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

Submission Title: [Preliminary Proposal for TG3d CfP]
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Re: [In response to TG3d 100 Gb/s Call for Proposals (15-15-0936-04-003d)]

Abstract: [Proposal for IEEE 802.15 TG3d.]

Purpose: [To be considered in TG3d baseline document.]

List of Contributors

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Summary

- Application
- Topology
- Modulation Scheme
- Channel Assignments
- Additional MAC functions

Application

- Target application: KIOSK Downloading (Close Proximity Communication)
- The KIOSK Downloading application has some common features with the applications currently considered in IEEE P802.15.3e
- This proposal aims much higher data-rates than those in IEEE P802.15.3e
- Other applications such as "Backhaul/Fronthaul links" and "Wireless links in Data Centers" may also be considered in this proposal.

Topology

- This proposal inherits the "pairnet" concept as considered in IEEE P802.15.3e
- The KIOSK Downloading application has common topology with the topology currently considered in IEEE P802.15.3e

Link 1

TRX1

TRX2
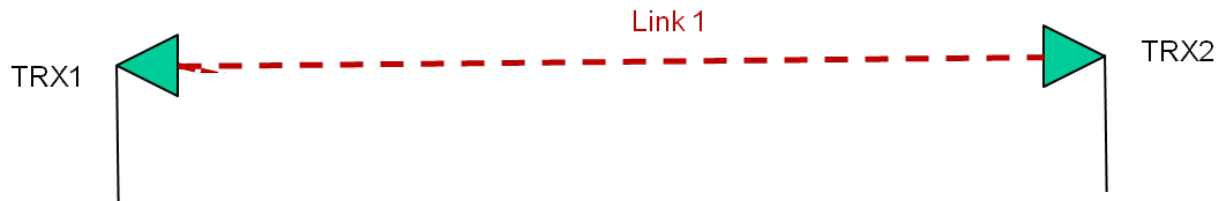
The "pairnet" consists of only two devices at the same time

Modulation Scheme

- 16 QAM and 64 QAM
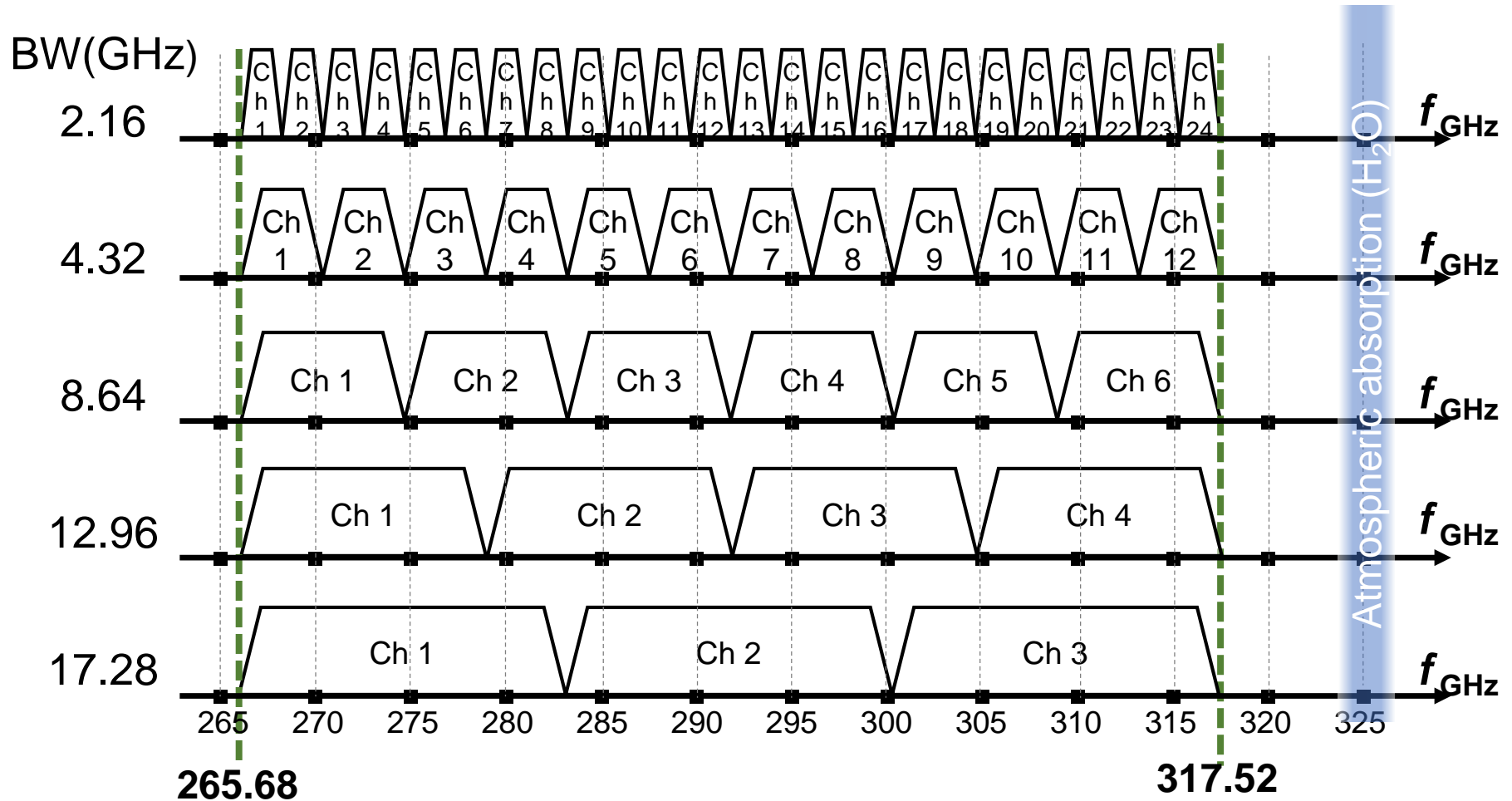 - Compatible to currently considering standard : IEEE P802.15.3e

[Example of QAM in 300 GHz band with Si-CMOS devices]
  - 32 QAM: 17.5 Gbit/s/ch
    (@ channel width = 5 GHz, 6 channels)
    ref. IEEE ISSCC2016, Digest pp. 342-343

Channel Assignments - I

Channel Assignments - II

- Considering compatibility with 60 GHz-band wireless communication such as IEEE P802.15.3c and IEEE P802.15.3e
- Channel width shall be multiples of 2.16 GHz
- Channel bonding scheme shall be considered such as:
  2.16 GHz: 2.16 GHz x 1
  4.32 GHz : 2.16 GHz x 2
  8.64 GHz : 2.16 GHz x 4
  12.96 GHz : 2.16 GHz x 6
  17.28 GHz : 2.16 GHz x 8

Additional MAC functions

■ Reference MACs
- IEEE P802.15.3c (existing standard)
- IEEE P802.15.3e (currently considering standard)

■ Additional MAC functions
- Throughput improvement
- Avoidance of reflected signals