

WCDMA/HSPA Scenario Version (1)

MD8480C

W-CDMA Signalling Tester

Details of Sample C–Scenario Part 1/2

How to Use Scenario Library and Structure with
“W_01_Packet_MD8480.c”



Version 1.0
Anritsu Corporation

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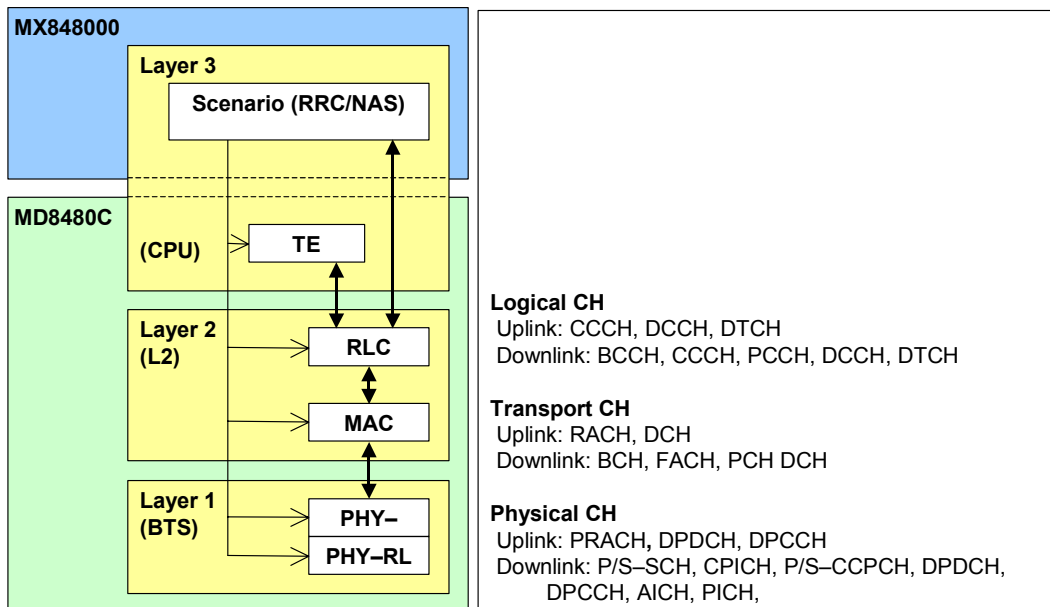
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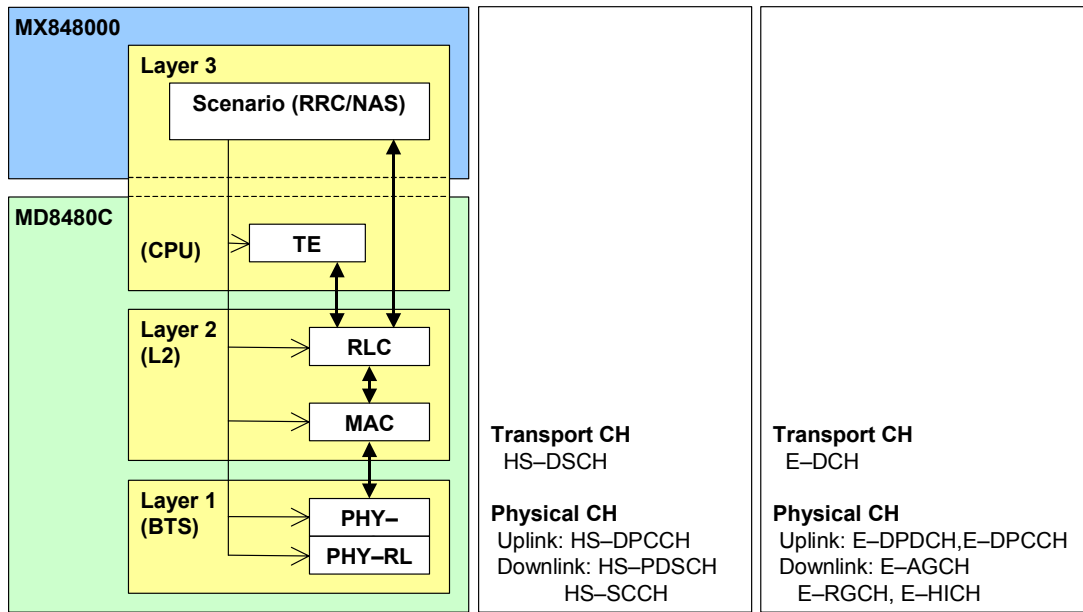
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Channels

Channels



Channels



Logical Channels

- **Uplink Channels**
 - CCCH: Common Control Channel
 - DCCH: Dedicated Control Channel
 - DTCH: Dedicated Traffic Channel
- **Downlink Channels**
 - BCCH: Broadcast Control Channel
 - CCCH: Common Control Channel
 - PCCH: Paging Control Channel
 - DCCH: Dedicated Control Channel
 - DTCH: Dedicated Traffic Channel

Transport Channels

- **Uplink Channels**
 - RACH: Random Access Channel
 - DCH: Dedicated Channel
 - E–DCH: Enhanced Dedicated Channel
- **Downlink Channels**
 - BCH: Broadcast Channel
 - FACH: Forward Access Channel
 - PCH: Paging Channel
 - DCH: Dedicated Channel
 - HS–DSCH: High Speed Downlink Shared Channel

Physical Channels

- **Uplink Channels**
 - PRACH: Physical Random Access Channel
 - DPDCH: Dedicated Physical Data Channel
 - DPCCH: Dedicated Physical Control Channel
 - HS–DPCCH: Dedicated Physical Control Channel (Uplink) for HS–DSCH
 - E–DPDCH: E–DCH Dedicated Physical Data Channel
 - E–DPCCH: E–DCH Dedicated Physical Control Channel

Physical Channels

- **Downlink Channels**

- P–SCH: Primary Synchronization Channel
- S–SCH: Secondary Synchronization Channel
- CPICH: Common Pilot Channel
- P–CCPCH: Primary Common Control Physical Channel
- S–CCPCH: Secondary Common Control Physical Channel
- AICH: Acquisition Indicator Channel
- PICH: Paging Indicator Channel
- DPDCH: Dedicated Physical Data Channel
- DPCCH: Dedicated Physical Control Channel

