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

Submission Title: Thoughts on Channel Realizations

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**Re:** n/a

**Abstract:** Basis for the discussion on how to include a set of concrete channel realizations to the channel model and the CMD.

**Purpose:** Contribution towards finalizing the channel modeling document of TG3d

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## Thoughts on Channel Realizations

#### Alexander Fricke, TU Braunschweig

### Frequency Band (1)

• A channel impulse response (CIR) depends on the bandwidth of the underlying signal



- Do we have to define frequency bands?
- Data Center / Intra-Device models output channel transfer functions (CTF)
  → via IFFT, any CIR in any (sub-) band of the

envisaged 252 GHz – 325 GHz range can be evaluated

• OK for the Close-Proximity P2P model?

### Frequency Band (2)

- Proposal: Inclusion of a set of channel transfer functions (CTFs) rather than channel impulse responses (CIRs)
- System proposals have to be tested against the CIRs that are generated from these CTFs according to the frequency bands defined in the proposals
- Advantages:
  - Method covers the full possible frequency range
  - Allows for system designs using sub-bands
  - $\rightarrow$  Agreed on providing channel transfer functions

January 2016

doc.: IEEE 802.15-16-0127-01-003d\_thoughts\_on\_channel\_realizations

#### Composition of the set

- So far, we have agreed upon a number of 100 data sets per application case (P2P, Intra-Device, ...)
- Does it make sense to define sub-sets e.g. 10 mandatory CTFs along with 100 optional ones?
- → Agreed on providing 100 CTFs for optional testing and 10 CTFs for mandatory testing

### Generation of a CIR

- Applied filter functions, ..., IFFT parameters must be defined or at least documented for every proposal
- $\rightarrow$  Agreed.
- → The frequency step between bins should be chosen appropriately according to the expected maximum excess delay of the respective scenario

#### Format

- .mat, .s2p, .csv
  - we should agree
  - → agreed on: ASCII-file with appropriate variable names and indices and comments
- To be embedded in the CMD file or to be stored on a separate webspace
  - where is it hosted?
  - $\rightarrow$  IEEE mentor, embedded in the CMD if possible
  - how is it linked / referenced? → embedded or referenced by doc.number

# Thank You for Your Attention