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| CR-Formv3 | |
| CHANGE REQUEST | |
| ⚡ 25.944 CR 05 ⚡ rev - ⚡ Current version: 3.3.0 ⚡ | |

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⚡ symbols.

Proposed change affects: ⚡ (U)SIM ME/UE Radio Access Network Core Network

| | | | |
|------------------------|---|-----------------|--|
| Title: | ⚡ 1.28 Mcps TDD related changes to 25.944 | | |
| Source: | ⚡ Siemens AG, CATT | | |
| Work item code: | ⚡ LCRTDD | Date: | ⚡ 09.01.2001 |
| Category: | ⚡ B | Release: | ⚡ REL-4 |
| | Use <u>one</u> of the following categories: F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) | | Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5) |
| | Detailed explanations of the above categories can be found in 3GPP TR 21.900. | | |

| | | | |
|--------------------------------------|--|--|--|
| Reason for change: | ⚡ Inclusion of the Workitem LCRTDD in release 4 | | |
| Summary of change: | ⚡ This CR describes coding and multiplexing examples for 1.28Mcps TDD. | | |
| Consequences if not approved: | ⚡ Incompleteness of TR25.944 with respect to LCR-TDD | | |

| | | | |
|------------------------------|---|---|--|
| Clauses affected: | ⚡ 4.2 (only heading), 4.3 (new section) | | |
| Other specs affected: | <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications | ⚡ | |
| Other comments: | ⚡ | | |

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⚡ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2 TDD mode – 3.84Mcps TDD option

4.3 TDD mode – 1.28Mcps TDD option

4.3.1 Downlink

4.3.1.1 BCH

Table XX: Parameters for BCH

| | |
|-----------------------------|--|
| <u>Transport block size</u> | <u>246 bits</u> |
| <u>CRC</u> | <u>16 bits</u> |
| <u>Coding</u> | <u>CC, coding rate = 1/3</u> |
| <u>TTI</u> | <u>20 ms</u> |
| <u>Codes and time slots</u> | <u>SF = 16 x 2 codes x 1 time slot</u> |
| <u>TFCI</u> | <u>0 bit</u> |
| <u>TPC</u> | <u>0 bit</u> |

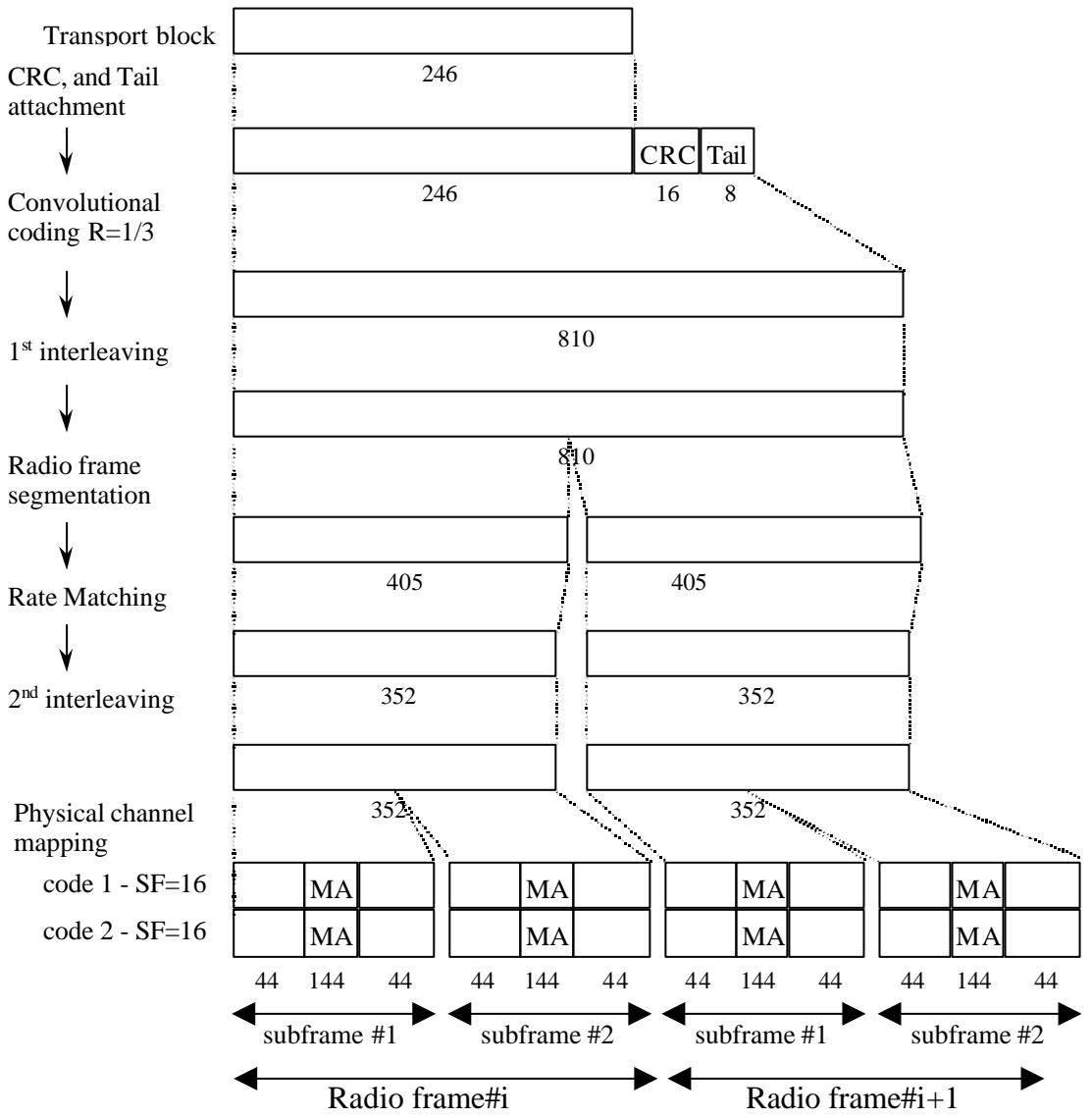


Figure XX: Channel coding for BCH

4.3.1.2 Example for PCH and FACH

Table 26: Parameters for PCH and FACH

| | | |
|---------------------------------|-------------------|--|
| <u>Transport block size</u> | <u>PCH</u> | <u>$N_{PCH}=80$ or <u>240 bits</u></u> |
| | <u>FACH1</u> | <u>360 bits</u> |
| | <u>FACH2</u> | <u>168 bits</u> |
| <u>Transport block set size</u> | <u>PCH</u> | <u>$80 \cdot B_{PCH}$ or $240 \cdot B_{PCH}$ bits ($B_{PCH}=0,1$)</u> |
| | <u>FACH1</u> | <u>$360 \cdot B_{FACH1}$ bits ($B_{FACH1}=0,1$)</u> |
| | <u>FACH2</u> | <u>$168 \cdot B_{FACH2}$ bits ($B_{FACH2}=0,1,2$)</u> |
| <u>Coding</u> | <u>PCH, FACH2</u> | <u>CC, coding rate = 1/2</u> |
| | <u>FACH1</u> | <u>TC</u> |
| <u>TTI</u> | | <u>10 ms</u> |
| <u>Codes and time slots</u> | | <u>SF = 16 x 6 codes x 1 time slot</u> |
| <u>TFI</u> | | <u>16 bit</u> |
| <u>TPC</u> | | <u>0 bit</u> |

