TSG-RAN Working Group 1 meeting #11 *TSGR1#11(00)0297*
San Diego, USA
February 29 – March 3, 2000

**Agenda item:**

**Source:** NEC

**Title:** CR 25.211-040: Clarification of downlink pilot bit patterns

**Document for:** Approval

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The attached CR covers the following two issues;

1) Clarification of pilot bit patterns for the normal antenna

Pilot bit patterns in compressed mode through spreading factor reduction are different from those listed in Table 12. This should be clarified.

2) Clarification of pilot bit patterns for antenna 2 in compressed mode through spreading factor reduction

In the current TS 25.211 V3.1.0, there is no description about downlink pilot bit patterns for antenna 2 when compressed mode is achieved through spreading factor reduction. Some text is needed because the pilot bit patterns are different from those listed in Table 14. WG1 consensus on this issue is that symbol repetition shall be applied to the patterns listed in Table 14 in the same manner as done on antenna 1 described in 5.3.2. When decoding, symbol combination of pilot bits is done first, and then STTD is decoded.

In addition, a special treatment is necessary for 4-bit pilots (originally 2 bits before SF reduction). In stead of symbol repetition, STTD encoding should be done on pilot bits from the normal antenna. Because pilot and data bits are jointly STTD encoded before SF reduction in that case, symbol repetition only on pilot bits can not maintain STTD encoding. There are two solutions:

1. STTD encode the pilot bits on Antenna 1. In this case, no change is needed in the processing for Antenna 1.
2. Use pilot bit patterns of Npilot = 4 in Table 14. In this case, pilot bit patterns of Npilot = 4 in Table 12 should be used on Antenna 1. This means that pilot bit patterns on Antenna 1 are changed whether STTD encoding is applied or not.

We think that method 1 is preferable. Thus, the CR attached employs method 1.

This CR does not supersede CR 029r1 (R1-00-0216), CR 033 (R1-00-0234), and CR 034 (R1-00-0240).

**3GPP TSG RAN WG1 Meeting 11**
**San Diego, USA, February 29 – March 3, 2000**

***Document R1-00-0297***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| | | | | |
|---|---|---|---|---|
| **25.211** | **CR** | **040** | Current Version: | 3.1.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* — *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG RAN #7 | for approval | X | Strategic | | (for SMG use only) |
| *list expected approval meeting # here ↑* | | for information | | Non-strategic | | |

*Form: CR cover sheet, version 2 for 3GPP and SMG* — *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | X | UTRAN / Radio | X | Core Network |

**Source:** NEC — **Date:** 24 Feb 2000

**Subject:** Clarification of downlink pilot bit patterns

**Work item:**

| **Category:** | | | | **Release:** | | |
|---|---|---|---|---|---|---|
| | F | Correction | X | | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | | | Release 96 | |
| *(only one category* | B | Addition of feature | | | Release 97 | |
| *shall be marked* | C | Functional modification of feature | | | Release 98 | |
| *with an X)* | D | Editorial modification | | | Release 99 | X |
| | | | | | Release 00 | |

**Reason for change:** To clarify pilot bit patterns when compressed mode is achieved through spreading factor reduction.

**Clauses affected:** 5.3.2, 5.3.2.1

| **Other specs affected:** | | | | |
|---|---|---|---|---|
| | Other 3G core specifications | | → List of CRs: | |
| | Other GSM core specifications | | → List of CRs: | |
| | MS test specifications | | → List of CRs: | |
| | BSS test specifications | | → List of CRs: | |
| | O&M specifications | | → List of CRs: | |

**Other comments:** This CR does not supersede CR 029r1, CR 033, and CR 034.

### 5.3.2 Dedicated downlink physical channels

There is only one type of downlink dedicated physical channel, the Downlink Dedicated Physical Channel (downlink DPCH).

