Sent: Wed Mar 24 10:03:31 2010
Subject: RE: RMK Problem

Hi

As I said yesterday, the PC effort is done. All we have to do now is to qualify a bunch of USB/RS-232 converters. It is unclear if they will work on anything other than a PC running the same driver that we qualify them

with. You have the Palm and iPaqs from Tess somewhere and I don't yet know where the source software is.

bye.....eric
559-292-1981 x3375

From: Wright, David
Sent: Wednesday, March 24, 2010 9:52 AM
To: Hamilton, Eric; Giroux, Gregory
Cc: Vang, Annie
Subject: Re: RMK Problem

Eric,

Please identify the status of the effort, without criticizing previous developers' abilities and Global IT.

Thanks,

David

From: Hamilton, Eric
To: Harris, Steve; Giroux, Gregory
Cc: Wright, David; Vang, Annie
Sent: Wed Mar 24 09:45:18 2010
Subject: RMK Problem

Hi

Yesterday Annie and I were able to get some USB/RS-232 converters working on the PC version of the downloader. Doing this required the following changes to the PC software:

1. Opening the COM port in 1 stop bit mode. Previously it was being opened in 2 stop bit mode. This change was required because the Spectra IV has three UARTS of which one, the one used on the download port, is not a "high quality" UART. Due to the problems with the downloader port a special option on the Spectra IV involves setting bit 3 in switch 2 to enable P Protocol commands to be received on the downloader port.

2. There were several non-related problems in the PC downloader software that were also fixed. These included opening the serial port as an "OPEN_EXISTING" instead of opening it as "CREATE_NEW", adding an error handling routine into the open logic. And fixing the "mouse pad" commands

so that PTZ actions will work correctly in the upper left quadrant.

3. The actual PC downloader software is not well written which makes working on it difficult. (Someone that worked on it had "discovered" cut-paste programming.)

Working with nine different USB/RS-232 converters seems to indicate that the exact rev of the converter's driver plays a significant role in this problem too. It seems as though some drivers do not support 1 stop bit operation.

It is assumed that similar problems exist in the other versions of the downloader software, however Pelco's policy of not allowing access to the computers of people that have left the company have made it impossible to verify this. Not having Palm and iPaq units to work with has also stopped this effort.

Without looking at the PC software for the ExSite and Spectra III downloader programs, it is assumed that the same problems listed in item 1 and 2, above, exist in them too.

bye.....eric
559-292-1981 x3375

From: Hamilton, Eric
Sent: Monday, March 22, 2010 2:58 PM
To: Giroux, Gregory
Cc: Vang, Annie; Wright, David
Subject: RE: RMK Update

Hi

This is a more difficult problem that we originally thought it would be.

So far we can get download running on the RJ-45 port only by reducing the download speed to 57600 baud. Anne and I got it to work this way just before I left on Friday.

However this solution will require that all Spectra IV (and Spectra III?) code be modified to work with a download speed change on the RJ-45 port.

I have been looking at Tess's software and have found some problems. The most recent problem that I fixed made it so that the downloader is not able to open any port. (Whoops)

Tess is currently examining the Spectra IV software to see if she can find anything.

We have not yet looked at the iPaq or Palm versions of the downloader.

bye.................eric
559-292-1981 x3375

From: Giroux, Gregory
Sent: Monday, March 22, 2010 2:50 PM
To: Hamilton, Eric
Subject: RMK Update

Do you have an RMK update for me today?

Gregory Giroux

$Header: d:/0rmk/RCS/Part2.txt,v 1.1 2010-04-20 08:19:18-07 Hamilton Exp Hamilton $

From: Hamilton, Eric
Sent: Wednesday, April 14, 2010 7:40 AM
To: Giroux, Gregory
Cc: Wright, David; Vang, Annie
Subject: RMK "Hardware" problems

Hi

I have been looking into the problems with the PC version of the RMK for some time now. As I see it there are several problems with it. These problems fit into two categories. One set has to do with hardware and the other has to do with software. This part my "status" report has mostly to do with the hardware aspects of the problem.

1. New PC type computers are tending to not have serial ports on them. Thus to communicate with "analog PTZ" units requires a USB to serial adapter. (We have nine "different" adapters to test with.)

2. Annie and I have tested several USB --> Serial adapters and have found that some work better than others. (Are you surprised?)

