$m \to$ integer, $1 \leq m \leq 80$

$$q(m) = \lfloor 0.1m \rfloor$$

$$r(m) = m - (\lfloor 0.1m \rfloor \times 10)$$

both $q(m)$ and $r(m)$ are integers.

$$BL(m) = 25 + 1.7\,q(m) + 6.1\,r(m)$$

The $BL(m)$ that I took $= 55.8$.

Let us see if we can find an m such that $BL(m) = 55.8$

$\Rightarrow \quad 25 + 1.7\,q(m) + 6.1\,r(m) = 55.8$

$\Rightarrow \quad 1.7\,q(m) + 6.1\,r(m) = 30.8$

$\Rightarrow \quad \boxed{17\,q(m) + 61\,r(m) = 308}$

As $1 \leq m \leq 80 \Rightarrow 0.1 \leq 0.1m \leq 8 \to \lfloor 0.1m \rfloor \in \{0, 1, 2, \ldots, 8\}$

clearly $r(m) = m - (10\lfloor 0.1m \rfloor) \leq m$.

Note that $\lfloor 0.1m \rfloor$ gives the digit in the 10's place of the two digit integer m. Hence $r(m)$ will give the digit in the unit's place of m i.e. $r(m) \in \{0, 1, 2, \ldots, 9\}$.

Now, $\left\lfloor \frac{308}{17} \right\rfloor = 18$ and $\left\lfloor \frac{308}{61} \right\rfloor = 5$

$\Rightarrow r(m) \in \{0,1,2,3,4,5\}$.

if $r(m) = 5$

$$\Rightarrow 17q(m) = 308 - 61\times 5$$
$$= 308 - 305$$
$$= 3$$

here $q(m)$ cannot be an integer if $r(m)=5$.

similarly if $r(m) = 4$

$$17q(m) = 308 - 61\times 4$$
$$= 64$$

here too $q(m)$ cannot be an integer.

if $r(m) = 3$

$$17q(m) = 308 - 61\times 3 = 125$$

here too $q(m)$ cannot be an integer

if $r(m) = 2$

$$17q(m) = 308 - 61\times 2 = 186$$

$$\Rightarrow q(m) = \frac{186}{17} = 10.9411 > 8.$$

if $r(m) = 1$ or 0, $q(m)$ will be further greater than 10.9411, which is not possible.

Hence, we couldn't find any integer $m < 80$ such that $BL(m) = 55.8\,kHz$

So, my choice $BL = 55.8\,kHz$ & $BH = 75.8\,kHz$ are unique.

For the first filter, the sampling frequency is $330\,kHz$. Half of this sampling frequency is $165\,kHz$. As both BL & BH are less than

165 kHz, there will not be any aliasing.