

FIG. 1

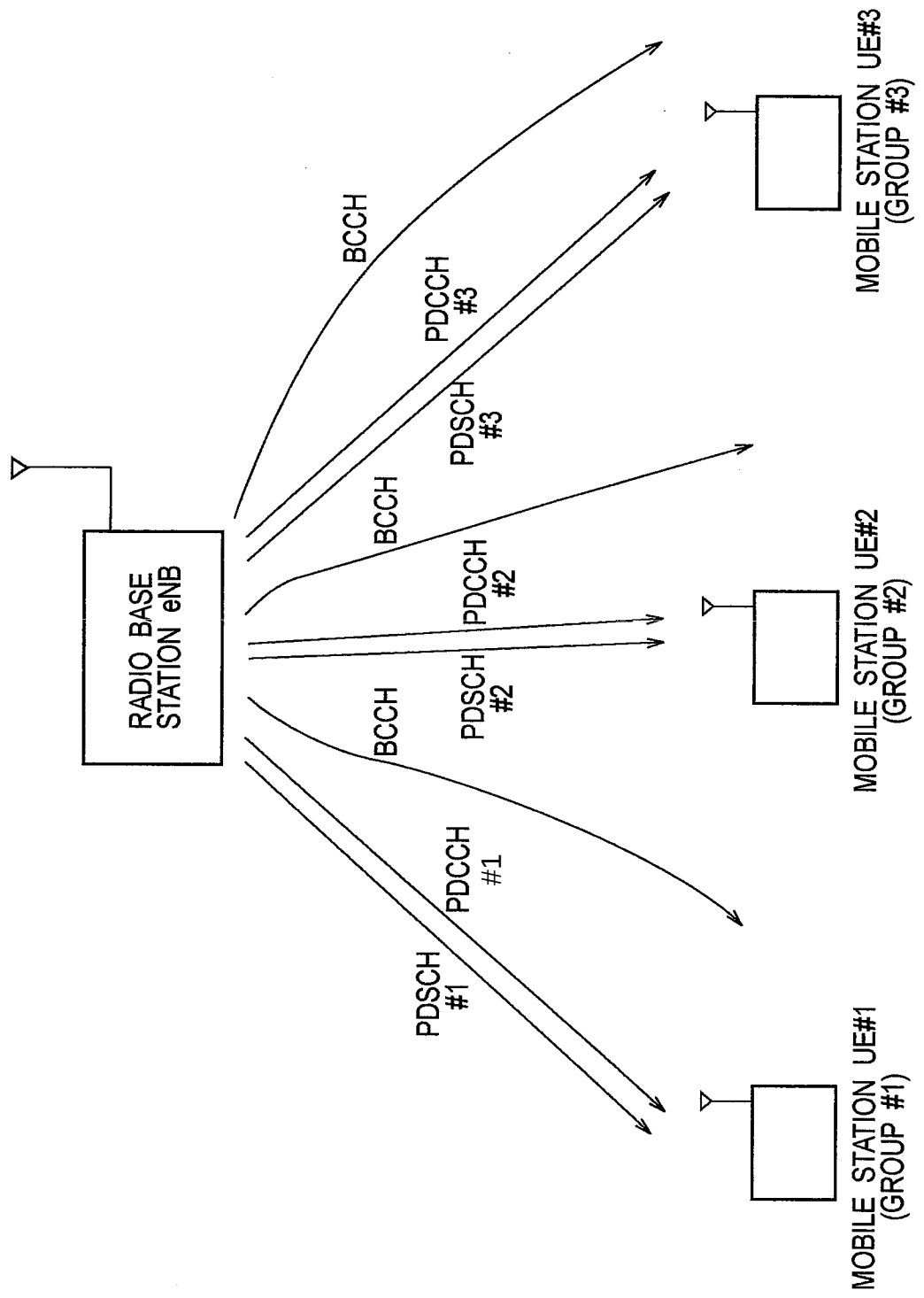


FIG. 2

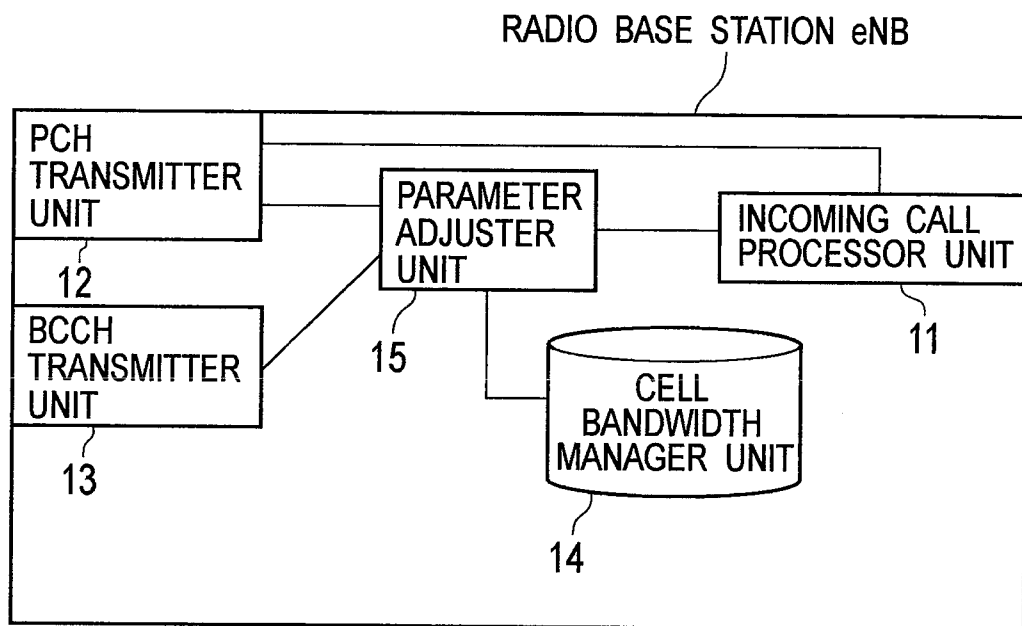