Within one downlink DPCH, dedicated data generated at Layer 2 and above, i.e. the dedicated transport channel (DCH), is transmitted in time-multiplex with control information generated at Layer 1 (known pilot bits, TPC commands, and an optional TFCI). The downlink DPCH can thus be seen as a time multiplex of a downlink DPDCH and a downlink DPCCH, compare section 5.2.1. It is the UTRAN that determines if a TFCI should be transmitted, hence making it is mandatory for all UEs to support the use of TFCI in the downlink. In case of USTS, the TPC bits in slot #14 in frames with CFN mod 2 = 0 are replaced by Time Alignment Bits (TABs) as described in section 9.3 of [5]

Figure 8 shows the frame structure of the downlink DPCH. Each frame of length 10 ms is split into 15 slots, each of length $T_{slot}$ = 2560 chips, corresponding to one power-control period.

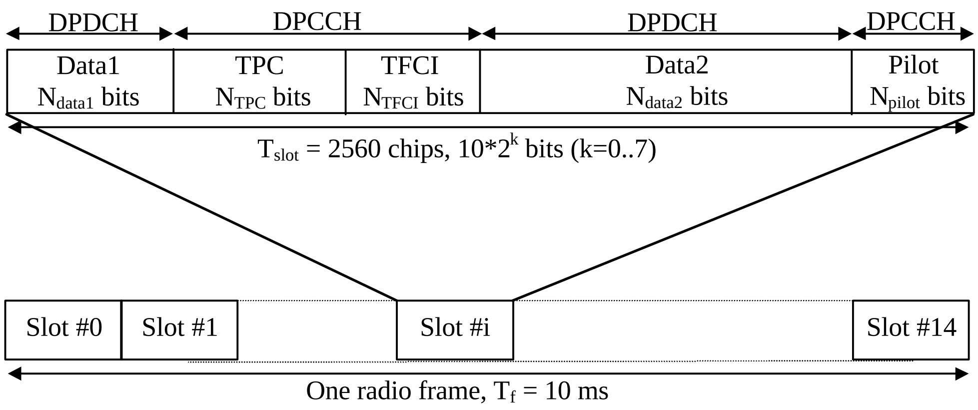


**Figure 8: Frame structure for downlink DPCH**

The parameter k in figure 8 determines the total number of bits per downlink DPCH slot. It is related to the spreading factor SF of the physical channel as SF = $512/2^k$. The spreading factor may thus range from 512 down to 4.

The exact number of bits of the different downlink DPCH fields ($N_{pilot}$, $N_{TPC}$, $N_{TFCI}$, $N_{data1}$ and $N_{data2}$) is determined in table 11. The overhead due to the DPCCH transmission has to be negotiated at the connection set-up and can be re-negotiated during the communication, in order to match particular propagation conditions.

There are basically two types of downlink Dedicated Physical Channels; those that include TFCI (e.g. for several simultaneous services) and those that do not include TFCI (e.g. for fixed-rate services). These types are reflected by the duplicated rows of table 11. In compressed mode, a different slot format is used compared to normal mode. There are two possible compressed slot formats that are labelled A and B. Format B is used for compressed mode by spreading factor reduction and format A is used for all other transmission time reduction methods. The channel bit and symbol rates given in table 11 are the rates immediately before spreading.