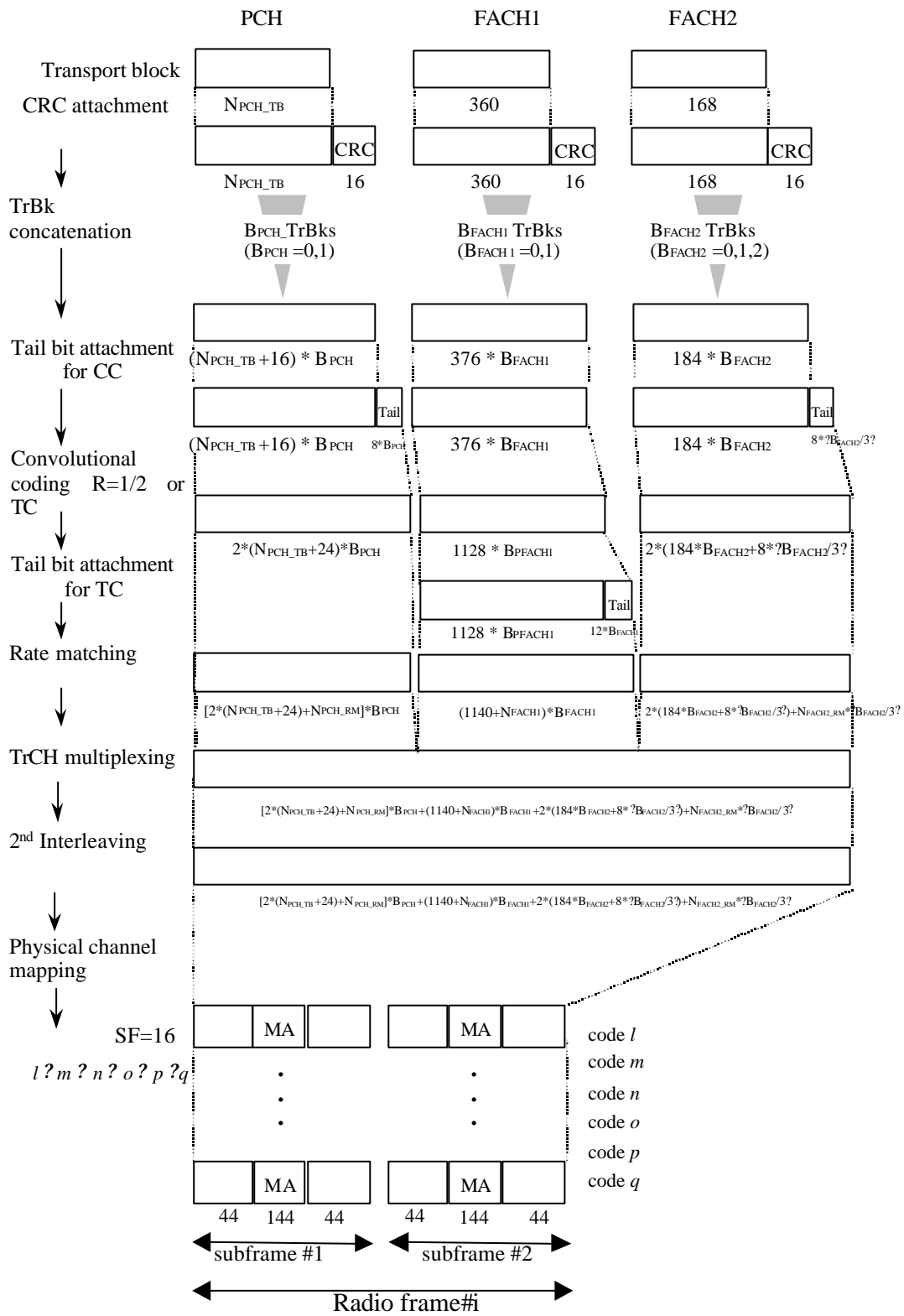


Figure XX: Channel coding and multiplexing example for PCH and FACH

4.3.1.3 Example for DCH

4.3.1.3.1 DCH-> Radio frame segmentation

The channel coding and multiplexing for DCH is common with the 3.84Mcps TDD option [cf. 4.2.1.3.1 ‘DCH-> Radio frame segmentation’]

4.3.1.3.2 TrCH multiplexing -> Physical channel mapping

4.3.1.3.2.1 Example for Stand-alone mapping of 3.4 kbps data

NOTE: This example can be applied to Stand-alone mapping of DCCH.

Table XX shows example of physical channel parameters for Stand-alone mapping of 3.4 kbps data.

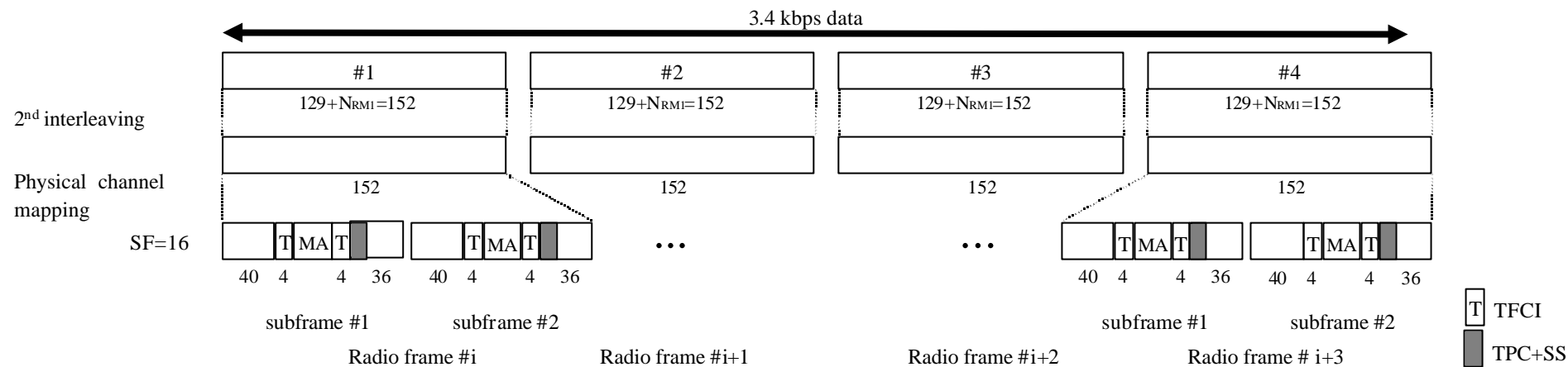


Figure XX: Channel coding and multiplexing example for Stand-alone mapping of 3.4 kbps data

