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Proposal for an improved B16 sequence

NTT

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Submission

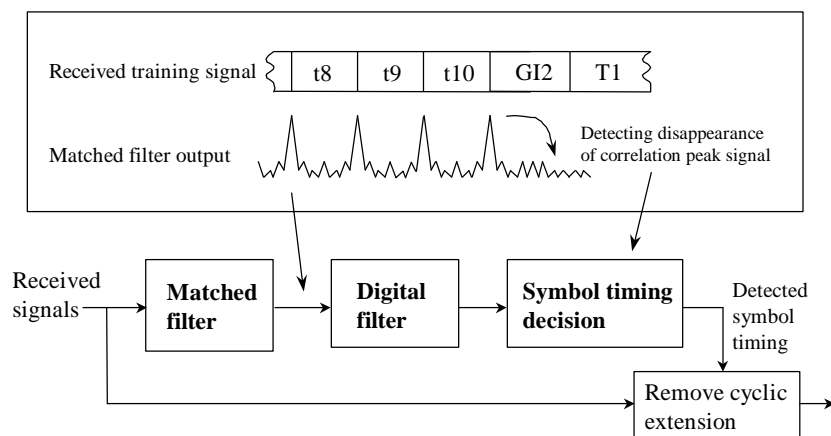
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A symbol timing detection scheme



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Symbol Contents

- Current short symbol pattern

$$B16_{-26...26} = \sqrt{2} * \{0, 0, 1+j, 0, 0, 0, -1-j, 0, 0, 0, -1-j, 0, 0, 0, 1-j, 0, 0, 0, -1-j, 0, 0, 0, 1-j, 0, 0, 0, 0, 0, 1+j, 0, 0, 0, 0, 0, 1-j, 0, 0, 0, -1-j, 0, 0, 0, 1-j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0\}$$

- Proposed B16 symbol(This modified B16 symbol pattern was accepted by the last ETSI BRAN meeting.)

$$B16_{-26...26} = \sqrt{2} * \{0, 0, 1+j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, -1-j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0, 0, 0, 0, 1+j, 0, 0, 0, 0, 0, -1-j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0\}$$

Generated by 4 points cyclic time shift and π rad rotation from current B16



Same PAPR and dynamic range with current B16

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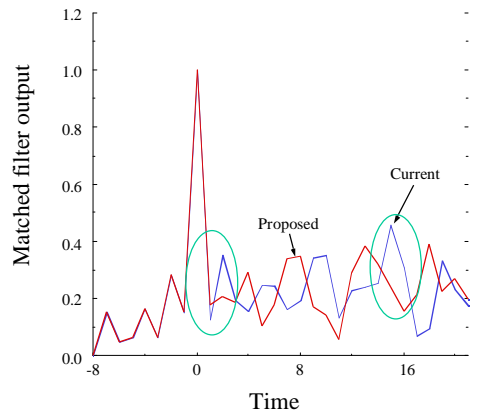
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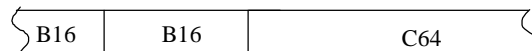
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Matched filter output



Search was carried out to obtain low sidelobe at the neighborhood of mainlobe (around $t=0$) and the next short symbol period ($t=16$).



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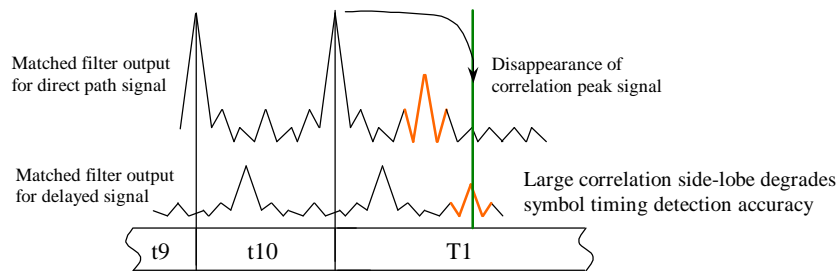
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Influence of the high correlation side-lobe on timing detection accuracy



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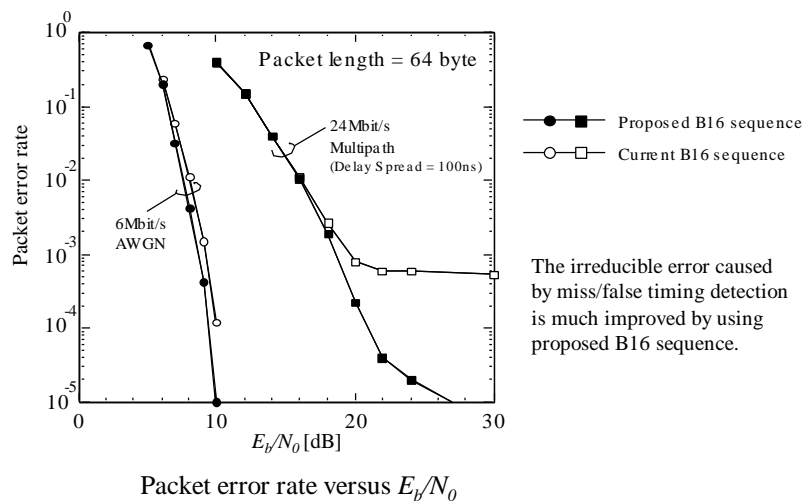
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Packet error rate performance



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Conclusion

We propose to adopt the modified B16 short symbol pattern which was accepted by the ETSI BRAN.

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