**Table 11: DPDCH and DPCCH fields**

| Slot Format #i | Channel Bit Rate (kbps) | Channel Symbol Rate (ksps) | SF | Bits/ Slot | DPDCH Bits/Slot | | DPCCH Bits/Slot | | | Transmitted slots per radio frame $N_{Tr}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $N_{Data1}$ | $N_{Data2}$ | $N_{TPC}$ | $N_{TFCI}$ | $N_{Pilot}$ | |
| 0 | 15 | 7.5 | 512 | 10 | 0 | 4 | 2 | 0 | 4 | 15 |
| 0A | 15 | 7.5 | 512 | 10 | 0 | 4 | 2 | 0 | 4 | 8-14 |
| 0B | 30 | 15 | 256 | 20 | 0 | 8 | 4 | 0 | 8 | 8-14 |
| 1 | 15 | 7.5 | 512 | 10 | 0 | 2 | 2 | 2 | 4 | 15 |
| 1B | 30 | 15 | 256 | 20 | 0 | 4 | 4 | 4 | 8 | 8-14 |
| 2 | 30 | 15 | 256 | 20 | 2 | 14 | 2 | 0 | 2 | 15 |
| 2A | 30 | 15 | 256 | 20 | 2 | 14 | 2 | 0 | 2 | 8-14 |
| 2B | 60 | 30 | 128 | 40 | 4 | 28 | 4 | 0 | 4 | 8-14 |
| 3 | 30 | 15 | 256 | 20 | 2 | 12 | 2 | 2 | 2 | 15 |
| 3A | 30 | 15 | 256 | 20 | 2 | 10 | 2 | 4 | 2 | 8-14 |
| 3B | 60 | 30 | 128 | 40 | 4 | 24 | 4 | 4 | 4 | 8-14 |
| 4 | 30 | 15 | 256 | 20 | 2 | 12 | 2 | 0 | 4 | 15 |
| 4A | 30 | 15 | 256 | 20 | 2 | 12 | 2 | 0 | 4 | 8-14 |
| 4B | 60 | 30 | 128 | 40 | 4 | 24 | 4 | 0 | 8 | 8-14 |
| 5 | 30 | 15 | 256 | 20 | 2 | 10 | 2 | 2 | 4 | 15 |
| 5A | 30 | 15 | 256 | 20 | 2 | 8 | 2 | 4 | 4 | 8-14 |
| 5B | 60 | 30 | 128 | 40 | 4 | 20 | 4 | 4 | 8 | 8-14 |
| 6 | 30 | 15 | 256 | 20 | 2 | 8 | 2 | 0 | 8 | 15 |
| 6A | 30 | 15 | 256 | 20 | 2 | 8 | 2 | 0 | 8 | 8-14 |
| 6B | 60 | 30 | 128 | 40 | 4 | 16 | 4 | 0 | 16 | 8-14 |
| 7 | 30 | 15 | 256 | 20 | 2 | 6 | 2 | 2 | 8 | 15 |
| 7A | 30 | 15 | 256 | 20 | 2 | 4 | 2 | 4 | 8 | 8-14 |
| 7B | 60 | 30 | 128 | 40 | 4 | 12 | 4 | 4 | 16 | 8-14 |
| 8 | 60 | 30 | 128 | 40 | 6 | 28 | 2 | 0 | 4 | 15 |
| 8A | 60 | 30 | 128 | 40 | 6 | 28 | 2 | 0 | 4 | 8-14 |
| 8B | 120 | 60 | 64 | 80 | 12 | 56 | 4 | 0 | 8 | 8-14 |
| 9 | 60 | 30 | 128 | 40 | 6 | 26 | 2 | 2 | 4 | 15 |
| 9A | 60 | 30 | 128 | 40 | 6 | 24 | 2 | 4 | 4 | 8-14 |
| 9B | 120 | 60 | 64 | ~~4~~80 | 12 | 52 | 4 | 4 | 8 | 8-14 |
| 10 | 60 | 30 | 128 | 40 | 6 | 24 | 2 | 0 | 8 | 15 |
| 10A | 60 | 30 | 128 | 40 | 6 | 24 | 2 | 0 | 8 | 8-14 |
| 10B | 120 | 60 | 64 | 80 | 12 | 48 | 4 | 0 | 16 | 8-14 |
| 11 | 60 | 30 | 128 | 40 | 6 | 22 | 2 | 2 | 8 | 15 |
| 11A | 60 | 30 | 128 | 40 | 6 | 20 | 2 | 4 | 8 | 8-14 |
| 11B | 120 | 60 | 64 | 80 | 12 | 44 | 4 | 4 | 16 | 8-14 |
| 12 | 120 | 60 | 64 | 80 | 12 | 48 | 4 | 8* | 8 | 15 |
| 12A | 120 | 60 | 64 | 80 | 12 | 40 | 4 | 16* | 8 | 8-14 |
| 12B | 240 | 120 | 32 | 160 | 24 | 96 | 8 | 16* | 16 | 8-14 |
| 13 | 240 | 120 | 32 | 160 | 28 | 112 | 4 | 8* | 8 | 15 |
| 13A | 240 | 120 | 32 | 160 | 28 | 104 | 4 | 16* | 8 | 8-14 |
| 13B | 480 | 240 | 16 | 320 | 56 | 224 | 8 | 16* | 16 | 8-14 |
| 14 | 480 | 240 | 16 | 320 | 56 | 232 | 8 | 8* | 16 | 15 |
| 14A | 480 | 240 | 16 | 320 | 56 | 224 | 8 | 16* | 16 | 8-14 |
| 14B | 960 | 480 | 8 | 640 | 112 | 464 | 16 | 16* | 32 | 8-14 |
| 15 | 960 | 480 | 8 | 640 | 120 | 488 | 8 | 8* | 16 | 15 |
| 15A | 960 | 480 | 8 | 640 | 120 | 480 | 8 | 16* | 16 | 8-14 |
| 15B | 1920 | 960 | 4 | 1280 | 240 | 976 | 16 | 16* | 32 | 8-14 |
| 16 | 1920 | 960 | 4 | 1280 | 248 | 1000 | 8 | 8* | 16 | 15 |
| 16A | 1920 | 960 | 4 | 1280 | 248 | 992 | 8 | 16* | 16 | 8-14 |