Table XX: Physical channel parameters for Stand-alone mapping of 3.4 kbps data

| | |
|-----------------------------|------------------------------------|
| <u>Codes and time slots</u> | <u>SF16 x 1 code x 1 time slot</u> |
| <u>TFCI</u> | <u>16 bits per user</u> |
| <u>TPC + SS</u> | <u>2 bit + 2bit</u> |

4.3.1.3.2.2 Example for multiplexing of 12.2 kbps data and 3.4 kbps data

NOTE: This example can be applied to multiplexing AMR speech and DCCH.

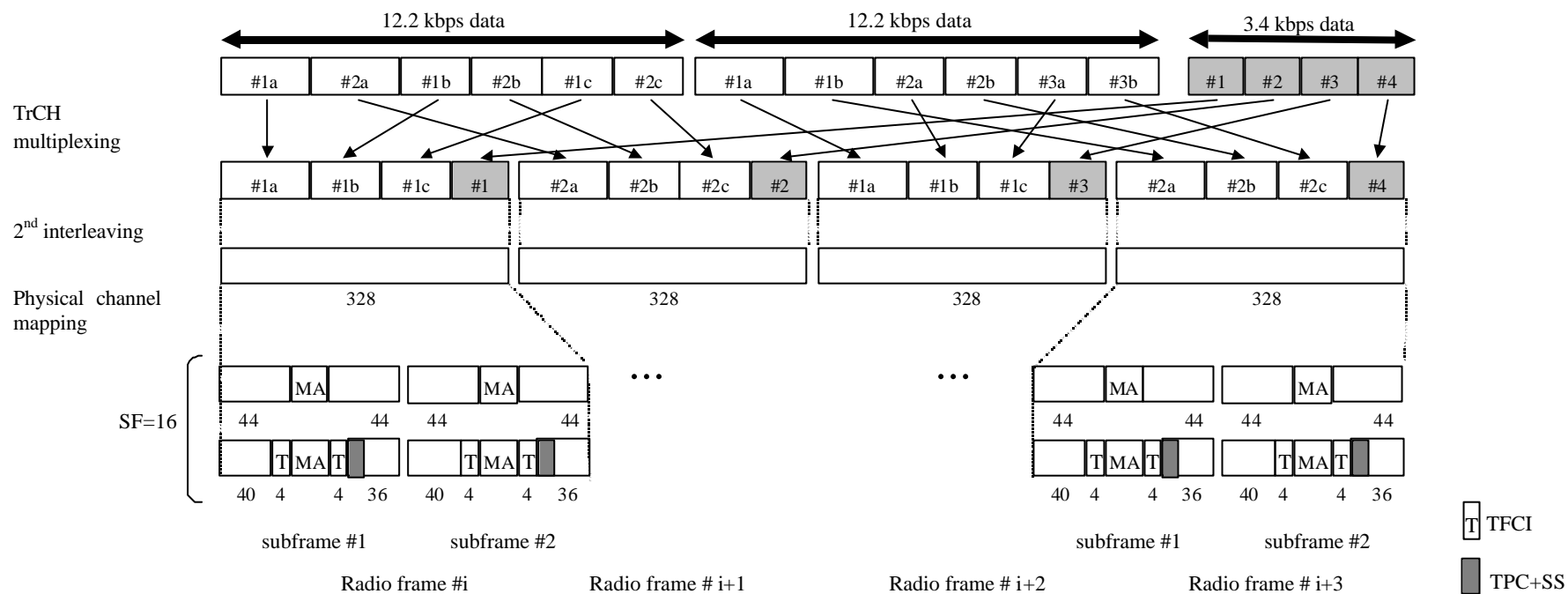


Figure XX: Channel coding and multiplexing example for multiplexing of 12.2 kbps data and 3.4 kbps data

Table XX: Physical channel parameters for multiplexing of 12.2 kbps data and 3.4 kbps data

| <u>Codes and time slots</u> | <u>SF16 x 2 codes x 1 time slot</u> |
|-----------------------------|-------------------------------------|
| <u>TFCI</u> | <u>16 bits per user</u> |
| <u>TPC + SS</u> | <u>2 bit + 2bit</u> |

4.3.1.3.2.3 Example for multiplexing of 28.8/57.6 kbps data 3.4 kbps data

NOTE: This example can be applied to multiplexing of Modem/FAX and DCCH.

Table XX shows example of physical channel parameters for multiplexing of 28.8/57.6 kbps data and 3.4 kbps data.

