# Article information:

Channel equalization based on QR decomposition in indoor visible light communication | IEEE Conference Publication | IEEE Xplore  
<https://ieeexplore.ieee.org/document/7334344>

# Article summary:

1. QR decomposition based channel equalizer proposed for indoor visible light communication (VLC) systems to overcome the limited bandwidth of phosphor-coated white LEDs.

2. Experimental investigation of a 400-Mb/s VLC system over 1.6-m air transmission with discrete multi-tones (DMT) modulations and discrete Fourier transform (DFT) spreading shows much better transmission performances with QR-CE compared to conventional CE.

3. The proposed QR-CE can combat the power fading due to fiber dispersion in direct-detection optical OFDM (DDO-OFDM) and achieve high spectral efficiency simultaneously.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article discusses the use of QR decomposition based channel equalizer in visible light communication (VLC) systems for indoor broadband wireless access. The article highlights the limitations of phosphor-coated white LEDs and how high spectral efficiency modulation formats such as DMT, OFDM, and CAP have been applied to overcome these limitations. The article also discusses the advantages of using QR-CE in VLC systems to combat power fading due to fiber dispersion.

Overall, the article provides a detailed analysis of the proposed solution and its experimental results. However, there are some potential biases and missing points of consideration that need to be addressed. For example, the article only focuses on the benefits of using QR-CE and does not explore any potential drawbacks or limitations. Additionally, the article does not provide any information on the cost or complexity of implementing this solution.

Furthermore, while the article acknowledges that RGB LEDs can provide higher data rates than phosphor-coated white LEDs through WDM at data rates more than 1-Gb/s, it does not explore this option further or compare it with the proposed solution. This could potentially lead readers to believe that QR-CE is the only viable solution for VLC systems based on phosphor-based LEDs.

Moreover, while the article mentions that high-speed VLC transmission systems require bit power loading or pre-equalization to compensate for frequency response degradation at high frequency of phosphor-based LEDs, it does not provide any evidence or data to support this claim.

In conclusion, while the article provides valuable insights into using QR decomposition based channel equalizer in VLC systems for indoor broadband wireless access, it is important to consider potential biases and missing points of consideration when evaluating its findings. Further research is needed to fully understand the benefits and limitations of this proposed solution compared to other options available for VLC systems.

# Topics for further research:

* Comparison of QR-CE with other equalization techniques in VLC systems
* Cost and complexity of implementing QR-CE in VLC systems
* Limitations and potential drawbacks of using QR-CE in VLC systems
* Comparison of RGB LEDs with phosphor-coated white LEDs for high-speed VLC transmission
* Evidence and data supporting the need for bit power loading or pre-equalization in high-speed VLC transmission systems
* Impact of environmental factors such as ambient light and distance on the performance of QR-CE in VLC systems.

# Report location:

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