3. The Spectra IV has three UARTs, two are "full service" UARTs and the other is a "limited service" UART. There is a known problem with the limited service UART in that it does not work correctly when receiving data that has two stop bits per character. (There is another problem with it, in that it is used on the download (RJ-45) port.)

4. Windows is not a "nice" environment to work in. It seems as though the order in which the USB --> Serial adapters' drivers get loaded affects if they will work at all. (One of the USB --> Serial adapters gave us a computer crash complete with a "blue screen of death".)

bye.................eric
559-292-1981 x3375

From: Hamilton, Eric
Sent: Wednesday, April 14, 2010 8:17 AM
To: Giroux, Gregory
Cc: Wright, David; Vang, Annie; Hannen, Craig; Watson, Jeremy; Springer, Derek; Springer, Michael
Subject: RMK "Software" problems

Hi

This is part 2 of my current status on the RMK problem. These are the software type problems.

1. I was able to change the format of sending commands to the PTZ from two stop bits to one stop bit and we can now download correctly. (Usually)

2. I can address COM ports fro COM1 --> COM9. Nothing I tried can get past COM9. I don't know why, the software should be able to do it. This might be a Windows limitation.

3. There was a problem with the PTZ control where it would not have pan motion if the cursor was in the upper-right hand corner of the screen. I fixed this.

4. I made it so that, what I believe, the most common choices are automatically made for the user. These are "D Protocol", Address 1, No parity, COM1 and 115200 baud. All of these values may be changed by the user and the defaults are easily changed. (By recompiling the software.)

5. The program used to appear as though it had "hung up" while trying to auto-baud to the attached PTZ unit. I have changed the display logic so that it now displays the baud rate that it is working at so the user will know that something is happening. (User feedback is always nice.)

6. On the older version, parity choices were always ignored and no parity was the only type of parity that the software ever sent data out at. Now the parity buttons work as expected.

7. When using the PTZ screen, if you "click" on a given location on the screen, the software sends out a "stop" command. Not the expected pan/tilt command that might be expected. I have not yet fixed this. If you move the mouse while clicked then the software sends out pan/tilt commands which include motion.

8. On the PTZ screen some bizarre pan/tilt speeds are generated. They are properly formatted, but not as predictable as might be desired. I have not yet fixed this.

9. When using the PTZ screen, if communications with the PTZ unit is broken, the software never detects this. I have not yet fixed this.

10. The software should send a QUERY command to the attached PTZ to determine the unit's address, baud rate, parity type and PTZ type. I modified the serial driver for the Atlas project so that this would be done. I have started to set the software up to do this but have not done

any "real" work on it.

11. The main display has a baud rate indicated that is not directly supported by Microsoft. I made it so that it may never be selected and during auto-bauding it is skipped over.

12. It is unknown how the main, or any other, display was generated. Tess probably had special software on her computer, but NSG has taken it and what that software is or how to use it is unknown.

13. I have asked several other software people here to help me with the software. All have been very helpful, however one of the universal comments is "This is an unusual way of doing the display". What happens is that the display is a "standard" Microsoft windows display with an overlaying BMP. The overlaying BMP looks much better than the "gray" Microsoft default display, but there is no known way of updating the overlaying BMPs. (That means that I have to leave the invalid baud rate displaying on the main display.)

14. Something, possibly age, is wrong with my version of Microsoft C++. Sometimes it hangs up in a build and has to be terminated externally and I have never been able to get the debugger to do anything useful. Like set a break point or be able to read out internal program values.

15. There is no "real" documentation on the system. I would hope that Tess has something in her Outlook files as e-mails, but again NSG has the computer and that information is not available. I have not found any requirements or design requests anywhere.

16. I believe that the best thing to do would be to dump the current downloader software and modify Craig's GlassKeyboard as a full replacement.

17. There are several advantages to using a modified GlassKeyboard as a replacement. These include, the original developer is available, we have the source and the system utilities (compiler, etc) to maintain the product with. We have documentation on Visual Basic 5 (which the GlassKeyboard appears to be written in.) available. (A big difference from the downloader software.)

18. At one point Craig put a downloader simulator in the GlassKeyboard. I don't know the current status of the GlassKeyboard, but it seems to be better behaved than the downloader.

bye.....eric
559-292-1981 x3375