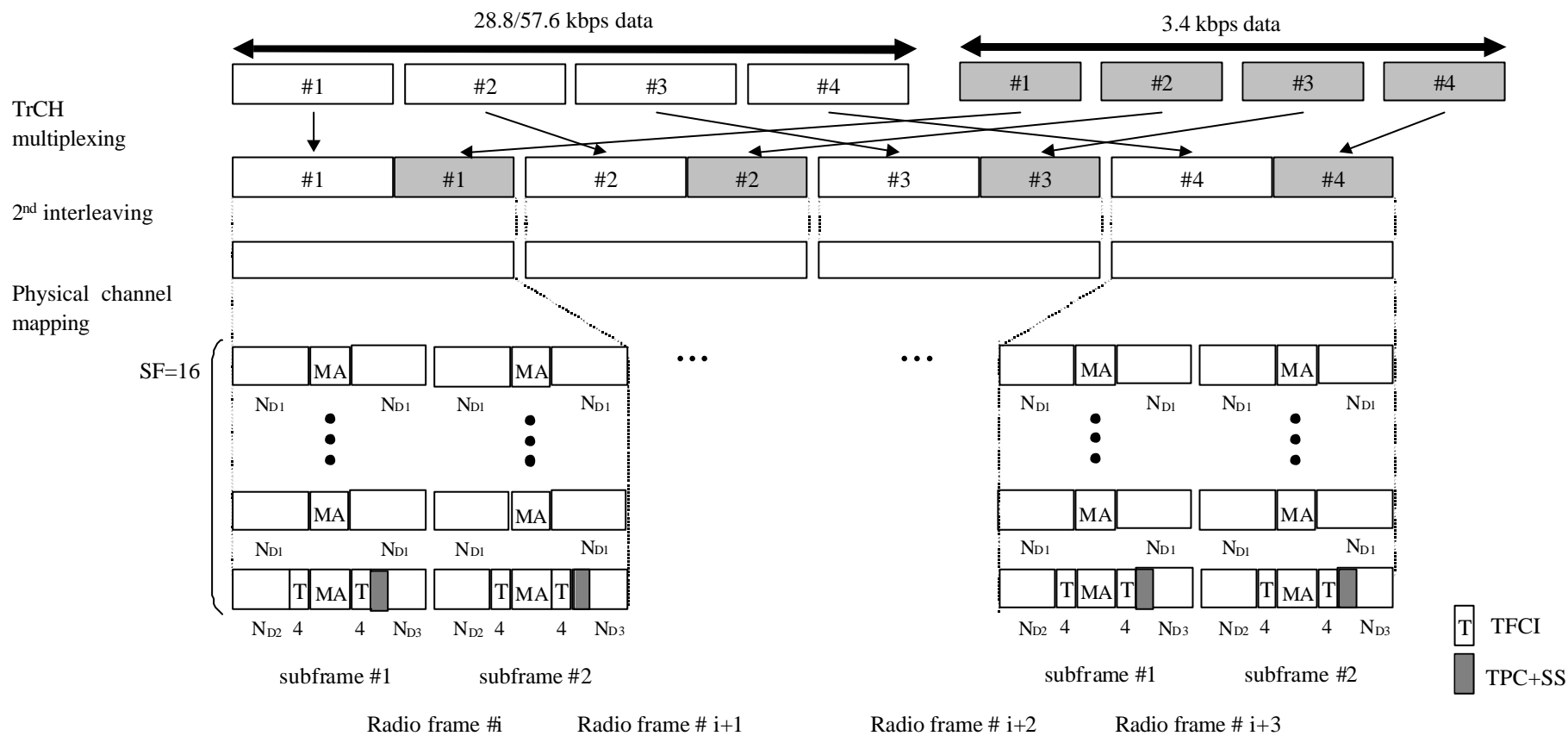


Figure XX: Channel coding and multiplexing example for multiplexing 28.8/57.6 kbps data and 3.4 kbps data

Table XX: Physical channel parameters for multiplexing of 28.8/57.6 kbps packet data and 3.4 kbps data

| | | |
|--|-----------------------|-------------------------------------|
| <u>N_{D1}, N_{D2}, N_{D3}</u> | <u>28.8/57.6 kbps</u> | <u>44 bits, 40 bits, 36 bits</u> |
| <u>Code & time</u> | <u>28.8 kbps</u> | <u>SF16 x 3 codes x 1 time slot</u> |
| <u>slots</u> | <u>57.6 kbps</u> | <u>SF16 x 6 codes x 1 time slot</u> |
| <u>TFCI</u> | | <u>16 bits per user</u> |
| <u>TPC + SS</u> | | <u>2 bit + 2bit</u> |

4.3.1.3.2.4 Example for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data

NOTE: This example can be applied to multiplexing 64/128/144/384 kbps packet data and DCCH.

Table XX shows example of physical channel parameters for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data.

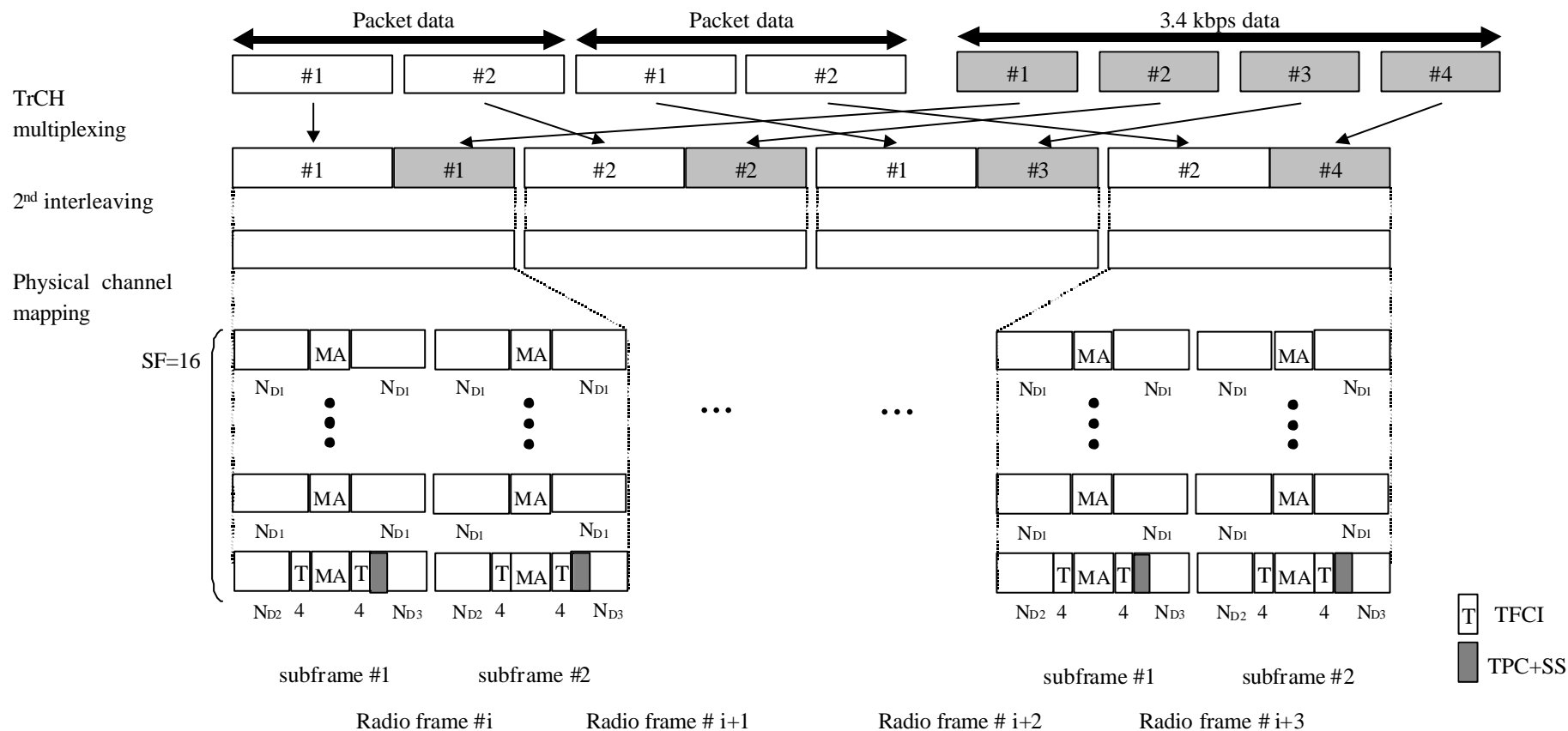


Figure XX: Channel coding and multiplexing example for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data

