ACTIR8250P vs. MCP2150/55 Throughput Comparison-v1.23-04/07/12

(ACTiSYS Confidential Information)

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Our customers provided the following MCP2150/55 and ACT-IR8250P comparison:

1) Customer 1:

a) Using a simple HyperTerminal we opened two terminal sessions on the same PC:
b) 1 session connects to the ACTiSYS ACT-IR8250P via a serial port
1 session connects to the ACTiSYS ACT-IR4000US USB-IrDA dongle, or
ACT-IR220L+ RS232-IrDA dongle
c) Both sessions are configured to 115.2Kbps, 8 data, no parity, 1 stop bit.
d) We have tested on systems running Windows 98 SE, 98 ME and Windows XP.
Processor speeds were in the 400 MHz region for the Windows 98 computers
and 1.2 GHz for the Windows XP.
We also tested between 2 computers, one with Windows 95 and the other with Windows ME.
e) We transfer a text file ("Send Text File", "Capture Text") of 8k to 65k bytes in each direction.
f) We find that the throughput with the IR8250P is approximately 2100 Bytes/sec.
The same test with the Microchip MCP2150 has a throughput, approximately 1200Bytes/sec.
g) Conclusion: ACT-IR8250P is about 75% faster than the MCP2150.

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2) Customer 2: (ACTIR8250P vs. MCP2150 Throughput, ~500 records)

PALM (OS#)	Adaptor	Time (m:ss.ss)
Palm VII (OS3.5.0)	Actisys	2:50.48
Palm VII (OS3.5.0)	Microchip	Slower
M500 (OS4.0)	Actisys	3:05.67
M500 (OS4.0)	Microchip	Slower
M130	Actisys	2:45.00
M515 (OS4.1)	Actisys	3:05.08
M515 (OS4.1)	Microchip	Slower
Tungsten T2 (OS5.2.1)	Actisys	0:56.22
Tungsten T2 (OS5.2.1)	Microchip	Connection drops in the middle of data exchange
Tungsten E (OS5.2.1)	Actisys	0:49.26
Tungsten E (OS5.2.1)	Microchip	Can not connect

Comments:

a) We used ACTIR8250P and MCP2150 adapters, with ~500 records d/l'ed from the pump.
b) The Palm/M515 was faster with the Actisys adaptor than the Microchip adapter,
and the Palm/M5XX series seems to be the slowest.
c) Though there are inefficiencies in the download with older palms using the Actisys
adapter, the performance is still better than using the Microchip adapter
d) Tungsten E (OS5.2.1): Microchip's adapter cannot connect, Microchip's contractor
who developed MCP2150 told me: it is in "permanent retry" but does not connect.
e) Tungsten T2 (OS5.2.1): MCP2150 would connect but it is shaky.
The connection drops in the middle of exchanging data.
f) Palm M500 (OS4.0), Palm M515 (OS4.1), Palm VII (OS3.5.0) and Symbol all work with
the Microchip part. I didn't see any problems with these except that the link is much slower.
I believe it is the processing overhead in our Palm application, suggested by MCP2150*.
g) Summarily, the progression from OS4.X to OS5.X seems to be where things went wrong.
h) I have found a way to communicate with older Palms. The microchip data sheet for the MCP2150 suggested sending 64 bytes at a time to the chip so that more efficient framing of data could occur. I still had this delay to wait for 60 bytes to come into my processor before I would send the data to the IR8250P. After our discussions I had pondered your 36 byte framing of the data. I realized then, that I was giving your chip a disadvantage because you had built

that same delay into your chip. I took the delay out of my software which allowed the data to flow to your chip as soon as it came in from my application while observing the flow control of your chip. Taking out the delay allows the older palms to work more correctly. The older Palms are slower than the newer Palms. It seems that the older Palms send the Acknowledgement too late to prevent packet resends. I think this is because it takes longer for the older palms to calculate the CRC of the packet and this delay is enough to cause redundant sending of data.

3) Customer 3:

a) I am really impressed by the unique in-system, field programmability of your ACT-IR8250P! Our products have average lifetime of 5 years or longer which is very expensive to upgrade firmware by collecting back the products to our factory.

b) Your IR8250P comes with CD which has Windows download software with comprehensive user interface of selectable parameters of: host interface (baud rate, data format), IrDA config. file (IrLMP hint bits, device and nick names, and class name) and IrDA protocol layers (IrLPT, IrComm, OBEX Transport, IrSocket, etc.). IR8250P reference circuit provides pinouts and application notes to enable in-system firmware re-programming.

c) This is powerful because it allows customized upgrades to be downloaded in IR8250P. It also assures compatibility with future IrDA devices if IrDA stack needs modification. It even allows us to add additional IrDA functions as new IrDA spec. is published.

d) This is the only viable way to implement any wireless protocol, allowing protocol firmware upgrades in the field. I don't have to change my PCB or re-test my product or IrDA functions. This is impossible with MCP2150/2140 or licensing/porting IrDA protocol codes!

4) Customer 4:

a) I used the newer MCP2140 which offers better compatibility than the older MCP2150. However, it has UART data rate of 9.6kbps only while MCP2150 offers UART rate of 9.6k to 115.2Kbps, and ACT-IR8250P offers 1.2K to 115.2Kbps. Therefore, MCP2140 is slow.

b) Furthermore, I still find MCP2140 to be incompatible or unstable, as the older MCP2150 with certain models of Pocket PC, data logger or smartphone. I suspect this problem may worsen with more future releases of new IrDA devices.

c) I really like the broad compatibility of your ACT-IR8250P assured by IrReady certification, with current IrDA devices and future IrReady-certified devices. The in-system, field programmability feature of IR8250P further assures on-going compatibility with future IrDA devices and new IrDA functions and new spec.

5) Customer 5:

a) In our industry, certification is very important. I am relieved IR8250P and all-in-one PCB module, IR8250PDB enables our product to quickly pass the tough IrReady certification.

b) This is why we chose not to license IrDA stack codes. We became more aware that IrDA stack is very sensitive to timing and interrupt handling. It may be quick to port codes but integrating it with our software and control functions may change IrDA stack timing, which stack licensers can't assure us to quickly debug to pass IrReady tests. If we pass it now, we may have to repeat the pain again if we modify our software or IrDA protocol codes.

6) Customer 6:

a) I was a little puzzled by different models, MCP2150 and MCP2155 for DCE and DTE host devices. I like your IR8250P simplicity, one chip for DCE and DTE, selected by I/O pins.

b) We noticed dropping bits, intermittent connection between MCP2150 and Pocket PC models.

7) Customer 7:

a) I have had good success with the IR8250P!

b) I am now looking at a board layout change from MCP2150 to use this part. The question I have is in regard to reprogramming the IR8250P in the field after it is on our board. There are several options….

8) Customer 8:

a) Our first efforts before knowing about the Actisys parts involved using the Microchip MCP2140 which has proved to be slow and unreliable. We have just now tried the ACT-IR8250PDP daughter board in place of the MCP2140. It works great, no changes to our host software, IrDA connects reliably and through-put is way better.

b) Now we would like to be able to change the host baud rate for the IR8250 from 9600 to a higher rate. The ACT-IR8250PEK's self-downloadable SW to re-program IR8250P firmware can easily change the host baud as we desire.

9) Customer 9:

The chip works great with our application. Firstly we tried to use the Microchip MCP2150, but we had problem with some PDA models. The ACTiSYS IC, however, is compatible to EVERY palm OS devices, supports data transfer without handshake lines, and the transmission is very reliable. When our product development is complete, you will receive our order.