



# Gamma Correction v1.0

Product Brief

## Introduction

The luminance generated by a physical device is generally not a linear function of the applied signal. This nonlinearity must be compensated in order to achieve correct reproduction of luminance. The Gamma Correction IP Core is a solution for reducing the non-linearity imposed by display devices on the input video.

The Gamma Correction IP core aids system designers to implement this feature in miniature video processing systems using FPGAs. The core can correct Gamma individually on the three colour planes (R, G, and B) or can correct with same Gamma for the three colour planes. The IP core is fully verified in ModelSim environment and validated in real hardware.

This architecture of the core is based on Look up Table method which optimizes the use of direct equation.

## Features

- Dynamically Programmable gamma tables
- Three colour channel LUT structure
- Configurable pixel bit depth from 8,10 to 12 bits
- Optional interpolated output values
- General purpose processor interface
- Delay match support for input sync signals

## Applications

- Consumer Displays
- Image or Video processing Systems
- Machine Vision
- Intensity Correction

## Core Resource Utilization and Performance

Resource utilization after Place and Route in Virtex5 FPGA (XC5VSX50T-1FFG1136) is given in the table below.

Resource Type	Quantity Used
Input pixel depth : 8 Output pixel depth : 8	
Slice Register	30
Slice LUT	24
Block RAM	2
Maximum Clock Frequency	250 MHz

## Verification

The core has been verified through extensive simulation and rigorous code coverage measurements using ModelSim and validated in Xilinx ML506 XtremeDSP development kit equipped with Virtex5 FPGA (XC5VSX50T-1FFG1136).

## Standard Deliverables

- RTL source code in VHDL or post-synthesis EDIF/NGC net list
- Sophisticated VHDL Test bench
- Simulation script, vectors, expected results, and comparison utility
- Product Datasheet
- Comprehensive User guide with detailed application notes

## Documentation

- Gamma Correction v1.0 Datasheet
- Gamma Correction v1.0 User guide

## Purchase and Technical Support

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