

HE-SIG-B Compression Mode

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HE-SIG-B Compression for MU-MIMO

- For MU-MIMO over the entire BW, 1 bit in HE-SIG-A indicates compression. [1]
- RU Size is set to the largest RU for the BW (20MHz – 242 tone RU, 40 – 484, 80– 996, 160 – 2x996)
- The SFD states that the user specific sub-fields are split equally between the two HE-SIG-B Channels for efficient load-balancing
- Only RU signaling is absent in the HE-SIG-B common fields

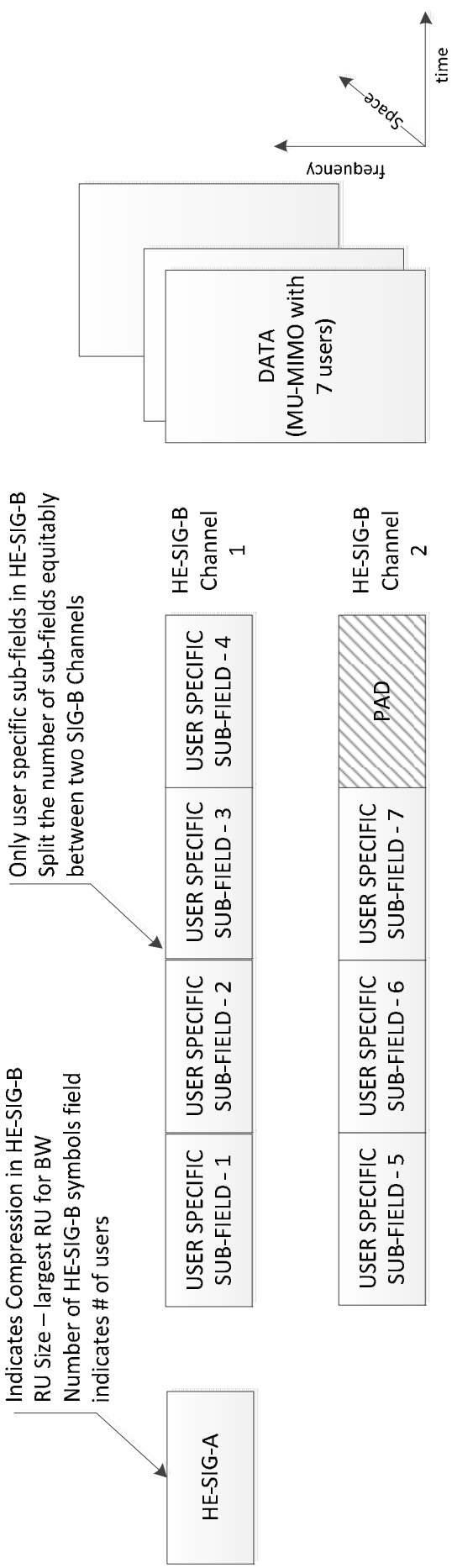
- **In this presentation**

- Resolve Open Issue of number of user signaling
- Clarify “equal split” between the two content channels
- Optimize HE-SIG-B length by not requiring HE-SIG-B common field with compression.

Compression mode - TBDs

- Need to indicate number of users in full bandwidth MU-MIMO allocation
 - *Solution: The number of HE-SIG-B symbols field in HE-SIG-A is re-purposed to indicate the number of MU-MIMO users, when compression mode is enabled*
- The equal distribution of user fields in the two content channels needs to be clearly stated
 - *Solution: For k user MU-MIMO PPDU, $1, \dots, \left\lceil \frac{k}{2} \right\rceil$ user specific sub-fields in HE-SIG-B channel 1 and $\left\lfloor \frac{k}{2} \right\rfloor + 1, \dots, k$ user specific sub-fields in HE-SIG-B channel 2*
- No common field in HE-SIG-B when full bandwidth MU-MIMO is used
 - *All required signaling fields for full bandwidth MU-MIMO are carried in HE-SIG-A and the user specific sub-fields. Maintains maximum signaling efficiency with respect to 11ac MU-MIMO.*

Summary



References

- [1] 11-15-1315-01-00ax-HE-SIG-B Mapping and Compression.pptx
- [2] 11-15-0132-15-00ax-spec-framework.docx

Straw Poll #1

- Do you agree to add the following description to the SIGB number of symbols fields in Table 2 in the SFD: HE-SIG-A fields for the HE MU PPDU of the SFD?

| Field | Length (bits) | Description | Encoding |
|------------------------|---------------|---|----------|
| SIGB Number Of Symbols | 4 | Support about 16 users using MCS0 per BCC. <u>When SIGB compression mode is enabled, the SIGB number of symbols are re-purposed to indicate the number of MU-MIMO users</u> | |

Straw Poll #2

- **Do you agree to modify the HE-SIG-B compression mode description in the SFD [Page 9, line 2-4 in 11-15-0132-15-00ax-spec-framework.docx] as follows:**

In an HE MU PPDU the HE-SIG-A field shall indicate the number of STAs when full bandwidth MU-MIMO compressed SIG-B mode is indicated. ~~Details are TBD.~~ When SIGB compression mode is enabled, the SIGB number of symbols are re-purposed to indicate the number of MU-MIMO users

[PHY Motion 111, January 2016, see [26]]

Straw Poll #3

- **Do you agree to modify the HE-SIG-B compression mode description in the SFD [Page 9, line 15-20 in 11-15-0132-15-00ax-spec-framework.docx] as follows:**

A compression bit is carried in the HE-SIG-A MU format to differentiate full BW MU-MIMO from OFDMA MU PPDU. In case of full BW MU-MIMO, the following conditions hold:

- Only applicable for RU sizes 242, 484, 996, 2*996
- The ~~RU information in~~ HE-SIG-B common field is not signaled
- For bandwidths > 20 MHz, the user specific sub-fields are split equitably between the two HE-SIG-B Channels i.e., For k user MU-MIMO PPDU, $1, \dots, \lfloor \frac{k}{2} \rfloor$ user specific sub-fields in HE-SIG-B channel 1 and $\lfloor \frac{k}{2} \rfloor + 1, \dots, k$ user specific sub-fields in HE-SIG-B channel 2

[PHY Motion 87, November 2015, see [25]]