Table XX: Physical channel parameters for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data

| | | |
|---|--|---------------------------------------|
| <u>N_{D1}, N_{D2}, N_{D3}</u> | <u>64 & 128 & 144 & 384 kbps</u> | <u>44 bits, 40 bits, 36 bits</u> |
| <u>Code & time</u> | <u>64 kbps</u> | <u>SF16 x 8 codes x 1 time slot</u> |
| <u>slots</u> | <u>128 kbps</u> | <u>SF16 x 14 codes x 1 time slot</u> |
| | <u>144 kbps</u> | <u>SF16 x 8 codes x 2 time slots</u> |
| | <u>384 kbps</u> | <u>SF16 x 10 codes x 4 time slots</u> |
| <u>TFCI</u> | | <u>16 bits per user</u> |
| <u>TPC + SS</u> | | <u>2 bit + 2bit</u> |

4.3.1.3.2.5 Example for multiplexing of 12.2 kbps data, 64/128/144/384 kbps packet data and 3.4 kbps data

NOTE: This example is corresponding to multiplexing of AMR speech, 64/128/144/384 kbps packet and DCCH.

Table XX shows example of physical channel parameters for multiplexing of 12.2 kbps data, 64/128/144/384 kbps packet data and 3.4 kbps data.

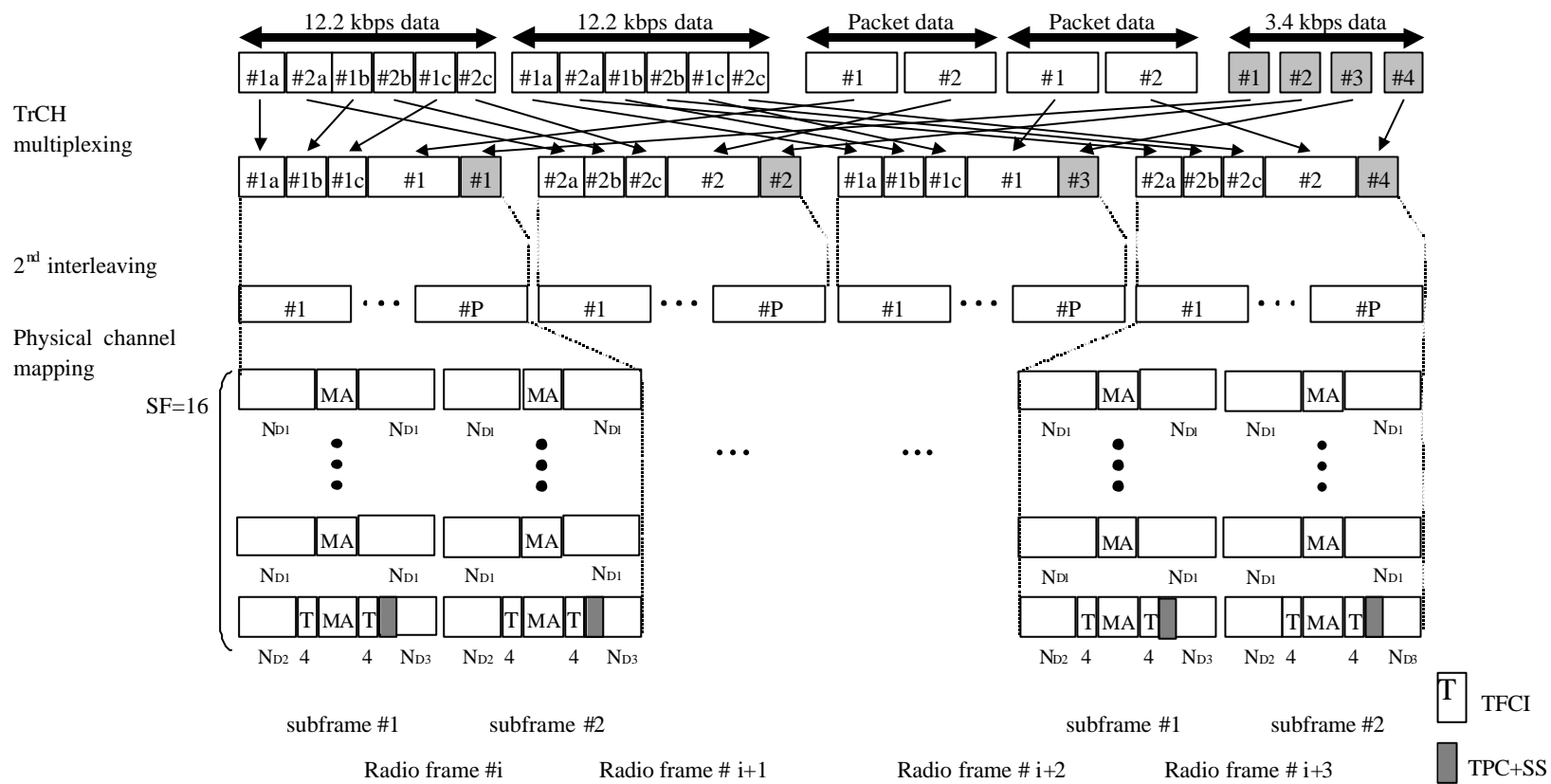


Figure XX: Channel coding and multiplexing example for multiplexing of 12.2 kbps data, 64/128/144/384 kbps packet data and 3.4 kbps data

Table XX Physical channel parameters for multiplexing of 12.2 kbps data, 64/128/144/384 kbps packet data and 3.4 kbps data

| <u>Data rate (kbps)</u> | <u>No. of timeslots</u> | <u>No. of physical channels with SF16 per used TS</u> | <u>N_{TFCI}</u> | <u>N_{TPC} + N_{TPC}</u> |
|-------------------------|-------------------------|---|-------------------------|--|
| <u>64</u> | <u>1</u> | <u>8</u> | <u>16</u> | <u>2 + 2</u> |
| <u>128</u> | <u>1</u> | <u>14</u> | <u>16</u> | <u>2 + 2</u> |
| <u>144</u> | <u>2</u> | <u>8</u> | <u>16</u> | <u>2 + 2</u> |
| <u>384</u> | <u>4</u> | <u>10</u> | <u>16</u> | <u>2 + 2</u> |

