Application Note #163:

Recommendations For Improved iModem Internet Connectivity

INTRODUCTION

This application note describes several methods that may be employed by the user to overcome typical problems, such as low email transmission success rate, encountered when using noisy PSTN line connections and/or when dialing through PBX systems.

RECOMMENDATIONS

Method 1. Some PBX connections may have response delays and/or echoes. In these cases, it is helpful to insert the comma mark (**,**) to force the CH21XX iModem product to delay issuing the DTMF tones. For example:

   9,,1,,408,,9902226 may be required instead of **914089902226**.

It will be necessary to empirically determine the placement of the comma mark(s) and the quantity needed. DON'T be afraid to use a lot of commas.

Method 2. Noisy telecom lines can make reliable internet connections difficult. The CH2160 iModems are pre-configured to communicate at 57.6Kbps over the PSTN line. Although this high data transmission rate is desirable for large files, it is less robust in noisy PSTN line connections. It is possible to reduce the carrier rate (i.e., the DCE speed) without affecting the serial port connection rate (i.e., the DTE speed).

Cermetek recommends reducing the DCE speed of the CH2160 iModems to 2400 baud for maximum improvement. Once it has been demonstrated that the reduced speed improves internet connectivity, the DCE speed can then be incrementally increased to determine the optimum connection rate. The **AT+MS** commands are not supported by the CH2124 iModem.

To reduce the DCE speed to 2400 bps, issue the following commands:

Enter:	**AT+MS=V22B,1,2400,2400,2400,2400<CR>**	Where **<CR>** denotes Carriage Return
	AT&W0<CR>	
	AT&W1<CR>	
Response:	**OK<CR><LF>**	Where **<LF>** denotes Line Feed

This will NOT affect the serial port connection rate so no change to the terminal emulation program (e.g., HyperTerminal) is required.

To change the DCE speed to **XXXX** bps, issue the following commands:

Enter:	**AT+MS=yyyy,1,XXXX,XXXX,XXXX,XXXX<CR>**	Where **XXXX** denotes the desired DCE speed
	AT&W0<CR>	**yyyy** denotes the carrier modulation code
	AT&W1<CR>	from table I
Response:	**OK<CR><LF>**	**1** enables automode

Refer to Table I to determine the required carrier modulation code associated with the desired DCE speed. Note that several of the Modulation Standards have overlapping DCE speeds. In general, the higher the Carrier Modulation Standard number, the more recent (and more complicated) the standard. As a cautionary note, often times the least complicated standard produces the best results.

To set the CH21XX back to the default DCE connection rate, issue the following commands:

Enter:	**AT&F<CR>**	Recalls the factory default modem parameters
	AT&W0<CR>	Stores parameters in user accessed space n=0
	AT&W1<CR>	Stores parameters in user accessed space n=1
Response:	**OK<CR><LF>**	

Table I.   Required Carrier Modulation Code for Corresponding Desired DCE Speed.

Modulation Standard	Required Modulation Carrier Code	DCE Speed Supported (baud)
V.21	V21	300
V.22bis	V22B	1200, 2400
V.23	V23C	1200
V.32	V32	4800, 9600
V.32bis	V32B	4800, 7620, 9600, 12000, 14400
V.34	V34	2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600
V.90	V90	28000, 29333, 30667, 32000, 33333, 34667, 36000, 37333, 38667, 40000, 41333, 42667, 45333, 46667, 48000, 49333, 50667, 52000, 53333, 54667, 56000
K56flex	K56	32000, 34000, 36000, 38000, 40000, 42000, 44000, 46000, 48000, 50000, 52000, 54000, 56000

Note that even though an ISP indicates that it will support a particular modulation and DCE speed, the actual implementation may vary from dial-up site. If a specific dial-up site fails to connect with the desired modulation and desired DCE speed, try another dial-up phone number.

Method 3. Try using the default **iModem Network** ISP but with a local access analog dial-up phone number (rather than the Sunnyvale, CA default). Over 2000 analog dial-up phone numbers are available on the Cermetek **iModem Network** web page located at http://www.imodem.net Click on Local Access to view a list of local access dial-up phone numbers. Note this is a secure web site.

Once a local access dial-up number has been determined, change the iModem analog dial-up phone number parameter by issuing the following command:

Enter: **@TN=91XXXYYYZZZZ<CR>**   Where the new dial-up number is **XXXYYYZZZZ**, the **9** is to gain access to an outside line (assuming a PBX system) and the **1** is for long distance access.

Response: **OK<CR><LF>**

Method 4. Go back to the factory set default **iModem Network** ISP parameters but use a direct connection PSTN line that bypasses the PBX system. In this case it will be necessary to re-enter the dial-up phone to remove the leading **9**. Proceed as follows:

Enter: **@TZ<CR>**   Resets the ISP parameters to the factory Defaults
Response: **OK<CR><LF>**

Enter: **@TN=14089902226<CR>**   Changes the phone number to **14089902226**
Response: **OK<CR><LF>**

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