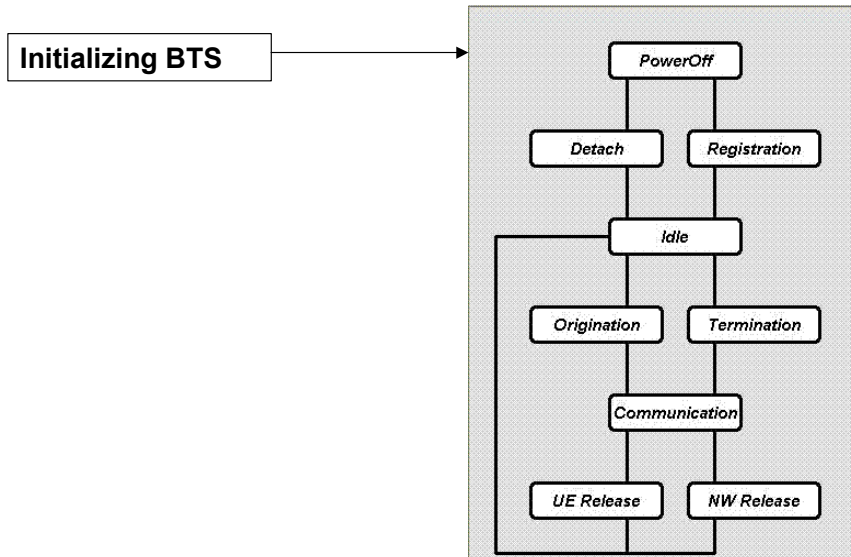
Physical Channels

- **Downlink Channels**

- HS–PDSCH: High Speed Physical Downlink Shared Channel
- HS–SCCH: HS–DSCH-related Shared Control Channel
- E–AGCH: E–DCH Absolute Grant Channel
- E–RGCH: E–DCH Relative Grant Channel
- E–HICH: E–DCH Hybrid ARQ Indicator Channel

Scenario Details

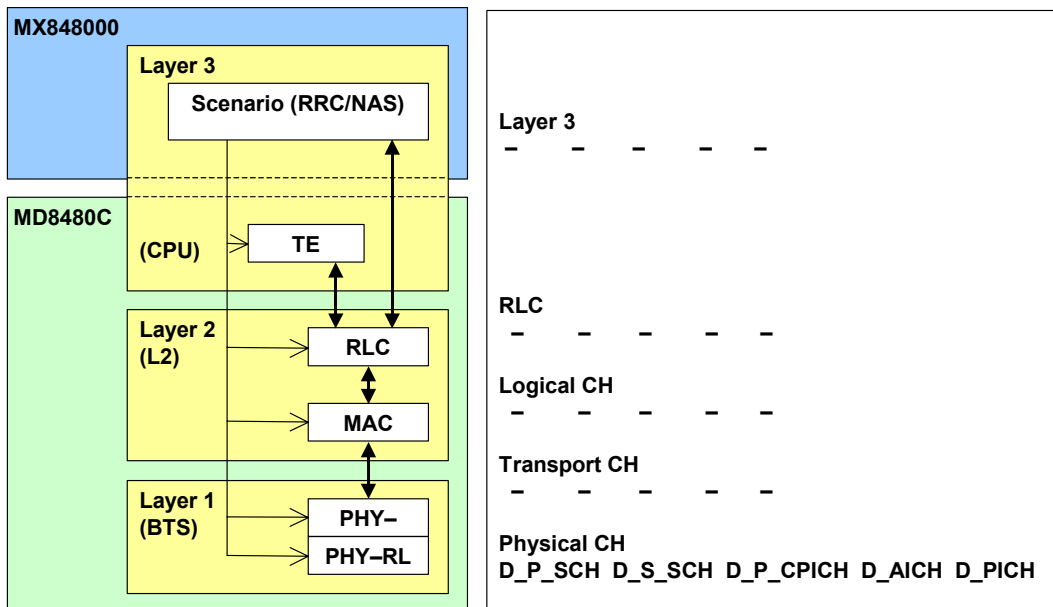
Protocol Sequence Overview



Initializing BTS

- P_SCH, S_SCH, P_CPICH, AICH, PICH Configuration
- P_CCPCH Configuration
- S_CCPCH, PRACH Configuration
- Sending "System Information" Repeatedly

P_SCH, S_SCH, P_CPICH, AICH, PICH Configuration



P_SCH, S_SCH, P_CPICH, AICH, PICH Configuration

```

// P_SCH Activate
CphyRISetup (UNIT_BTS1, D_P_SCH, 0, &CphyRISetup_P_SCH_BTS1, ..., ...);

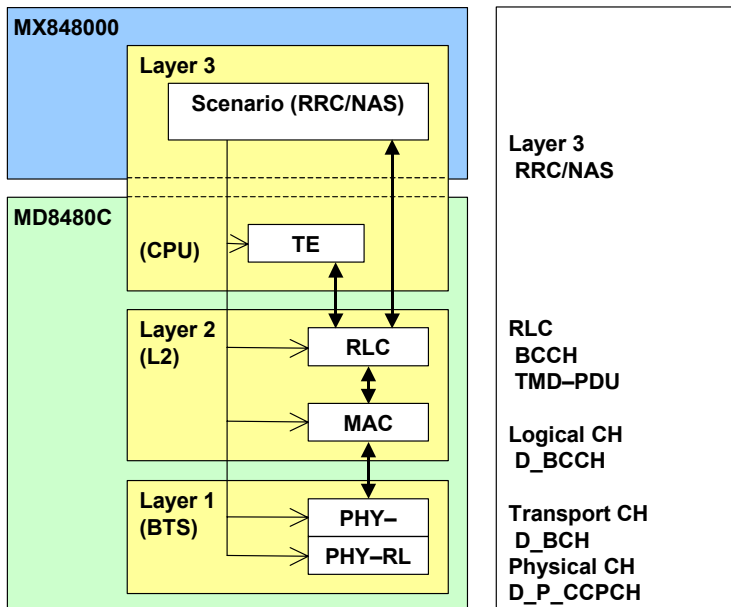
// S_SCH Activate
CphyRISetup (UNIT_BTS1, D_S_SCH, 0, &CphyRISetup_S_SCH_BTS1, ..., ...);

// P_CPICH Activate
CphyRISetup (UNIT_BTS1, D_P_CPICH, 0, &CphyRISetup_P_CPICH_BTS1, ..., ...);

// AICH Activate
CphyRISetup (UNIT_BTS1, D_AICH, 0, &CphyRISetup_D_AICH_BTS1, ..., ...);

// PICH Activate
DRXCycleLength = 256;
PageNp = 18;
CphyRISetup (UNIT_BTS1, D_PICH, 0, &CphyRISetup_D_PICH_BTS1, ..., ...);
    
```