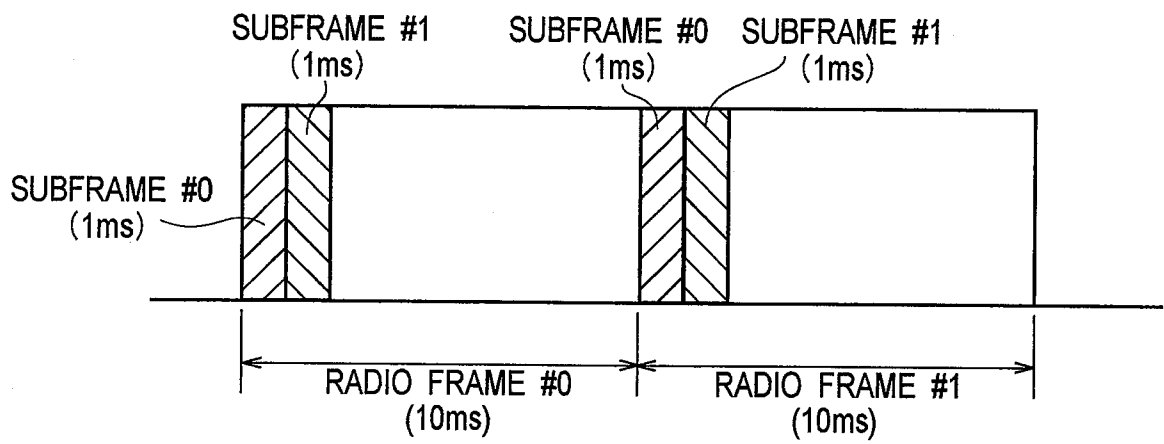


FIG. 3

(a)



(b)