* If TFCI bits are not used, then DTX shall be used in TFCI field.

NOTE1: Compressed mode is only supported through spreading factor reduction for SF=512 with TFCI.

NOTE2: Compressed mode by spreading factor reduction is not supported for SF=4.

The pilot ~~symbol~~bit patterns ~~is~~are described in table 12. The shadowed part can be used as frame synchronization words. (The symbol pattern of the pilot ~~symbol~~bits other than the frame synchronization word shall be "11".) In table 12, the transmission order is from left to right. (Each two-bit pair represents an I/Q pair of QPSK modulation.)

In downlink compressed mode through spreading factor reduction, the number of bits in the TPC and Pilot fields are doubled. Symbol repetition is used to fill up the fields. Denote the bits in one of these fields in normal mode by $x_1$, $x_2$, $x_3$, …, $x_X$. In compressed mode the following bit sequence is sent in corresponding field: $x_1$, $x_2$, $x_1$, $x_2$, $x_3$, $x_4$, $x_3$, $x_4$,…, $x_X$,.

**Table 12: Pilot ~~Symbol~~bit ~~P~~patterns for downlink DPCCH**

| | $N_{pilot}$~~Npilot~~ = 2 | $N_{pilot}$~~Npilot~~ = 4 (*1) | | $N_{pilot}$~~Npilot~~ = 8 (*2) | | | | $N_{pilot}$~~Npilot~~ = 16 (*3) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Symbol #** | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Slot #0** | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 10 |
| **1** | 00 | 11 | 00 | 11 | 00 | 11 | 10 | 11 | 00 | 11 | 10 | 11 | 11 | 11 | 00 |
| **2** | 01 | 11 | 01 | 11 | 01 | 11 | 01 | 11 | 01 | 11 | 01 | 11 | 10 | 11 | 00 |
| **3** | 00 | 11 | 00 | 11 | 00 | 11 | 00 | 11 | 00 | 11 | 00 | 11 | 01 | 11 | 10 |
| **4** | 10 | 11 | 10 | 11 | 10 | 11 | 01 | 11 | 10 | 11 | 01 | 11 | 11 | 11 | 11 |
| **5** | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 10 | 11 | 01 | 11 | 01 |
| **6** | 11 | 11 | 11 | 11 | 11 | 11 | 00 | 11 | 11 | 11 | 00 | 11 | 10 | 11 | 11 |
| **7** | 10 | 11 | 10 | 11 | 10 | 11 | 00 | 11 | 10 | 11 | 00 | 11 | 10 | 11 | 00 |
| **8** | 01 | 11 | 01 | 11 | 01 | 11 | 10 | 11 | 01 | 11 | 10 | 11 | 00 | 11 | 11 |
| **9** | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 00 | 11 | 11 |
| **10** | 01 | 11 | 01 | 11 | 01 | 11 | 01 | 11 | 01 | 11 | 01 | 11 | 11 | 11 | 10 |
| **11** | 10 | 11 | 10 | 11 | 10 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 00 | 11 | 10 |
| **12** | 10 | 11 | 10 | 11 | 10 | 11 | 00 | 11 | 10 | 11 | 00 | 11 | 01 | 11 | 01 |
| **13** | 00 | 11 | 00 | 11 | 00 | 11 | 11 | 11 | 00 | 11 | 11 | 11 | 00 | 11 | 00 |
| **14** | 00 | 11 | 00 | 11 | 00 | 11 | 11 | 11 | 00 | 11 | 11 | 11 | 10 | 11 | 01 |