P_CCPCH Configuration

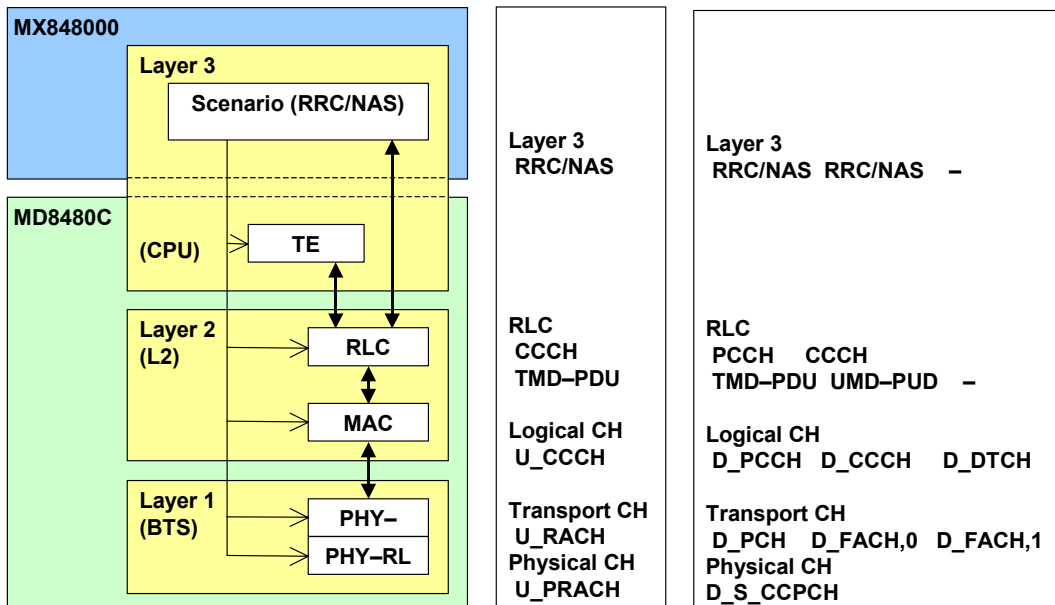


P_CCPCH Configuration

```
// P_CCPCH Activate
CalcRMPParameter (D_P_CCPCH, &CphyRISetup_P_CCPCH_BTS1,
&CphyTrchConfig_P_CCPCH_BTS1);
CphyRISetup (UNIT_BTS1, D_P_CCPCH, 0, &CphyRISetup_P_CCPCH_BTS1, ..., ...);
CphyTrchConfig (UNIT_BTS1, D_P_CCPCH, 0, &CphyTrchConfig_P_CCPCH_BTS1, ..., ...);
CmacConfig (UNIT_BTS1, D_P_CCPCH, 0, &CmacConfig_P_CCPCH_BTS1, ..., ...);
```

```
// Establish TM BCCH
CrlcConfig (UNIT_BTS1, CRLC_TR_ESTABLISH, BCCH, 0, &CrlcConfig_BCCH, RRC, ...);
```

S_CCPCH, PRACH Configuration



S_CCPCH, PRACH Configuration

```
// S_CCPCH Activate
CalcRMPParameter (D_S_CCPCH,&CphyRISetup_S_CCPCH_PCHxFACH,
&CphyTrchConfig_S_CCPCH_PCHxFACH);
CphyRISetup (UNIT_BTS1, D_S_CCPCH, 0, &CphyRISetup_S_CCPCH_PCHxFACH, ..., ...);
CphyTrchConfig (UNIT_BTS1, D_S_CCPCH, 0, &CphyTrchConfig_S_CCPCH_PCHxFACH, ..., ...);
CmacConfig (UNIT_BTS1, D_S_CCPCH, 0, &CmacConfig_S_CCPCH_PCHxFACH, ..., ...);

// PRACH Activate
CalcRMPParameter (U_PRACH, &CphyRISetup_U_PRACH, &CphyTrchConfig_U_PRACH);
CphyRISetup (UNIT_BTS1, U_PRACH, 0, &CphyRISetup_U_PRACH, ..., ...);
CphyTrchConfig (UNIT_BTS1, U_PRACH, 0, &CphyTrchConfig_U_PRACH, ..., ...);
CmacConfig (UNIT_BTS1, U_PRACH, 0, &CmacConfig_U_PRACH, ..., ...);

// Establish TM PCCH
CrlcConfig (UNIT_BTS1, CRLC_TR_ESTABLISH, PCCH, 0, &CrlcConfig_PCCH, RRC, ...);
```

Sending "System Information" Repeatedly

SIB Schedule

Frame No/SIB_POS Block Type	0 MIB	2 SIB1	4 SIB3	6 SIB5-1	8 MIB	10 SIB5-2	12 SIB5-3	14
Frame No/SIB_POS Block Type	16 MIB	18 SIB7	20 SIB11-1/-	22 SIB11-2/-	24 MIB	26 SIB11-3/-	28 SIB11-4/-	30 SIB11-5/-
Frame No/SIB_POS Block Type	32 MIB	34 SIB1	36 SIB3	38 SIB5-1	40 MIB	42 SIB5-2	44 SIB5-3	46 SIB11-6/-
Frame No SIB_POS Block Type	48 MIB	50	52	54 -	56 MIB	58	60	62

Use SIB_REP and SIB_POS to make the schedule.

"Easy_to ... A.1.7 SndMessage()"

7) Use the following global variables to specify detailed parameters. Set these global variables before executing SndMessage().

· If Loch is BCCH or BCH:

SIB_REP SIB_REP value (2–4096, in 10-ms units)

SIB_POS SIB_POS value (0–4094, in 10-ms units)

SIB schedule information, except MIB, is described in the MIB message.

Information for the S_CCPCH, PRACH and AICH configuration is described in SIB5.

Sending “System Information” Repeatedly

```
/* Send Message: MIB */           SIB_POS = 0;   SIB_REP = 8;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB1 */           SIB_POS = 2;   SIB_REP = 32;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB3 */           SIB_POS = 4;   SIB_REP = 32;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB5-1 */ SIB_POS = 6;   SIB_REP = 32;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB5-2 */ SIB_POS = 10;  SIB_REP = 32;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB5-3 */ SIB_POS = 12;  SIB_REP = 32;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

Sending “System Information” Repeatedly

```
/* Send Message: SIB7 */           SIB_POS = 18;  SIB_REP = 64;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB11-1 */       SIB_POS = 20;  SIB_REP = 128;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB11-2 */       SIB_POS = 22;  SIB_REP = 128;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB11-3 */       SIB_POS = 26;  SIB_REP = 128;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB11-4 */       SIB_POS = 28;  SIB_REP = 128;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB11-5 */       SIB_POS = 30;  SIB_REP = 128;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

```
/* Send Message: SIB11-6 */       SIB_POS = 46;  SIB_REP = 128;  
SndMessage (UNIT_BTS1, RLC_TR_DATA_REQ, D_BCCH, 0, SndData, sizeof (SndData));
```

