APPLICATION NOTE 058
ISA OSC-Signal (14.3MHz) and Video-Controller

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From:	FK	*Product:*	PC-cards with onboard Video-Controller
To:	Customer/Support	*Version:*	Vx.xx
Date:	11.97	*BIOS:*	Vx.xx

Problem: In rare application cases, the video screen flickers if the PC board is connected into a bus card. Specially we saw this issue with the PCC-P5 card used in a unknown 8 slot passiv bus.

Comment: Since we have never become such a system in our lab, we have to check theoreticaly this problem. We have used a passiv slot bus together with our PCC-P5 PC card and we have checked each bus signal with different loads to ground and to VCC.

Result: The OSC signal shows the flickering display as soon we connect a load of 220Ohm to VCC. To ground we see no influence down to 100 Ohm. The OSC signal is the 14Mhz reference signal used for the PLL's of the videocontroller. In today systems, no other card use this signal.

EMI/EMC:

1. If the bus is DC terminated with 220Ohm's, then we expect to overcome this problem. Only lowcost and bad designed buscards works with DC termination. Actual technology uses allways AC termination (serie capacitance of 47pF).

2. We are obligated to prevent the system from overshots and spikes with onboard serieresistance. Since the OSC signal is the fastest on the ISA-BUS, we use a higher resistance. All values are optimized while the EMC/EMI measurments.

Solution: If any application shows this problem, the BUS Termination must be checked. DC termination on the bus or on any peripheral card is not allowed on the OSC signal. Use generally the AC termination.

Reworks:

1. Increase the termination resistor to 1k for OSC
2. Add a second serieresistor onboard, after the videocontroller, to eliminate the external overload (from the applied termination). This must be done by DIGITAL-LOGIC AG .

Longterm solution: We will fully separate the OSC path from the onboard video OSC path, to be shure, that the customer can not influence the functionality of the board.
We can even not guaranty EMI/EMC values and the function of the extern OSC signal, if the customer use the card with wrong or not qualified termination methods (specially asymetric DC termination).