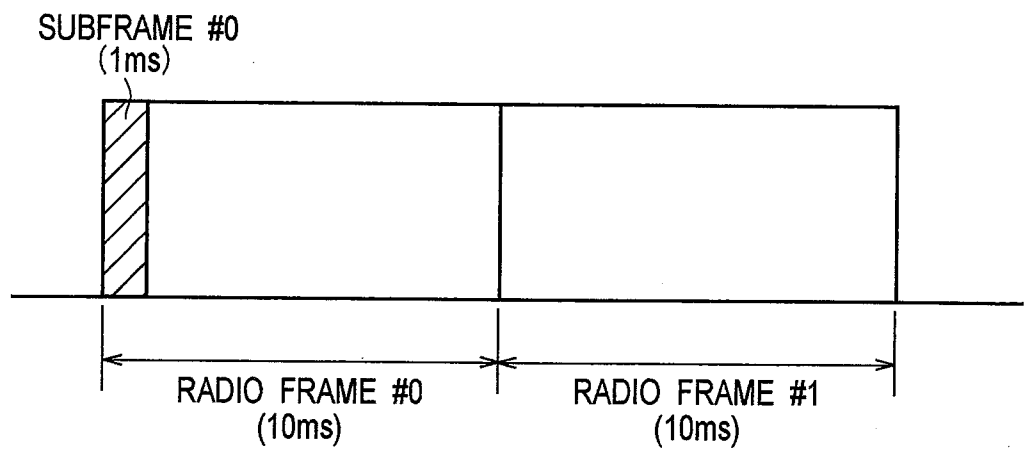


FIG. 4

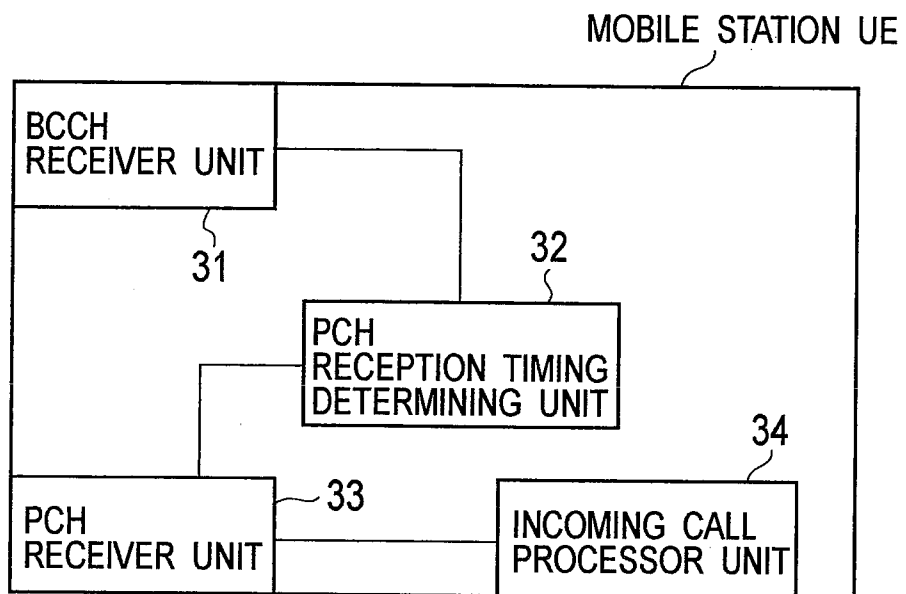
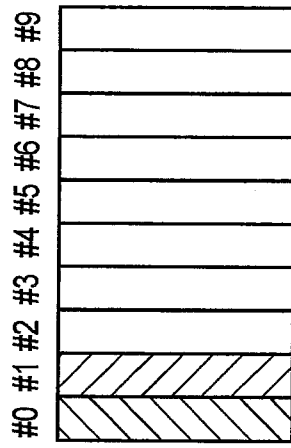
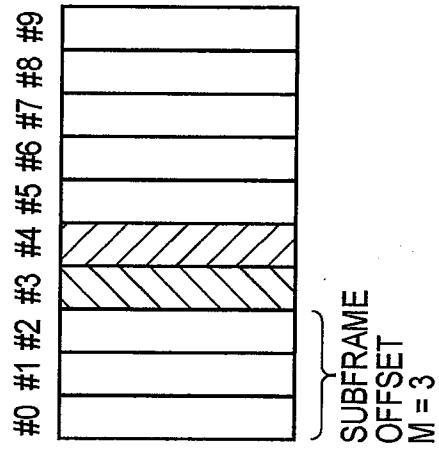