Registration Sequence

TS34.108 – 7.2.2.3.3 Procedure UE establishes PS registration immediately after UE power-on

```

/* Registration arrow diagram in this Scenario */
/* MS MD8480 */
/* |----- RRC Connection Request ----->| */
/* | (TR-Mode PRACH-RACH-CCCH) | */
/* ===== Stand-alone DCCH Configuration ===== */
/* |<---- RRC Connection Setup -----| */
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */
/* |----- RRC Connection Setup Complete ----->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- GMM Attach Request ----->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- GMM AuthenticAndCiphering Req. -----| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- GMM AuthenticAndCiphering Resp.----->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- Security Mode Command -----| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- Security Mode Complete ----->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- GMM Identity Request -----| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- GMM Identity Response ----->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- GMM Attach Accept -----| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- GMM Attach Complete ----->| */
/* | (AM-Mode DPCH-DCH-DCCH) |

```

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Registration Sequence

```

/* Registration arrow diagram in this Scenario */
/* MS MD8480 */
/* |<---- RRC Connection Release -----| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* |----- RRC Connection Release complete----->| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* ===== DCCH Releasing ===== */

```

This scenario supports the following registration protocol sequences.

TS34.108

- 7.2.2.1 Registration on CS
- 7.2.2.2 Registration on PS
- 7.2.2.3 Registration on CS/PS combined environment
- 7.2.2.3.3 Procedure UE establishes PS registration immediately after UE power-on
- 7.2.2.3.3a Procedure UE establishes PS registration later when user decides to use PS services
- 7.2.2.4 Registration on CS/PS non-combined environment

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Receiving "RRC Connection Request"

```

/* CCCH RLC Establish */
CrlcConfig (UNIT_BTS1, CRLC_TR_ESTABLISH, CCCH, 0, &CrlcConfig_CCCH, RRC, ...);

/* Receive Message: RRC Connection Request */
RcvMessage (&BtsNo, &Frame, &Lo_Ch, &Lo_No, RcvData, ...);
... if (GetMessageTypeMsgNo (U_CCCH, RcvData) == Mar2002_RrcConnectionRequest) ...

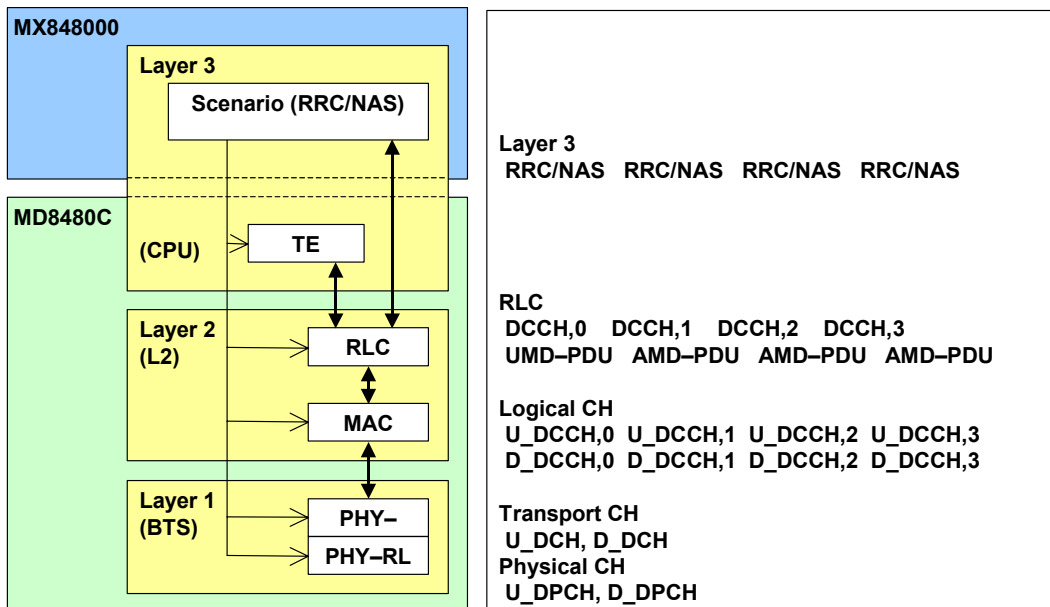
/* CCCH RLC Establish */
CrlcConfig (UNIT_BTS1, CRLC_UM_ESTABLISH, CCCH, 0, &CrlcConfig_CCCH, RRC, ...);

```

The UE sends the "RRC Connection Request" message to Uplink CCCH TMD-PDU.
 To receive it, the RLC mode on the CCCH must be configured with **CRLC_TR_ESTABLISH**.

The message after "RRC Connection Setup" on the Downlink CCCH is UMD-PDU.
 To send it, the RLC mode on the CCCH must be reconfigured with **CRLC_UM_ESTABLISH**.

Stand-alone DCCH Configuration



Stand-alone DCCH Configuration

```
CalcRMPParameter (D_DPCH, &CphyRISetup_D_DPCH_SDCCH,  
    &CphyTrchConfig_D_DPCH_SDCCH);  
CphyRISetup (UNIT_BTS1, D_DPCH, 0, &CphyRISetup_D_DPCH_SDCCH, ..., ...);  
CphyTrchConfig (UNIT_BTS1, D_DPCH, 0, &CphyTrchConfig_D_DPCH_SDCCH, ..., ...);  
CmacConfig (UNIT_BTS1, D_DPCH, 0, &CmacConfig_D_DPCH_SDCCH, ..., ...);  
  
CalcRMPParameter (U_DPCH, &CphyRISetup_U_DPCH_SDCCH,  
    &CphyTrchConfig_U_DPCH_SDCCH);  
CphyRISetup (UNIT_BTS1, U_DPCH, 0, &CphyRISetup_U_DPCH_SDCCH, ..., ...);  
CphyTrchConfig (UNIT_BTS1, U_DPCH, 0, &CphyTrchConfig_U_DPCH_SDCCH, ..., ...);  
CmacConfig (UNIT_BTS1, U_DPCH, 0, &CmacConfig_U_DPCH_SDCCH, ..., ...);  
  
CrlcConfig (UNIT_BTS1, CRLC_UM_ESTABLISH, DCCH, 0, &CrlcConfig_DCCH, RRC, ...);  
CrlcConfig (UNIT_BTS1, CRLC_AM_ESTABLISH, DCCH, 1, &CrlcConfig_DCCH, RRC, ...);  
CrlcConfig (UNIT_BTS1, CRLC_AM_ESTABLISH, DCCH, 2, &CrlcConfig_DCCH, RRC, ...);  
CrlcConfig (UNIT_BTS1, CRLC_AM_ESTABLISH, DCCH, 3, &CrlcConfig_DCCH, RRC, ...);
```

“DCCH, 0” is configured with **CRLC_UM_ESTABLISH** and other channels are configured with **CRLC_AM_ESTABLISH**.
Also, information for the stand-alone DCCH configuration is described in the “RRC Connection Setup” message, because the “RRC Connection Setup” message goes to the UE, which configures its own channels based on this message.