4.3.2 Uplink

4.3.2.1 RACH

Table XX: Parameters for RACH

| | |
|-----------------------------|--|
| <u>Transport block size</u> | <u>$N_{RACH}=168$</u> |
| <u>CRC</u> | <u>16 bits</u> |
| <u>Coding</u> | <u>CC, coding rate = 1/2</u> |
| <u>TTI</u> | <u>10 ms</u> |
| <u>Codes and time slots</u> | <u>SF = 8 x 1 x 1 code x 1 time slot</u> |
| <u>TFCI</u> | <u>0 bit</u> |
| <u>TPC</u> | <u>0 bit</u> |

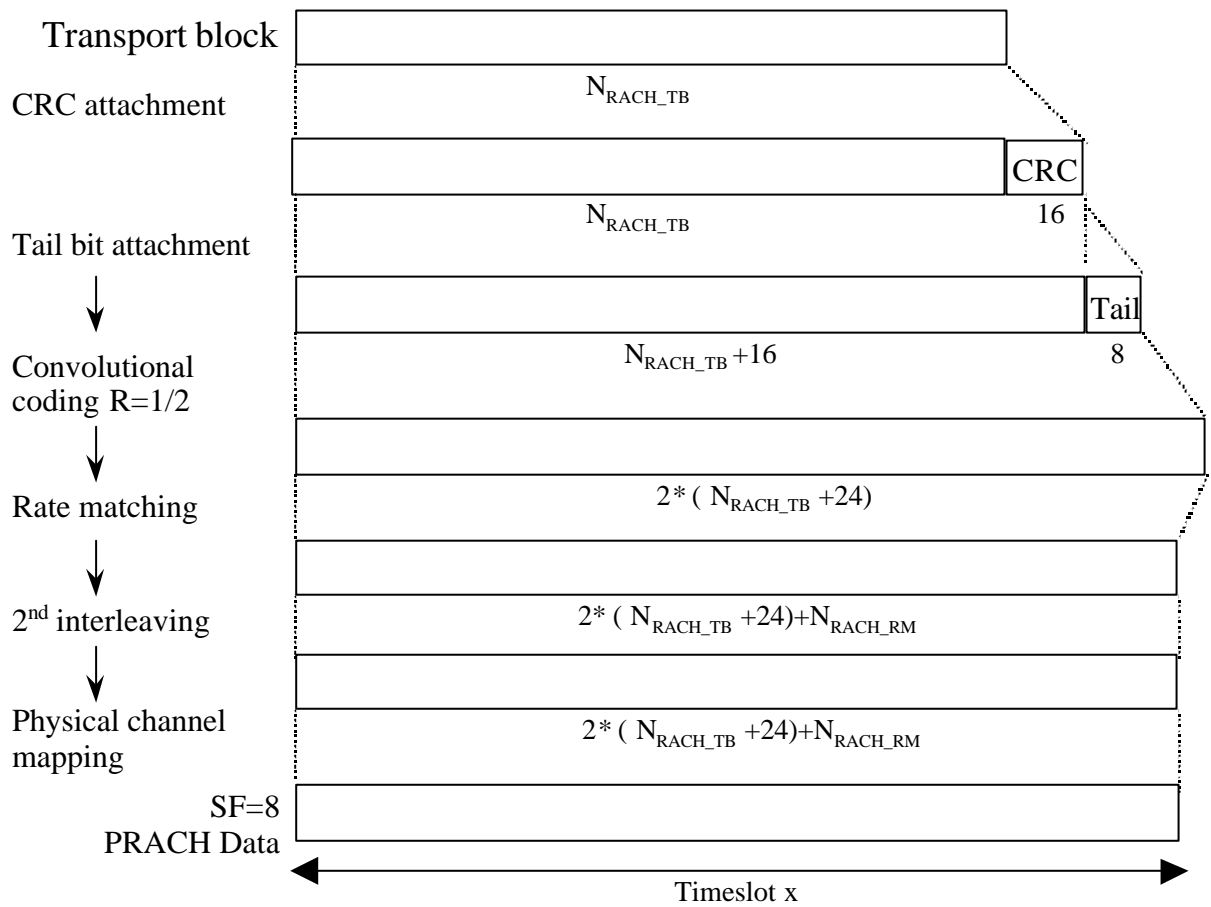


Figure XX: Channel coding and multiplexing example for PRACH

4.3.2.2 Example for DCH

4.3.2.2.1 DCH-> Radio frame segmentation

See 4.3.1.3.1

4.3.2.2.2 TrCH multiplexing -> Physical channel mapping

4.3.2.2.2.1 Example for Stand-alone mapping of 3.4 kbps data

NOTE: This example can be applied to Stand-alone mapping of DCCH.

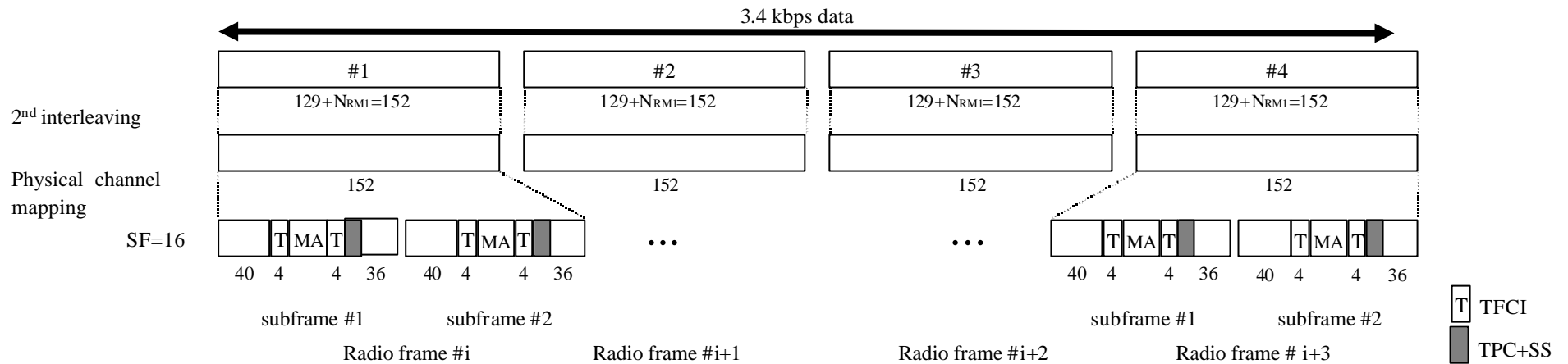


Figure XX: Channel coding and multiplexing example for Stand-alone mapping of 3.4 kbps data

4.3.2.2.2 Example for multiplexing of 12.2 kbps data and 3.4 kbps data

NOTE: This example can be applied to multiplexing AMR speech and DCCH.