FIG. 5

(a)



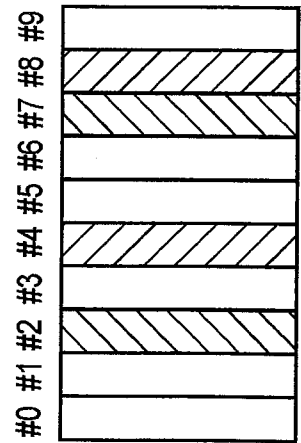
(b)



(c)

BITMAP (10 BITS)

0 0 1 0 1 0 0 1 1 0



(d)

MAPPING PATTERN (3 BITS)

|    |   |   |   |   |   |   |   |   |   |
|----|---|---|---|---|---|---|---|---|---|
| #0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| #1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| #7 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |

FIG. 6

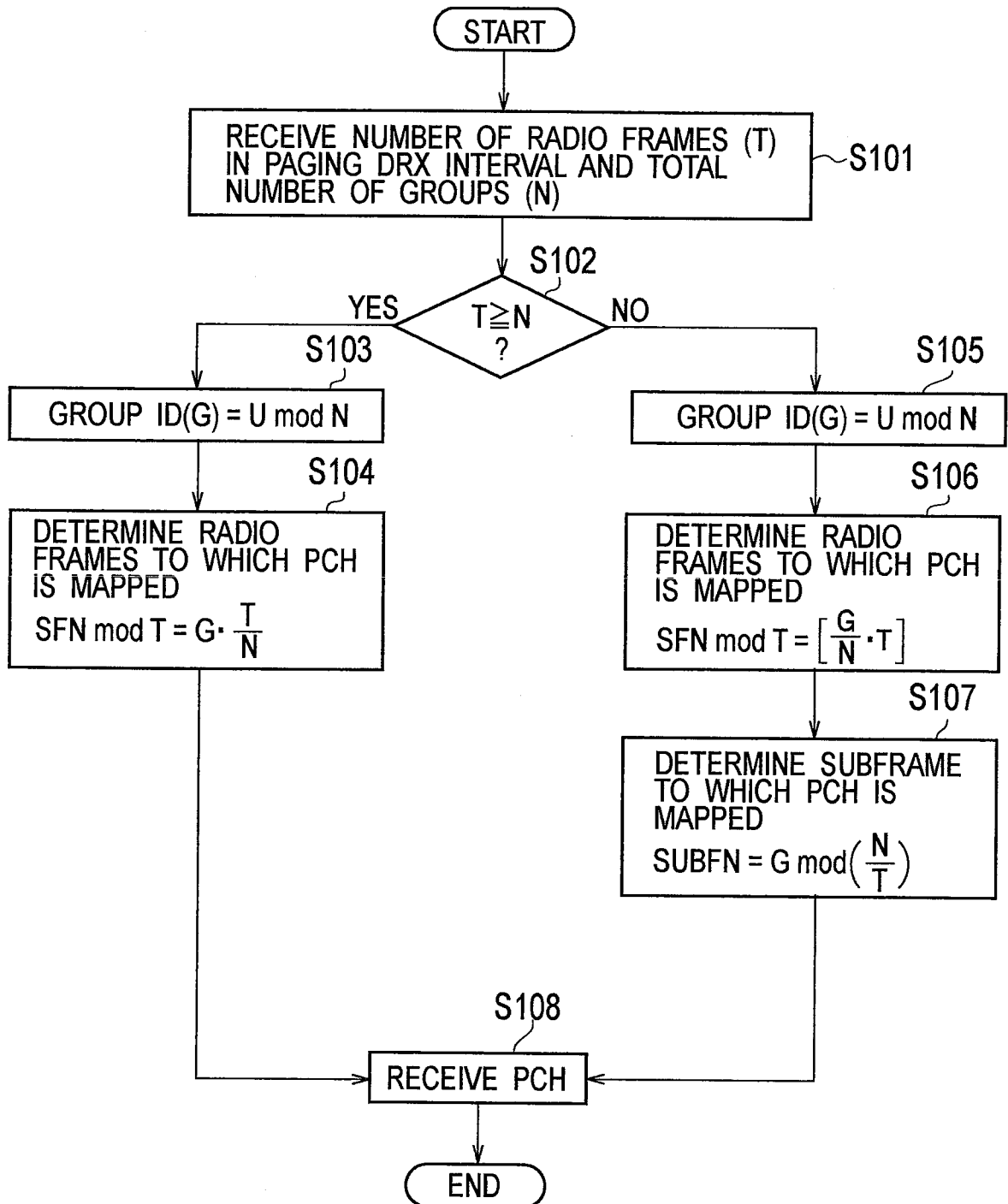


FIG. 7

|                                         | ALTERNATIVE EMBODIMENT 1                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radio frame                             | $\text{SFN mod } T = \left\lceil \frac{T}{N} \right\rceil \cdot \{U \bmod \{\min(T, N)\}\}$                                                                                                                                                                                                                                                                                                                                                                              |
| Subframe Index                          | $i = \left( \frac{U}{T} \right) \bmod \left\lceil \frac{N}{T} \right\rceil$                                                                                                                                                                                                                                                                                                                                                                                              |
| Example1<br>$T = 128$<br>$N / T = 4$    | <div style="text-align: center;"> <div>MSB</div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div>12</div><div>11</div><div>10</div><div>9</div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span>unused</span><span>subframe</span><span>radio frame</span> </div> <div>LSB</div> </div> |
| Example2<br>$T = 32$<br>$N / T = 8$     | <div style="text-align: center;"> <div>MSB</div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div>12</div><div>11</div><div>10</div><div>9</div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span>unused</span><span>subframe</span><span>radio frame</span> </div> <div>LSB</div> </div> |
| Example3<br>$T = 64$<br>$N / T = 1 / 4$ | <div style="text-align: center;"> <div>MSB</div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div>12</div><div>11</div><div>10</div><div>9</div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span>unused</span><span>radio frame</span> </div> <div>LSB</div> </div>                      |
| Description                             | LSBs of UE ID are used for radio frame calculation, and MSBs are used for subframe calculation. The bits used for calculation depend on the values of T and N.                                                                                                                                                                                                                                                                                                           |

FIG. 8

|                                     |                                                                                                                                                                                                                                                                            |    |    |    |   |   |   |   |   |   |   |   |   |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---|---|---|---|---|---|---|---|---|