Sending “RRC Connection Setup”

```
/* Send Message: RRC Connection Setup */  
RlcSpecialLI = 1;  
SndMessage (UNIT_BTS1, RLC_UM_DATA_REQ, D_CCCH, 0, SndData, sizeof(SndData));  
RlcSpecialLI = 0;  
  
/* Receive Message: RRC Connection Setup Complete */  
ret = RcvMessage (&BtsNo, &Frame, &Lo_Ch, &Lo_No, RcvData, ...);  
... if GetMessageTypeMsgNo (U_DCCH, RcvData)==Mar2002_RrcConnectionSetupComplete) ...
```

“Easy_to... A.1.7 SndMessage()”

7) Use the following global variables to specify detailed parameters. Set these global variables before executing SndMessage().

- If Frame is RLC_UM_DATA_REQ:
RlcSpecialLI 1 when using Special LI, otherwise 0.

In the Rel. 99 specifications, Length Indicator on RLC UMD-PDU is optional. However, after Rel. 99, it is always required and is not optional.

To use Length Indicator, follow procedure above, which uses the RlcSpecialLI global variable.

Releasing DCCH

CphyTrchRelease (UNIT_BTS1, D_DPCH, 0, ..., ...);
 CphyRRelease (UNIT_BTS1, D_DPCH, 0, ..., ...);
 CmacConfig (UNIT_BTS1, D_DPCH, 0, (CMAC_CONFIG_PAR *)0, ..., ...);

CphyTrchRelease (UNIT_BTS1, U_DPCH, 0, ..., ...);
 CphyRRelease (UNIT_BTS1, U_DPCH, 0, ..., ...);
 CmacConfig (UNIT_BTS1, U_DPCH, 0, (CMAC_CONFIG_PAR *)0, ..., ...);

CrlcConfig (UNIT_BTS1, CRLC_UM_RELEASE, DCCH, 0, (CRLC_CONFIG_PAR *)0, RRC, ...);
 CrlcConfig (UNIT_BTS1, CRLC_AM_RELEASE, DCCH, 1, (CRLC_CONFIG_PAR *)0, RRC, ...);
 CrlcConfig (UNIT_BTS1, CRLC_AM_RELEASE, DCCH, 2, (CRLC_CONFIG_PAR *)0, RRC, ...);
 CrlcConfig (UNIT_BTS1, CRLC_AM_RELEASE, DCCH, 3, (CRLC_CONFIG_PAR *)0, RRC, ...);

Packet Origination Sequence

```

/* Origination arrow diagram in this Scenario */
/* MS MD8480 */
/* |----- RRC Connection Request ---->| */
/* | (TR-Mode PRACH-RACH-CCCH) | */
/* |<---- RRC Connection Setup ---->| */
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */
/* |----- RRC Connection Setup Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- MM CM Service Request ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- GMM AuthenticAndCiphering Req. ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- GMM AuthenticAndCiphering Resp.---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- Security Mode Command ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- Security Mode Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |----- SM Activate PDP Context Request ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- Radio Bearer Setup ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* ===== UL:64 DL:384k /PS RAB Configuration ===== */
/* ===== Connect DTCH ===== */
/* |----- Radio Bearer Setup Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- SM Activate PDP Context Accept ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
  
```


Sending “Radio Bearer Setup”

```

INT CFN; /* Cell Frame Number */
CFN = ((BtsReadCFN(UNIT_BTS1, NO_TIMEOUT)+150)%256) & (short)(~(4-1));

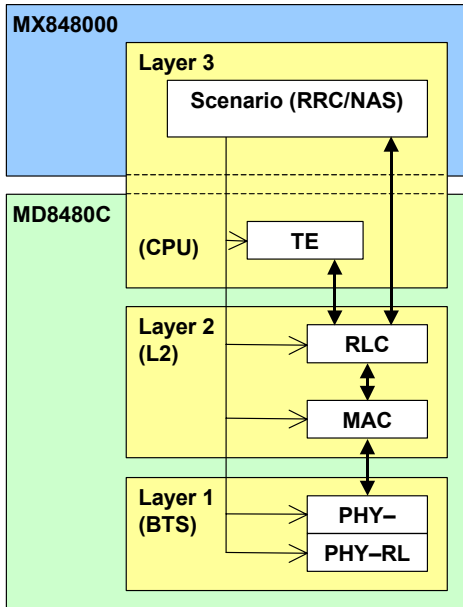
/* Send Message: Radio Bearer Setup */
RlcMUI = 1;
RlcCNF = 1;
SndMessageIntegrity (UNIT_BTS1, RLC_AM_DATA_REQ, D_DCCH, 1, SndData, 728);
RlcCNF = 0;

/* Receive Message: RLC_AM_DATA_CNF */
ret = RcvMessage (&BtsNo, &Frame, &Lo_Ch, &Lo_No, RcvData, ...);
... if (Frame == RLC_AM_DATA_CNF) ...
    
```

“Easy_to... A.1.7 SndMessage()”
 7) Use the following global variables to specify detailed parameters. Set these global variables before executing SndMessage().
 · If Frame is RLC_AM_DATA_REQ:
 RlcMUI MUI value (0-32767)
 RlcCNF 1 when using transmission verification with MUI, otherwise 0.

Establishing RAB requires synchronized DPCH reconfiguration. CFN is calculated to synchronize the BTS and UE.
 CFN is encoded in the “Radio Bearer Setup” message and used in RAB configuration.
 To ensure the received “Radio Bearer Setup” message in UE, this scenario uses the RlcMUI and RlcCNF global variables and receives the RLC_AM_DATA_CNF message.