Note *1: This pattern is used except slot formats 2B and 3B.

Note *2: This pattern is used except slot formats 0B, 1B, 4B, 5B, 8B, and 9B.

Note *3: This pattern is used except slot formats 6B, 7B, 10B, 11B, 12B, and 13B.

Note: For the other slot formats, symbol repetition shall be applied to the pilot bit pattern with the half size.

The relationship between the TPC symbol and the transmitter power control command is presented in table 13.

**Table 13: TPC Bit Pattern**

| TPC Bit Pattern | | | Transmitter power control command |
|---|---|---|---|
| $N_{TPC}$ = 2 | $N_{TPC}$ = 4 | $N_{TPC}$ = 8 | |
| 11 | 1111 | 11111111 | 1 |
| 00 | 0000 | 00000000 | 0 |

For slot formats using TFCI, the TFCI value in each radio frame corresponds to a certain combination of bit rates of the DCHs currently in use. This correspondence is (re-)negotiated at each DCH addition/removal. The mapping of the TFCI bits onto slots is described in [3].

When the total bit rate to be transmitted on one downlink CCTrCH exceeds the maximum bit rate for a downlink physical channel, multicode transmission is employed, i.e. several parallel downlink DPCHs are transmitted for one CCTrCH using the same spreading factor. In this case, the Layer 1 control information is put on only the first downlink DPCH. The additional downlink DPCHs belonging to the CCTrCH do not transmit any data during the corresponding time period, see figure 9.

In the case of several CCTrCHs of dedicated type for one UE different spreading factors can be used for each CCTrCH and only one DPCCH would be transmitted for them in the downlink.