|                                     | ALTERNATIVE EMBODIMENT 2                                                                                                                                                                                                                                                   |    |    |    |   |   |   |   |   |   |   |   |   |
| Radio frame                         | $\text{SFN mod } T = \left\lfloor \frac{T}{N} \cdot (U \bmod N) \right\rfloor$                                                                                                                                                                                             |    |    |    |   |   |   |   |   |   |   |   |   |
| Subframe Index                      | $i = U \bmod \left\lceil \frac{N}{T} \right\rceil$                                                                                                                                                                                                                         |    |    |    |   |   |   |   |   |   |   |   |   |
| Example1<br>T = 128<br>N / T = 4    | <div><div>MSB</div><div><table><tr><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table><div><div>unused</div><div>radio frame</div><div>subframe</div></div></div><div>LSB</div></div> | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 12                                  | 11                                                                                                                                                                                                                                                                         | 10 | 9  | 8  | 7 | 6 | 5 | 4 | 3 | 2 | 1 |   |   |
| Example2<br>T = 32<br>N / T = 8     | <div><div>MSB</div><div><table><tr><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table><div><div>unused</div><div>radio frame</div><div>subframe</div></div></div><div>LSB</div></div> | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 12                                  | 11                                                                                                                                                                                                                                                                         | 10 | 9  | 8  | 7 | 6 | 5 | 4 | 3 | 2 | 1 |   |   |
| Example3<br>T = 64<br>N / T = 1 / 4 | <div><div>MSB</div><div><table><tr><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table><div><div>unused</div><div>radio frame</div></div></div><div>LSB</div></div>                    | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 12                                  | 11                                                                                                                                                                                                                                                                         | 10 | 9  | 8  | 7 | 6 | 5 | 4 | 3 | 2 | 1 |   |   |
| Description                         | MSBs of UE ID are used for radio frame calculation, and LSBs are used for subframe calculation. The bits used for calculation depend on the values of T and N.                                                                                                             |    |    |    |   |   |   |   |   |   |   |   |   |