UL:64 DL:384 k/PS RAB Configuration



Layer 3
 TE port RRC/NAS RRC/NAS RRC/NAS RRC/NAS

RLC
 DTCH DCCH,0 DCCH,1 DCCH,2 DCCH,3
 AMD-PDU UMD-PDU AMD-PDU AMD-PDU
 AMD-PDU

Logical CH
 U_DTCH U_DCCH,0 U_DCCH,1 U_DCCH,2
 U_DCCH,3
 D_DTCH D_DCCH,0 D_DCCH,1 D_DCCH,2
 D_DCCH,3

Transport CH
 U_DCH,0 U_DCH,1
 D_DCH,0 D_DCH,1

Physical CH
 U_DPCH, D_DPCH

UL:64 DL:384 k/PS RAB Configuration

```
CalcRMPParameter (D_DPCH, &CphyRISetup_D_DPCH_P384K, &CphyTrchConfig_D_DPCH_P384K);
CphyRISetup (UNIT_BTS1, D_DPCH, 0, &CphyRISetup_D_DPCH_P384K, CFN, ...);
CphyTrchConfig (UNIT_BTS1, D_DPCH, 0, &CphyTrchConfig_D_DPCH_P384K, CFN, ...);
CmacConfig (UNIT_BTS1, D_DPCH, 0, &CmacConfig_D_DPCH_P384K, CFN, ...);
```

```
CalcRMPParameter (U_DPCH, &CphyRISetup_U_DPCH_P64K, &CphyTrchConfig_U_DPCH_P64K);
CphyRISetup (UNIT_BTS1, U_DPCH, 0, &CphyRISetup_U_DPCH_P64K, CFN, ...);
CphyTrchConfig (UNIT_BTS1, U_DPCH, 0, &CphyTrchConfig_U_DPCH_P64K, CFN, ...);
CmacConfig (UNIT_BTS1, U_DPCH, 0, &CmacConfig_U_DPCH_P64K, CFN, ...);
```

```
CrlcConfig(UNIT_BTS1, CRLC_AM_ESTABLISH, DTCH, 0, &Packet_CrlcConfig_DTCH, TE, ...);
```

```
/* TE Configuration */
```

```
CTE_CONFIG_PAR CteConfigIPPacket; /* Config Parameter */
CteConfigIPPacket.TeType = TE_TYPE_IPPACKET;
CteConfigIPPacket.Layer = RLC;
CteConfig (DTCH, 0, &CteConfigIPPacket, ...);
```

```
CteConnect (DTCH, 0, TE_PORT_NORMAL, TE_PORT_NORMAL, CALL_FROM_AIR, (UCHAR *)0,...);
```

To synchronize the configuration timing between the UE and MD8480, specify CFN in the Activation Time argument.

Packet Disconnect Sequence

```
/* Origination arrow diagram in this Scenario */
/* MS MD8480 */
/* |--- SM Deactivate PDP Context Request -->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* ===== Disconnect DTCH ===== */
/* |<-- SM Deactivate PDP Context Accept ---| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- RRC Connection Release -----| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* |----- RRC Connection Release complete----->| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* ===== DCCH Releasing ===== */
/* ===== DTCH Releasing ===== */
```

Releasing DTCH

```
CteDisconnect (DTCH, 0, CALL_FROM_AIR, NO_TIMEOUT);
```

```
CricConfig (UNIT_BTS1, CRLC_AM_RELEASE, DTCH, 0, (CRLC_CONFIG_PAR *)0, TE, ...);
```

Structures

Physical Layer Structure

Specification method for uplink scrambling code
 bit 0 – bit 23 Secondary Code No (000000h–FFFFFFh)
 bit 24 – bit 31 Scrambling Code Type (0: Short 1: Long)

In this scenario:

```

Uplink Common CH: ScrCode is 0x01000090, Long Code, Secondary Code No=0.
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 => 0x01000000
Uplink DPCH:      ScrCode is 0x01000000, Long Code, Secondary Code No=0x90.
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 => 0x01000090
+-----+-----+-----+-----+-----+-----+-----+-----+
|1 0 9 8|7 6 5 4|3 2 1 0|9 8 7 6|5 4 3 2|1 0 9 8|7 6 5 4|3 2 1 0|
|-----|-----|-----|-----|-----|-----|-----|-----|
| Scrambling | Secondary Code No
| Code Type  |
|0:Short 1:Long | (000000h-FFFFFFh)
    
```

Physical Layer Structure

Common information:

- **Offset**

TS 25.211 – 7. Timing relationship between physical channels

When the PICH is associated with S-CCPCH, the PICH timing is $t_{PICH} = 7680$ chips prior to its corresponding S-CCPCH frame timing.

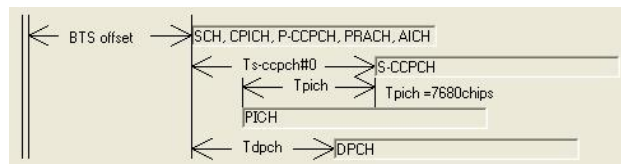
“MD8480C easy to” – A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure

Specify the offset of each channel in chips as multiples of 256.

Because the PICH timing is used as the reference value, specify the value plus 7680.

Example: If Tdpch is 12, $12 \times 256 + 7680 = 10752$

For **uplink**, add **1024** to the downlink value.



CphyRISetup_P_SCH_BTS1

```
CphyRISetupPar->Offset = 7680;
CphyRISetupPar->ScrCode; // Don't care *1
CphyRISetupPar->SlotFormat; // Don't care
CphyRISetupPar->SymbolRate = SYMRATE15K; // same as P_CCPCH
CphyRISetupPar->ChCode; // Don't care *2
CphyRISetupPar->Power = POWER_STEP_01DB(-160); // Power = -16.0dB
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

- *1: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
ScrCode: This variable is disabled when the channel is P_SCH or S_SCH.
- *2: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
ChCode: This variable is disabled when the channel is P_SCH.

CphyRISetup_S_SCH_BTS1

```
CphyRISetupPar->Offset = 7680;
CphyRISetupPar->ScrCode; // Don't care *1 */
CphyRISetupPar->SlotFormat; // Don't care
CphyRISetupPar->SymbolRate = SYMRATE15K; // same as P_CCPCH
CphyRISetupPar->ChCode = 1; // Primary Code
Group=1 *2
CphyRISetupPar->Power = POWER_STEP_01DB(-160); // Power = -16.0 dB
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

- *1: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
ScrCode: This variable is disabled when the channel is P_SCH or S_SCH.
- *2: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
ChCode: For S_SCH, specify the value of Primary Code Group of P_CCPCH and P_CPICH.

CphyRISetup_P_CPICH_BTS1

```
CphyRISetupPar->Offset = 7680;
CphyRISetupPar->ScrCode = 0x00000090;
CphyRISetupPar->SlotFormat; // Don't care
CphyRISetupPar->SymbolRate = SYMRATE15K; // *1
CphyRISetupPar->ChCode = 0; // *2
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

***1:** TS25.211 5.3.3.1 Common Pilot Channel (CPICH)

The CPICH is a fixed-rate (30 kbps, SF = 256) downlink physical channel carrying a pre-defined bit sequence.

***2:** TS25.213 5.2.1 Channelization codes

The channelization code for the Primary CPICH is fixed to $C_{ch,256,0}$ and the channelization code for the Primary CCPCH is fixed to $C_{ch,256,1}$.

CphyRISetup_P_CCPCH_BTS1

```
CphyRISetupPar->Offset = 7680;
CphyRISetupPar->ScrCode = 0x00000090;
CphyRISetupPar->SlotFormat; // Don't care
CphyRISetupPar->SymbolRate = SYMRATE15K; // *1
CphyRISetupPar->ChCode = 1; // *2
CphyRISetupPar->Power = POWER_STEP_01DB(-160); // Power = -16.0 dB
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

***1:** TS25.211 5.3.3.3 Primary Common Control Physical Channel (P-CCPCH)

The Primary CCPCH is a fixed-rate (30 kbps, SF = 256) downlink physical channel carrying the BCH transport channel.

