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Abstract	Text corresponding to submitted comments on 80216abc-01/01r1
Purpose	Consideration & decision
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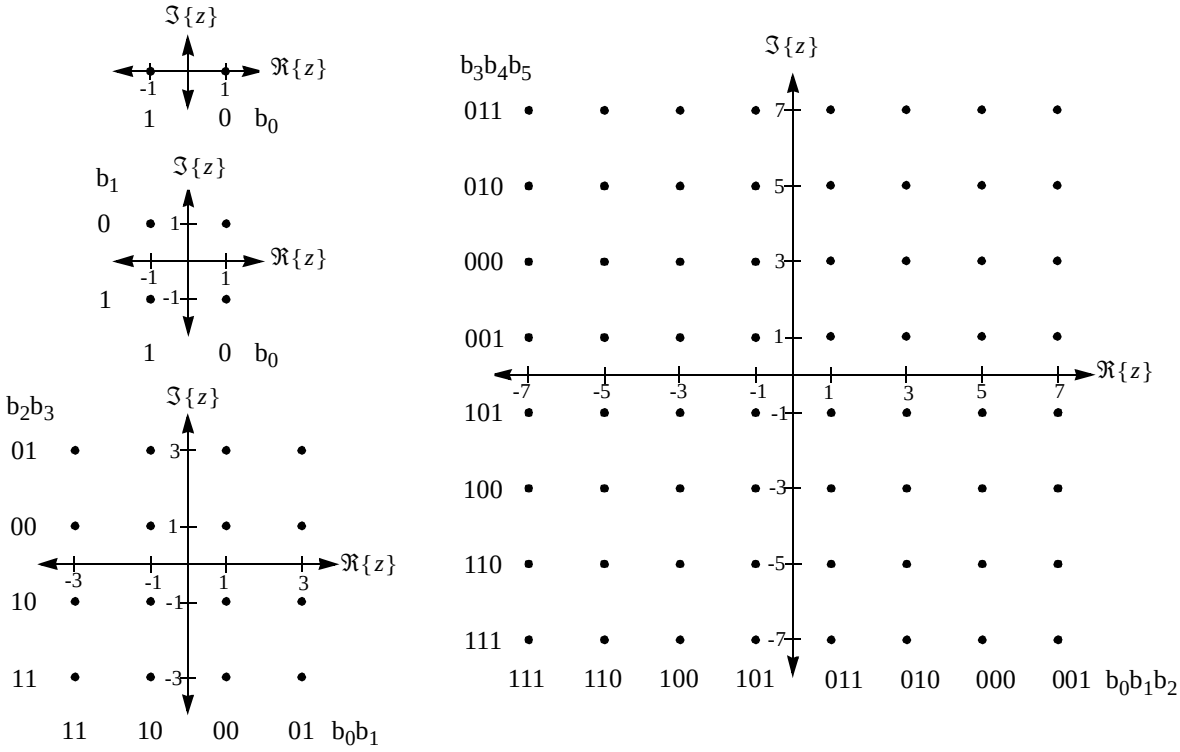
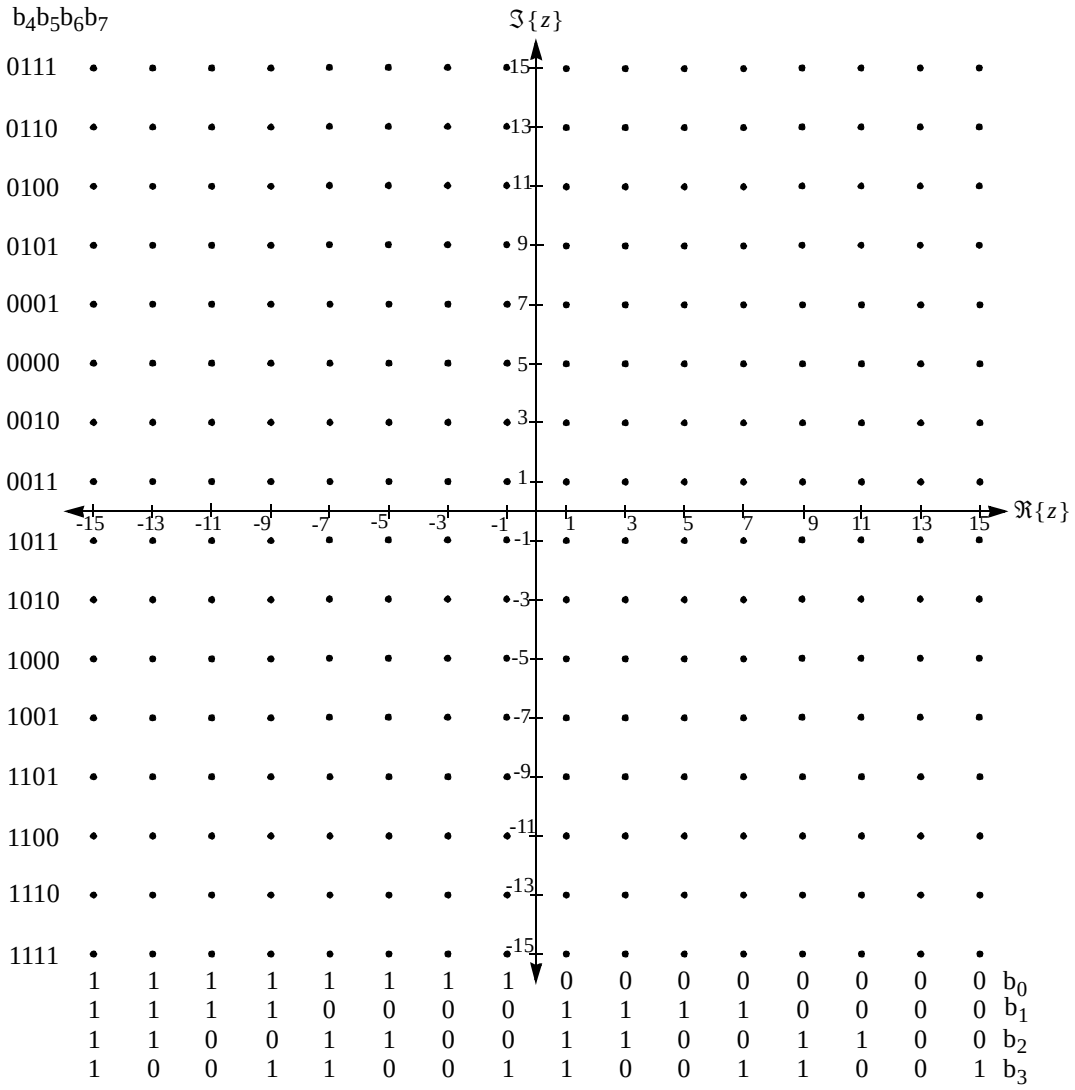
8.3.3.1.5.4 Constellation mapping

