

4. SUMMARY/CONCLUSIONS

An initial study was performed to investigate the system effects of moving from the current state-of-the-art scene projectors to a projector with significantly higher apparent temperatures and a wider dynamic range. The primary conclusions from the study were:

- 16-bit linear drive or inputs to a “high-temperature” system will not allow for acceptable resolution at low output
- Similarly, an inherently linear system driven with 16-bit evenly-spaced inputs will not provide acceptable resolution at low output
- The present C&CE NUC implementation will not allow for acceptable NUC performance if the pixel-to-pixel variations are as large as early simulations suggest
- New numerical formats (probably floating point) and LUT representations or transformations will be required to achieve an acceptable NUC for high-temperature projectors that must also provide good performance at near-ambient temperatures.

These considerations and others should be carefully reviewed as the control systems are designed for high temperature arrays currently under development. It is noted that some of the required changes will extend beyond the design of the control electronics. Changes to improve resolution must be implemented in the entire system, including moving from the existing 16 bit radiance interface, which is most common, to some other interface such as a floating point representation in order to achieve the necessary resolution at low apparent temperatures. Changes in the RNUC algorithm may require alteration of the global look-up tables typically used and will likely require additional low radiance measurements to address the higher variability expected in the new systems.

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6. REFERENCES

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