ECR #: 21
Title: Correct Pull-up Resistor Errors
Release Date: tbd
Impact: Clarification
Spec Version: A.G.P. 1.0

Summary: Change the specification to clearly define which agent is responsible to provide the pull-up for which signals and correct the pull-up resistor list in Chapter 4.

Background: Pull-ups are provided by the A.G.P. target in the current specification. Because of implementation trade-off this requirement may not be the correct answer in all cases. Also, the text lists the pins on which pull-ups are required, but does not say whether pull-ups are allowed or not allowed on other pins. Also, a warning about the stub length to connect to the resistor should be given.

Change Current Specification as shown: In chapter 3, section 3.3, between Tables 3-5 and 3-6, change the text as follows:

s/t/s	*Sustained Tri-State* is an active low tri-state signal owned and driven by one and only one agent at a time. The agent that drives a s/t/s pin low must drive it high for at least one clock before letting it float. A new agent cannot start driving a s/t/s signal any sooner than one clock after the previous agent tri-states it. A pull-up is required to sustain the inactive state until another agent drives it, and must be provided by the central resource (A.G.P. compliant target or motherboard).

Change the description of RBF# in table 3-7:

RBF#	in	*Read Buffer Full* indicates if the master is ready to accept previously requested low priority read data or not. When **RBF#** is asserted the arbiter is not allowed to initiate the return of low priority read data to the master[1]. This signal must be pulled up by the central resource.

In chapter 4, change the text as show below:

4.3.5.2 Pullups

AGP control signals require pull-ups to Vddq on the motherboard (or, optionally integrated on motherboard chipset) to ensure they contain stable values when no agent is actively driving the bus. These signals include **FRAME#**, **TRDY#**, **IRDY#**, **DEVSEL#**, **STOP#**, **SERR#**, **PERR#**, **RBF#**, **INTA#**, **INTB#**[2][4], **PIPE#**, **AD_STB[1::0]** and **SB_STB**. The central resource (A.G.P. compliant target or motherboard), may require a weak pull-up on **REQ#** to insure that this signal does not float when there is no add-in card in the connector. Values for this pull-up shall be specified by the central resource vendor.

[1] An A.G.P. master is not required to implement this signal when it is always capable of accepting Low Priority Read Data.

Pull-ups are allowed on any A.G.P. pin. Care should be taken when attaching pull-ups to the **AD**, strobe or **CB/E** signals. The trace stub to the pull-up on these signals should be kept to less than 0.1 inch to avoid signal reflections from the stub.