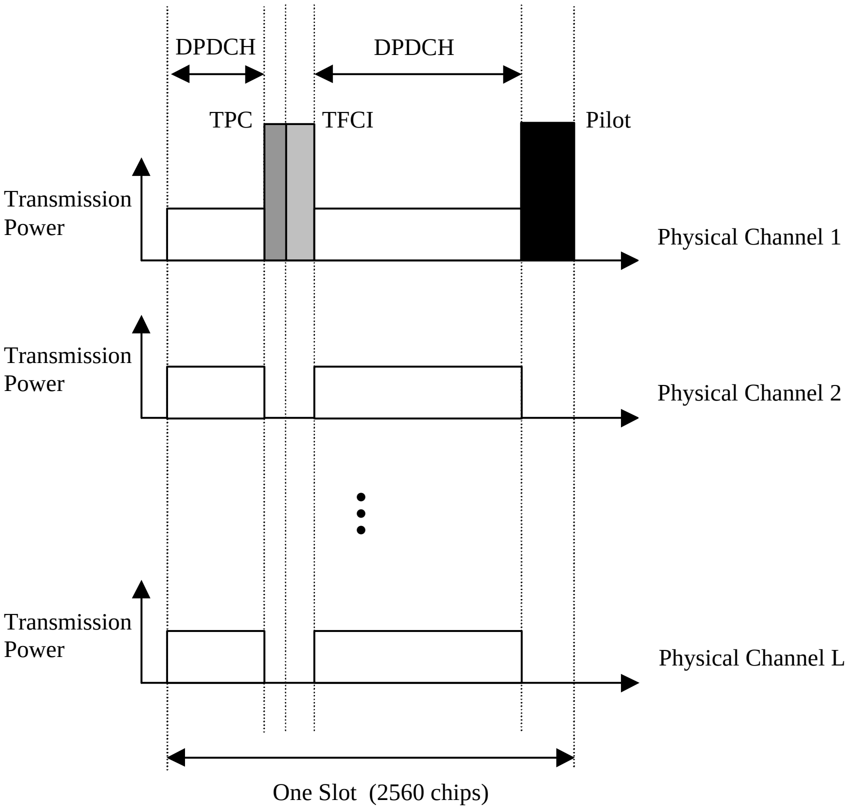


**Figure 9: Downlink slot format in case of multi-code transmission**

#### 5.3.2.1 STTD for DPCH

The pilot bit pattern for the DPCH channel transmitted on ~~the diversity~~ antenna 2 is given in table 14. The shadowed part indicates pilot bits that are STTD encoded from the corresponding (shadowed) bits in Table 12. For the SF=256 DPCH, if there are only two dedicated pilot bits ($N_{pilot}$ = 2 in Tables 12 and 14), they are STTD encoded together with the last two bits (data or DTX) of the second data field (data2) of the slot. STTD encoding for the DPDCH, TPC, and TFCI fields is done as described in section 5.3.1.1.1. For the SF=512 DPCH , the first two bits in each slot, i.e. TPC bits, are not STTD encoded and the same bits are transmitted with equal power from the two antennas. The following four bits are STTD encoded.

For compressed mode through spreading factor reduction and for $N_{pilot}$ > 4, symbol repetition shall be applied to the pilot bit patterns of table 14, in the same manner as described in 5.3.2. For slot formats 2B and 3B, i.e. compressed mode through spreading factor reduction and $N_{pilot}$ = 4, the pilot bits on antenna 1 are STTD encoded, and thus the pilot bit pattern is as shown in the most right set of table 14.

### Table 14: Pilot bit patterns of ~~the~~downlink DPCCH ~~channel~~ for ~~the diversity~~ antenna 2 using STTD

| | ~~Npilot = 2~~ | ~~Npilot = 4~~ | | ~~Npilot = 8~~ | | | | ~~Npilot = 16~~ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~Symbol #~~ | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Slot #0 | 01 | 01 | 10 | 11 | 00 | 00 | 10 | 11 | 00 | 00 | 10 | 11 | 00 | 00 | 10 |
| 1 | 10 | 10 | 10 | 11 | 00 | 00 | 01 | 11 | 00 | 00 | 01 | 11 | 10 | 00 | 10 |
| 2 | 11 | 11 | 10 | 11 | 11 | 00 | 00 | 11 | 11 | 00 | 00 | 11 | 10 | 00 | 11 |
| 3 | 10 | 10 | 10 | 11 | 10 | 00 | 01 | 11 | 10 | 00 | 01 | 11 | 00 | 00 | 00 |
| 4 | 00 | 00 | 10 | 11 | 11 | 00 | 11 | 11 | 11 | 00 | 11 | 11 | 01 | 00 | 10 |
| 5 | 01 | 01 | 10 | 11 | 00 | 00 | 10 | 11 | 00 | 00 | 10 | 11 | 11 | 00 | 00 |
| 6 | 01 | 01 | 10 | 11 | 10 | 00 | 10 | 11 | 10 | 00 | 10 | 11 | 01 | 00 | 11 |
| 7 | 00 | 00 | 10 | 11 | 10 | 00 | 11 | 11 | 10 | 00 | 11 | 11 | 10 | 00 | 11 |
| 8 | 11 | 11 | 10 | 11 | 00 | 00 | 00 | 11 | 00 | 00 | 00 | 11 | 01 | 00 | 01 |
| 9 | 01 | 01 | 10 | 11 | 01 | 00 | 10 | 11 | 01 | 00 | 10 | 11 | 01 | 00 | 01 |
| 10 | 11 | 11 | 10 | 11 | 11 | 00 | 00 | 11 | 11 | 00 | 00 | 11 | 00 | 00 | 10 |
| 11 | 00 | 00 | 10 | 11 | 01 | 00 | 11 | 11 | 01 | 00 | 11 | 11 | 00 | 00 | 01 |
| 12 | 00 | 00 | 10 | 11 | 10 | 00 | 11 | 11 | 10 | 00 | 11 | 11 | 11 | 00 | 00 |
| 13 | 10 | 10 | 10 | 11 | 01 | 00 | 01 | 11 | 01 | 00 | 01 | 11 | 10 | 00 | 01 |
| 14 | 10 | 10 | 10 | 11 | 01 | 00 | 01 | 11 | 01 | 00 | 01 | 11 | 11 | 00 | 11 |