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ℑ{z}
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0101
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1010
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-15 -13 -11 -9 -7 -5 -3 -1 1 3 5 7 9 11 13 15
1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 b0
1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 b1
1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 b2
1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 b3

8.3.6.3.4.1.3 Permutation Example

This clause is informative only.

For clarity, an example for using the permutation procedure with the UL 2048 mode is given. The relevant parameters characterizing the UL 2048 mode are as follow:

- Number of Sub-Channels: $N_{elements} = 32$
- Number of data carriers in subchannel: $N_{subchannel} = 48$
- Number of carriers in subchannel: $N_{groups} = 53$
- $\{PermutationBase_0\}$ = {3, 18, 2, 8, 16, 10, 11, 15, 26, 22, 6, 9, 27, 20, 25, 1, 29, 7, 21, 5, 28, 31, 23, 17, 4, 24, 0, 13, 12, 19, 14, 30}

Using the procedure defined in clause [EDITORIAL NOTE: LINK TO 8.3.6.3.4.1.1] does the allocating:

1 The basic series of 32 numbers is {3, 18, 2, 8, 16, 10, 11, 15, 26, 22, 6, 9, 27, 20, 25, 1, 29, 7, 21, 5, 28, 31, 23, 17, 4, 24, 0, 13, 12, 19, 14, 30}

2 In order to get 32 different permutation the series is rotated to the left (from no rotation at all up to 31 rotations). For the first permutation ($permutationbase_{s=1}$), we get the following series: 18, 2, 8, 16, 10, 11, 15, 26, 22, 6, 9, 27, 20, 25, 1, 29, 7, 21, 5, 28, 31, 23, 17, 4, 24, 0, 13, 12, 19, 14, 30, 3

3 To get an $N_{subchannel} = 48$ length series we concatenate the permutated series 2 times (to get a 64 length series) and take the first 48 numbers only: 18, 2, 8, 16, 10, 11, 15, 26, 22, 6, 9, 27, 20, 25, 1, 29, 7, 21, 5, 28, 31, 23, 17, 4, 24, 0, 13, 12, 19, 14, 30, 3, 18, 2, 8, 16, 10, 11, 15, 26, 22, 6, 9, 27, 20, 25, 1, 29. [EDITORIAL NOTE: verify need for this step]

4 The concatenation depends on the cell Id (which characterizes the working cell and can range from 0 to 15). For example when using permutation s=1 with $ID_{cell} = 2$

$$c_1[k] = \{p_s[k_{mod(32)}] + ceil[(k+1)/32] - 2\}_{mod(32)} \quad \text{with } k = 0, 1, \ldots, 52$$

c_1 = {0, 1, 7, 15, 9, 10, 14, 25, 21, 5, 8, 26, 19, 24, 0, 28, 6, 20, 4, 27, 30, 22, 16, 3, 23, 31, 12, 11, 18, 13, 30, 1, 2, 8, 16, 10, 11, 15, 26, 22, 6, 9, 27, 20, 25, 1, 29, 7, 21, 5, 28, 31, 23}

5 The last step achieves the carrier indices allocated for the specific Sub-Channel with the current Cell Id. Using $carrier(n,1)) = 32n + c_1[n]$,where $n = 0, 1, \ldots, 52$ the current permutation of subchannel 1 is found:

{32, 65, 103, 143, 169, 202, 238, 281, 309, 325, 360, 410, 435, 472, 480, 540, 550, 596, 612, 667, 702, 726, 752, 771, 823, 863, 876, 907, 946, 973, 1022, 1025, 1058, 1096, 1136, 1162, 1195, 1231, 1274, 1302, 1318, 1353, 1403, 1428, 1465, 1473, 1533, 1543, 1589, 1605, 1660, 1695, 1719}