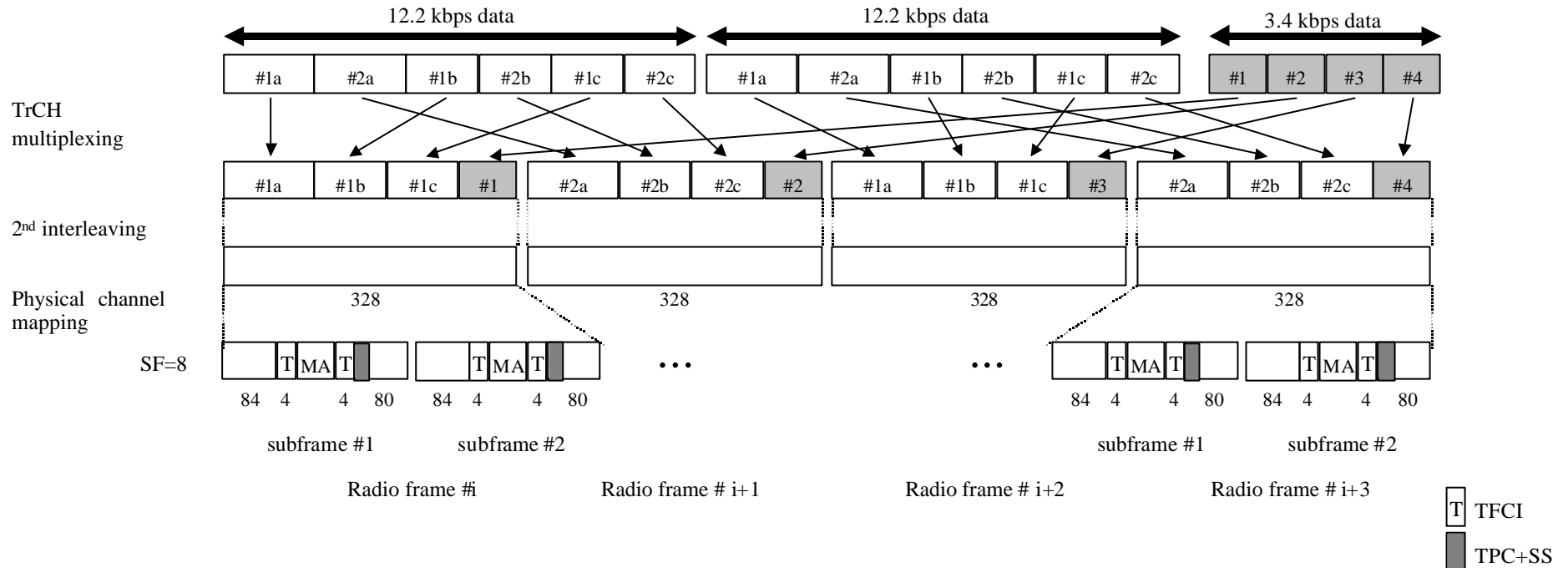


Figure XX: Channel coding and multiplexing example for multiplexing of 12.2 kbps data and 3.4 kbps data

Table XX: Physical channel parameters for multiplexing of 12.2 kbps data and 3.4 kbps data

| | |
|----------------------|----------------------------|
| Codes and time slots | SF8 x 1 code x 1 time slot |
| TFCI | 16 bits per user |
| TPC + SS | 2 bit + 2bit |

4.3.2.2.3 Example for multiplexing of 28.8/57.6 kbps data and 3.4 kbps data

NOTE: This example can be applied to multiplexing of Modem/FAX and DCCH.

Table XX shows example of physical channel parameters for multiplexing of 28.8/57.6 kbps data and 3.4 kbps data.