FIG. 9

|                                     |                                                                                                                                                                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | ALTERNATIVE EMBODIMENT 3                                                                                                                                                                                                                                                  |
| Radio frame                         | $\text{SFN mod } T = \left\lceil \frac{T}{N} \right\rceil \cdot \left\{ \left( \frac{U}{16} \right) \bmod \{ \min ( T, N) \} \right\}$                                                                                                                                    |
| Subframe Index                      | $i = U \bmod \left\lceil \frac{N}{T} \right\rceil$                                                                                                                                                                                                                        |
| Example1<br>T = 128<br>N / T = 4    | <div><div>MSB</div><div><div>12</div><div>11</div><div>10</div><div>9</div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div><div>LSB</div></div> <div><div>radio frame</div><div>subframe</div></div>                |
| Example2<br>T = 32<br>N / T = 8     | <div><div>MSB</div><div><div>12</div><div>11</div><div>10</div><div>9</div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div><div>LSB</div></div> <div><div>radio frame</div><div>subframe</div></div>                |
| Example3<br>T = 64<br>N / T = 1 / 4 | <div><div>MSB</div><div><div>12</div><div>11</div><div>10</div><div>9</div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div><div>LSB</div></div> <div><div>unused</div><div>radio frame</div><div>unused</div></div> |
| Description                         | Similar to Alt. 2 but the bit split is fixed irrespective of the values of T and N. This is achieved by using U / 16 in the radio frame formula (this is just an example to cover in case max 10 paging subframes can be configured per radio frame).                     |

FIG. 10

| mapping pattern# | # paging subframes per radio frame $N_{fr}$ | Description                          | Mapping                                                                                                                                                              | Paging capacity |
|------------------|---------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 0                | 1 / 4                                       | 1 paging occasion per 4 radio frames | $i = 0 \rightarrow \text{subframe\#9}$                                                                                                                               | 2.5%            |
| 1                | 1 / 2                                       | 1 paging occasion per 2 radio frames | $i = 0 \rightarrow \text{subframe\#9}$                                                                                                                               | 5%              |
| 2                | 1                                           | 1 paging occasion per radio frame    | $i = 0 \rightarrow \text{subframe\#9}$                                                                                                                               | 10%             |
| 3                | 2                                           | 2 paging occasions per radio frame   | $i = 0 \rightarrow \text{subframe\#9}$<br>$i = 1 \rightarrow \text{subframe\#4}$                                                                                     | 20%             |
| 4                | 4                                           | 4 paging occasions per 4 radio frame | $i = 0 \rightarrow \text{subframe\#9}$<br>$i = 1 \rightarrow \text{subframe\#4}$<br>$i = 2 \rightarrow \text{subframe\#8}$<br>$i = 3 \rightarrow \text{subframe\#3}$ | 40%             |
| 5                | Reserved                                    | —                                    | —                                                                                                                                                                    | —               |
| 6                | Reserved                                    | —                                    | —                                                                                                                                                                    | —               |
| 7                | Reserved                                    | —                                    | —                                                                                                                                                                    | —               |

FIG. 11

