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**Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)**

**Submission Title:** [Answers for the ISC questions]

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**Re:** []

**Abstract:** [Answers from VLCC for the ISC questions in TCD discussion.]

**Purpose:** [Contribution to IEEE 802.15 TG7]

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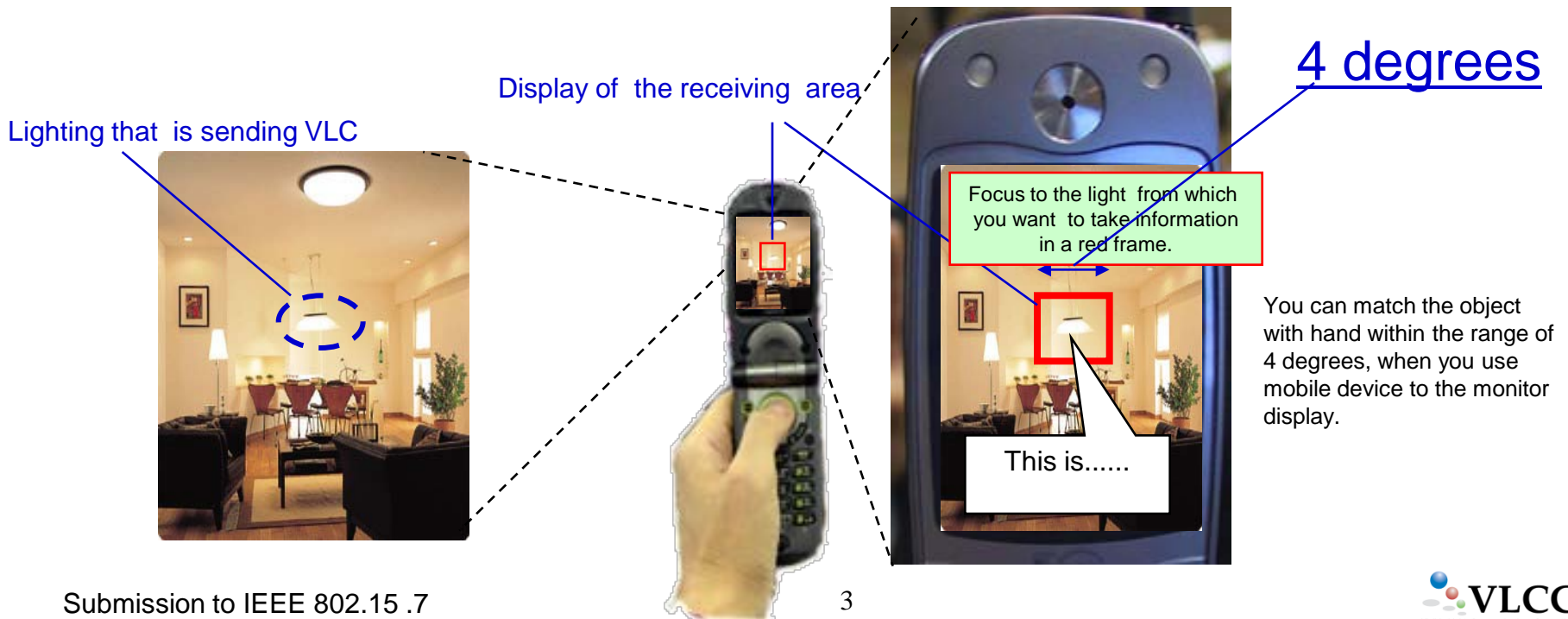
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Answers to the questions in 802.15.7 ML  
about an amendment from VLCC for TCD.

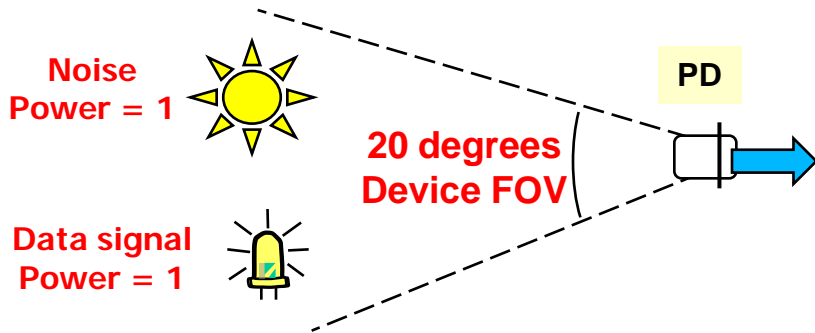
1. Reasons for Device FOV at minimum 4 degrees
2. Reasons why Device FOV doesn't influence SNR

# Why is a minimum FOV of VLC in arrayed PD/image sensor good at 4 degrees?

- The object can be matched at 4 degree-FOV by using image sensor in the mobile device.
  - The object can be matched easily with our hands by camera and binocular, etc.
    - In general, these camera and binocular have about 10 times zoom magnification capability at the maximum zoom.
    - The field angle of camera is about 40 degrees in width. => This means that a 10 times zoom shows 4 degrees in width at the focus-point.



# Why is Device FOV not related directly to SNR in the case of Arrayed PD/Image Sensor ?

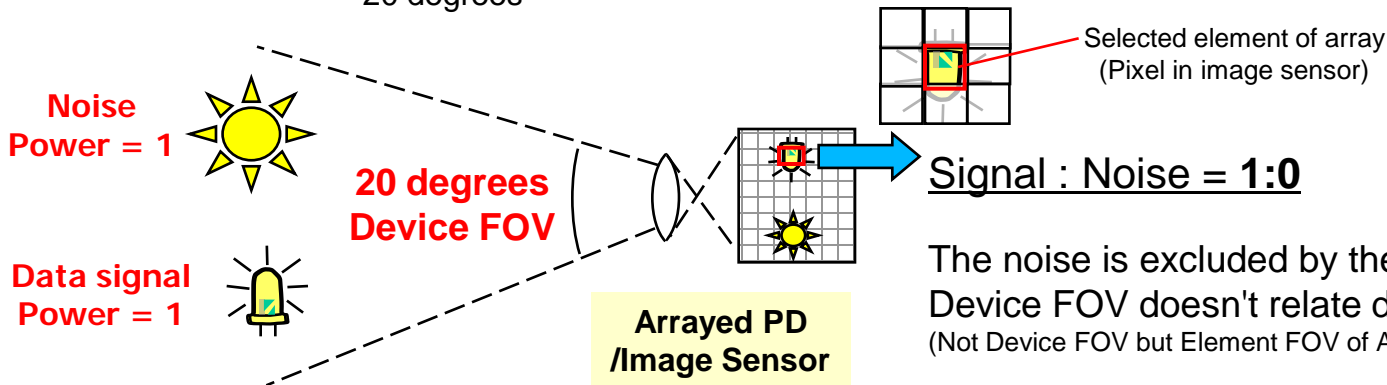


Signal : Noise = 1:1

Everything is multiplied.

SNR deteriorates because the noise ratio increases when Device FOV is getting larger.

Same device FOV  
20 degrees



Signal : Noise = 1:0

The noise is excluded by the spatial separateness. Device FOV doesn't relate directly.  
(Not Device FOV but Element FOV of Array decides SNR.)

- \*1 An appropriate array element can be properly selected.
- \*2 Array and optical system have a sufficient resolution capability.