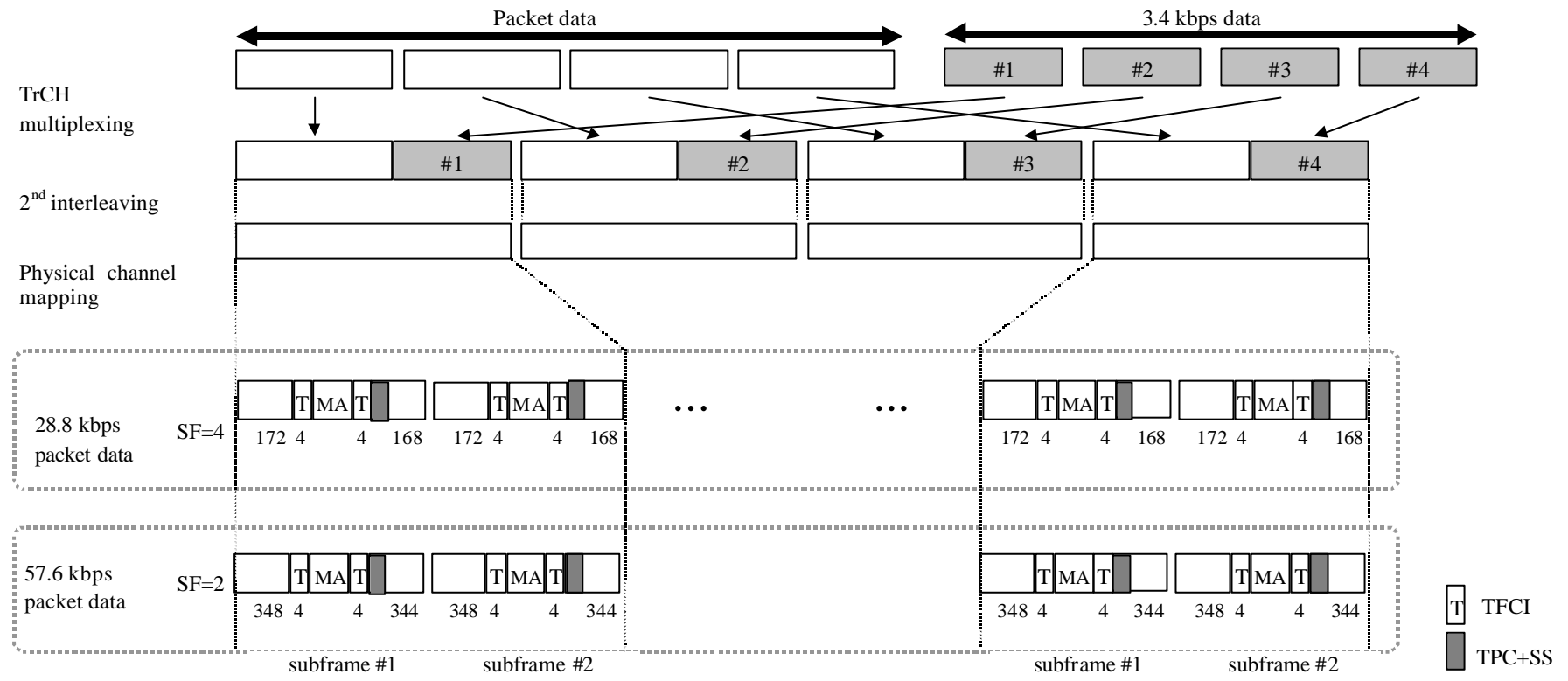


Figure XX: Channel coding and multiplexing example for multiplexing of 28.8/57.6 kbps data and 3.4 kbps data

Table XX: Physical channel parameters for multiplexing of 28.8/57.6 kbps data and 3.4 kbps data

| | | |
|--------------------|-----------|------------------------------|
| Codes & time slots | 28.8 kbps | (SF4 x 1 code) x 1 time slot |
| | 57.6 kbps | (SF2 x 1 code) x 1 time slot |
| TFCI | | 16 bits per user |
| TPC + SS | | 2 bit + 2bit |

4.3.2.2.2.4 Example for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data

NOTE: This example can be applied to multiplexing 64/128/144/384 kbps packet data and DCCH.

Table XX shows example of physical channel parameters for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data.

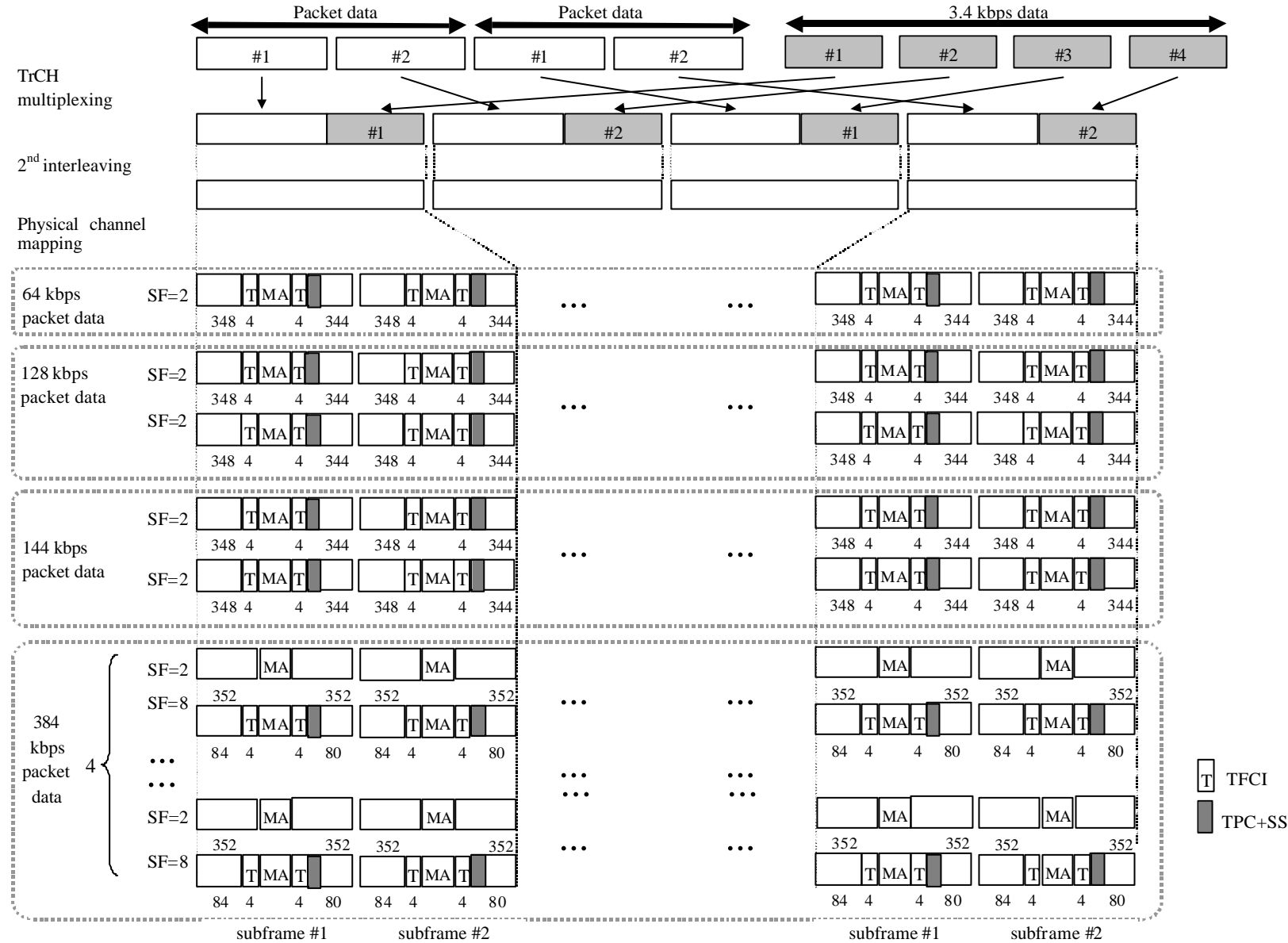


Figure XX: Channel coding and multiplexing example for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data**Table XX: Physical channel parameters for multiplexing of 64/128/144/384 kbps packet data and 3.4 kbps data**

| | | |
|-------------------------|-----------------|---|
| <u>Codes & time</u> | <u>64 kbps</u> | <u>(SF2 x 1 code) x 1 time slot</u> |
| <u>slots</u> | <u>128 kbps</u> | <u>(SF2 x 1 code) x 2 time slots</u> |
| | <u>144 kbps</u> | <u>(SF2 x 1 code) x 2 time slots</u> |
| | <u>384 kbps</u> | <u>{(SF8 x 1 code) + (SF2 x 1 code)} x 4 time slots</u> |
| <u>TFCI</u> | | <u>16 bits per user</u> |
| <u>TPC + SS</u> | | <u>2 bit + 2bit</u> |