Let $S = S_1 \cup S_2 \cup S_3$

$S[0,1] = [0.2, 0.3] \cup [0.5, 0.6] \cup [0.10, 0.11]$ (expressed mod 16)

$S^2[0,1] = [0.22, 0.23] \cup [0.25, 0.26] \cup [0.2,10, 0.2,11]$
$\cup [0.5,13, 0.5,14] \cup [0.5,10, 0.5,11] \cup [0.55, 0.56]$
$\cup [0.62, 0.63] \cup [0.10\,5, 0.10, 6] \cup [0.10\,10, 0.10\,11]$

$S^3[0,1] = [0.222, 0.223] \cup [0.225, 0.226] \cup [0.22,10, 0.22\,11]$
$\cup [0.5\,10\,2] \cup [0.5,10,5, 0.5,10,6] \cup [0.5,10,10, 0.5\,10\,11]$
$\cup [0.10,10,2, 0.10\,10\,3] \cup [0.10\,10\,5, 0.10\,10\,6] \cup [0.10\,10\,10, 0.10\,10\,11] \ldots$

At stage S^k, we have 3^k intervals of length 16^{-k} from a point whose decimal expansion consists solely of the numbers 2, 5, 10. Note that whatever the decimal expansion of $x \in [0,1]$, $x = 0.a_1 a_2 \ldots$

$S_1(x) = 0.2\, a_1 \ldots$

$S_2(x) = 0.5, (15-a_1), (15-a_2) \ldots$

$S_3(x) = 0.10\, a_1\, a_2 \ldots$

So $S_{i_1} S_{i_2} S_{i_3} S_{i_4} \ldots S_{i_k}(x) = 0.b_{i_1} b_{i_2} b_{i_3} \ldots b_{i_k} \ldots$?

where b_{ij} is one of 2, 5 or 10.