***2:** TS25.213 5.2.1 Channelization codes

The channelization code for the Primary CPICH is fixed to $C_{ch,256,0}$ and the channelization code for the Primary CCPCH is fixed to $C_{ch,256,1}$.

CphyRISetup_S_CCPCH_PCHxFACH

```
CphyRISetupPar->Offset = 7680;
CphyRISetupPar->ScrCode = 0x00000090;
CphyRISetupPar->SlotFormat = SLOT_FORMAT_8;
CphyRISetupPar->SymbolRate = SYMRATE60K; // based on SlotFormat
CphyRISetupPar->ChCode = 8;
CphyRISetupPar->Power = POWER_STEP_01DB(-130); // Power = -13.0 dB
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

*1: TS25.211 5.3.3.4 Secondary Common Control Physical Channel (S-CCPCH)
Table 18: Secondary CCPCH fields

CphyRISetup_D_AICH_BTS1

```
CphyRISetupPar->Offset = 7680;
CphyRISetupPar->ScrCode = 0x00000090;
CphyRISetupPar->SlotFormat; // *1 Don't care
CphyRISetupPar->SymbolRate = SYMRATE15K; // *1
CphyRISetupPar->ChCode = 2; // *2
CphyRISetupPar->Power = POWER_STEP_01DB(-100); // Power = -10.0 dB */
CphyRISetupPar->AICHPositive = AICH_POSITIVE;
CphyRISetupPar->AICHack = AICH_ACK;
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

*1: TS25.211 5.3.3.7 Acquisition Indicator Channel (AICH)

The Acquisition Indicator channel (AICH) is a fixed-rate (SF = 256) physical channel carrying Acquisition Indicators (AI).

*2: System Information Type5 in this scenario specifies the AICH ChCode and must match.

```
| +-aich-Info ::= SEQUENCE OPTIONAL:Exist
| +-channelisationCode256 ::= INTEGER (0..255) [2]
| +-sttd-Indicator ::= BOOLEAN [FALSE]
| +-aich-TransmissionTiming ::= ENUMERATED [e0]
```


CphyRISetup_D_PICH_BTS1

```
CphyRISetupPar->Offset = 0;
CphyRISetupPar->ScrCode = 0x00000090;
CphyRISetupPar->SlotFormat; // *1 Don't care
CphyRISetupPar->SymbolRate = SYMRATE15K; // *1
CphyRISetupPar->ChCode = 3;
CphyRISetupPar->Power = POWER_STEP_01DB(-183); // Power = -18.3 dB
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

***1:** TS25.211 [5.3.3.10 Paging Indicator Channel \(PICH\)](#)

The Paging Indicator Channel (PICH) is a fixed-rate (SF = 256) physical channel carrying the paging indicators.

CphyRISetup_U_PRACH

```
CphyRISetupPar->Offset = 10240; // 7680 + 2560 or 7680 *4
CphyRISetupPar->ScrCode = 0x01000090;
CphyRISetupPar->SlotFormat; // Don't care
CphyRISetupPar->SymbolRate = SYMRATE60K; // for message data field *2
CphyRISetupPar->ChCode = 128; // Don't care *3
CphyRISetupPar->Power; // Don't care *1
CphyRISetupPar->AICHTiming = AICH_3ACCESS_SLOT;
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

***1:** A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure

Power: This variable has no meaning for Uplink Physical Channel.cc.

***2:** TS25.211 [5.2.2.1.3 RACH message part](#)

Table 6: Random-access message data fields

***3:** Refer to "Easy to... A.1.10 A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure – PreambleRxMode"

and Refer to TS25.213 – 4.3.1.3

***4:** TS25.214 6.1.2 RACH access slot sets

CphyRISetup_U_DPCH_SDCCH

```
CphyRISetupPar->Offset      = 8704;
CphyRISetupPar->ScrCode     = 0x01000000;
CphyRISetupPar->SlotFormat  = SLOT_FORMAT_0;           // for DPCCH
CphyRISetupPar->SymbolRate  = SYMRATE60K;             // for DPDCH
CphyRISetupPar->ChCode      = 0;                     // Always 0 *4
CphyRISetupPar->Power;                                       // Don't care *1
CphyRISetupPar->NumOfDPDCH  = 1;                       // *2
CphyRISetupPar->Dpdch[0].ChCode = 16;                 // SF/4 = 64/4 *4
CphyRISetupPar->Dpdch[0].Power;                         // Don't care *3
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
```

- *1: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
Power: This variable has no meaning for Uplink Physical Channel.cc.
- *2: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
NumOfDPDCH: Specifies number of Physical Channels that one CCTrCH mapped to
Downlink DPCH: 1, 2, or 3
Uplink DPCH: 0 or 1
- *3: A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
Dpdch[0].Power: Specifies Power of DPDCH

CphyRISetup_U_DPCH_SDCCH

- *4: TS25.213 4.3.1.2.1 Code allocation for DPCCH/DPDCH
The following applies for DPCCH and DPDCH:
The DPCCH shall always be spread by code $c_c = C_{ch,256,0}$.
When only one DPDCH is to be transmitted, $DPDCH_1$ shall be spread by code $c_{d,1} = C_{ch,SF,k}$ where SF is the spreading factor of $DPDCH_1$ and $k = SF/4$.
When more than one DPDCH is to be transmitted, all DPDCHs have spreading factors equal to 4. $DPDCH_n$ shall be spread by the code $c_{d,n} = C_{ch,4,k}$, where $k = 1$ if $n \in \{1, 2\}$, $k = 3$ if $n \in \{3, 4\}$, and $k = 2$ if $n \in \{5, 6\}$.