| | $N_{pilot}$ = 2 (*1) | $N_{pilot}$ = 4 (*2) | | $N_{pilot}$ = 8 (*3) | | | | $N_{pilot}$ = 16 (*4) | | | | | | | | $N_{pilot}$ = 4 (*5) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Symbol #** | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 |
| **Slot #0** | 01 | 01 | 10 | 11 | 00 | 00 | 10 | 11 | 00 | 00 | 10 | 11 | 00 | 00 | 10 | 01 | 10 |
| **1** | 10 | 10 | 10 | 11 | 00 | 00 | 01 | 11 | 00 | 00 | 01 | 11 | 10 | 00 | 10 | 10 | 01 |
| **2** | 11 | 11 | 10 | 11 | 11 | 00 | 00 | 11 | 11 | 00 | 00 | 11 | 10 | 00 | 11 | 11 | 00 |
| **3** | 10 | 10 | 10 | 11 | 10 | 00 | 01 | 11 | 10 | 00 | 01 | 11 | 00 | 00 | 00 | 10 | 01 |
| **4** | 00 | 00 | 10 | 11 | 11 | 00 | 11 | 11 | 11 | 00 | 11 | 11 | 01 | 00 | 10 | 00 | 11 |
| **5** | 01 | 01 | 10 | 11 | 00 | 00 | 10 | 11 | 00 | 00 | 10 | 11 | 11 | 00 | 00 | 01 | 10 |
| **6** | 01 | 01 | 10 | 11 | 10 | 00 | 10 | 11 | 10 | 00 | 10 | 11 | 01 | 00 | 11 | 01 | 10 |
| **7** | 00 | 00 | 10 | 11 | 10 | 00 | 11 | 11 | 10 | 00 | 11 | 11 | 10 | 00 | 11 | 00 | 11 |
| **8** | 11 | 11 | 10 | 11 | 00 | 00 | 00 | 11 | 00 | 00 | 00 | 11 | 01 | 00 | 01 | 11 | 00 |
| **9** | 01 | 01 | 10 | 11 | 01 | 00 | 10 | 11 | 01 | 00 | 10 | 11 | 01 | 00 | 01 | 01 | 10 |
| **10** | 11 | 11 | 10 | 11 | 11 | 00 | 00 | 11 | 11 | 00 | 00 | 11 | 00 | 00 | 10 | 11 | 00 |
| **11** | 00 | 00 | 10 | 11 | 01 | 00 | 11 | 11 | 01 | 00 | 11 | 11 | 00 | 00 | 01 | 00 | 11 |
| **12** | 00 | 00 | 10 | 11 | 10 | 00 | 11 | 11 | 10 | 00 | 11 | 11 | 11 | 00 | 00 | 00 | 11 |
| **13** | 10 | 10 | 10 | 11 | 01 | 00 | 01 | 11 | 01 | 00 | 01 | 11 | 10 | 00 | 01 | 10 | 01 |
| **14** | 10 | 10 | 10 | 11 | 01 | 00 | 01 | 11 | 01 | 00 | 01 | 11 | 11 | 00 | 11 | 10 | 01 |

Note *1: The pilot bits precede the last two bits of the data2 field.

Note *2: This pattern is used except slot formats 2B and 3B.

Note *3: This pattern is used except slot formats 0B, 1B, 4B, 5B, 8B, and 9B.

Note *4: This pattern is used except slot formats 6B, 7B, 10B, 11B, 12B, and 13B.

Note *5: This pattern is used for slot formats 2B and 3B.

Note: For the other slot formats, symbol repetition shall be applied to the pilot bit pattern with the half size.