CphyRISetup_D_DPCH_SDCCH

```
CphyRISetupPar->Offset      = 7680;
CphyRISetupPar->ScrCode     = 0x00000090;
CphyRISetupPar->SlotFormat  = SLOT_FORMAT_8;           // for DPCCH and DPDCH
CphyRISetupPar->SymbolRate  = SYMRATE30K;           // based on SlotFormat
CphyRISetupPar->ChCode      = 30;
CphyRISetupPar->Power       = POWER_STEP_01DB(-160); // Power = -16.0 dB
CphyRISetupPar->NumOfDPDCH  = 1;                     // *1
CphyRISetupPar->Dpdch[0].Power = POWER_STEP_01DB(-160); // *2
CphyRISetupPar->Dpdch[0].ChCode = 30;
CphyRISetupPar->TxDiversity = DIVERSITY_OFF;
CphyRISetupPar->MaxDLPower  = -10;
CphyRISetupPar->MinDLPower  = -99;
```

- *1:** A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
NumOfDPDCH: Specifies number of Physical Channels that one CCTrCH mapped to
Downlink DPCH: 1 or 3
Uplink DPCH: 0 or 1
- *2:** A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
Dpdch[0].Power: Specifies Power of DPDCH

CphyRISetup_D_DPCH_SDCCH

- *3:** A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
MaxDLPower:
Specifies maximum power of Downlink DPCH
Value in scenario description
-99..-10 _____ -99 dBm to -10 dBm
Use POWER_STEP_01DB(x) macro to enable 0.1-dB resolution.
Value in scenario description
-999..-100 _____ -99.9 dBm to -10.0 dBm
Example: POWER_STEP_01DB(-105) = -10.5 dBm
- *4:** A.2.2.6.2 Description of CPHY_RL_SETUP_PAR structure
MinDLPower :
Specifies minimum power of Downlink DPCH
Value in scenario description
-99..-10 _____ -99 dBm to -10 dBm
Use POWER_STEP_01DB(x) macro to enable 0.1-dB resolution.
Value in scenario description
-999..-100 _____ -99.9 dBm to -10.0 dBm
Example: POWER_STEP_01DB(-105) = -10.5 dBm

Appendix

Protocol Sequence

Registration 1
Sample Sequence

```
/* *****  
/* Registration arrow diagram in this Scenario */  
/* MS MD8480 */  
/* |----- RRC Connection Request ----->| */  
/* | (TR-Mode PRACH-RACH-CCCH) | */  
/* |<----- RRC Connection Setup ----->| */  
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */  
/* |----- RRC Connection Setup Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- MM Location Updating Request ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM Attach Request ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- MM Authentication Request ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- MM Authentication Response ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- Security Mode Command ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Security Mode Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- MM Identity Request ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- MM Identity Response ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- MM Location Updating Accept ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- MM TMSI Reallocation complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* */  
/* *****
```

Protocol Sequence

Registration 1 Sample Sequence

```
/* ***** */
/* Registration arrow diagram in this Scenario */
/* MS MD8480 */
/* |<---- GMM AuthenticAndCiphering Req. ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- GMM AuthenticAndCiphering Resp.---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- Security Mode Command ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- Security Mode Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- GMM Identity Request ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- GMM Identity Response ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- GMM Attach Accept ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- GMM Attach Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- RRC Connection Release ---->| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* |---- RRC Connection Release complete---->| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* */
/* End Of Sequence */
/* ***** */
```

Protocol Sequence

Registration 2 Sample Sequence

```
/* ***** */
/* Registration arrow diagram in this Scenario */
/* MS MD8480 */
/* |---- RRC Connection Request ---->| */
/* | (TR-Mode PRACH-RACH-CCCH) | */
/* |<---- RRC Connection Setup ---->| */
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */
/* |---- RRC Connection Setup Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- MM Location Updating Request ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- MM Authentication Request ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- MM Authentication Response ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- Security Mode Command ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- Security Mode Complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- MM Identity Request ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- MM Identity Response ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- MM Location Updating Accept ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |---- MM TMSI Reallocation complete ---->| */
/* | (AM-Mode DPCH-DCH-DCCH) | */
/* |<---- RRC Connection Release ---->| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* |---- RRC Connection Release complete---->| */
/* | (UM-Mode DPCH-DCH-DCCH) | */
/* ***** */
```

Protocol Sequence

Registration 2
Sample Sequence

```
/* *****  
/* Registration arrow diagram in this Scenario */  
/* MS MD8480 */  
/* |----- RRC Connection Request ---->| */  
/* | (TR-Mode PRACH-RACH-CCCH) | */  
/* |<----- RRC Connection Setup -----| */  
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */  
/* |----- RRC Connection Setup Complete ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM Attach Request ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- GMM AuthenticAndCiphering Req. -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM AuthenticAndCiphering Resp.---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- Security Mode Command -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Security Mode Complete ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- GMM Identity Request -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM Identity Response ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- GMM Attach Accept -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM Attach Complete ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- RRC Connection Release -----| */  
/* | (UM-Mode DPCH-DCH-DCCH) | */  
/* |----- RRC Connection Release complete---->| */  
/* | (UM-Mode DPCH-DCH-DCCH) | */  
/* End Of Sequence */  
/* *****
```

Protocol Sequence

Voice & Video
Origination
Sample Sequence

```
/* *****  
/* Origination arrow diagram in this Scenario */  
/* MS MD8480 */  
/* |----- RRC Connection Request ---->| */  
/* | (TR-Mode PRACH-RACH-CCCH) | */  
/* |<----- RRC Connection Setup -----| */  
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */  
/* |----- RRC Connection Setup Complete ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM CM Service Request ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- MM Authentic Request -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- MM Authentic Response ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- Security Mode Command -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Security Mode Complete ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- CC Setup ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- CC Call Proceeding -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- Radio Bearer Setup -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Radio Bearer Setup Complete ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- CC Alerting -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<----- CC Connect -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- CC Connect Acknowledge ---->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* End Of Sequence */  
/* *****
```

Protocol Sequence

Voice & Video Termination Sample Sequence

```
/******  
/* Termination arrow diagram in this Scenario */  
/* MS MD8480 */  
/* |<---- Paging Type 1 -----| */  
/* | (TR-Mode S-CCPCH-PCH-PCCH) | */  
/* |----- RRC Connection Request ----->| */  
/* | (TR-Mode PRACH-RACH-CCCH) | */  
/* |<---- RRC Connection Setup -----| */  
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */  
/* |----- RRC Connection Setup Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Paging Response ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- MM Authentic Request -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- MM Authentic Response ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- Security Mode Command -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Security Mode Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- CC Setup -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- CC Call Comfirmed ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- Radio Bearer Setup -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Radio Bearer Setup Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- CC Alerting ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- CC Connect ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- CC Connect Acknowledge -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* End Of Sequence */  
/******
```



Protocol Sequence

Packet Origination Sample Sequence

```
/******  
/* Origination arrow diagram in this Scenario */  
/* MS MD8480 */  
/* |----- RRC Connection Request --->| */  
/* | (TR-Mode PRACH-RACH-CCCH) | */  
/* |<---- RRC Connection Setup -----| */  
/* | (UM-Mode S-CCPCH-FACH-CCCH) | */  
/* |----- RRC Connection Setup Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM CM Service Request ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- GMM AuthenticAndCiphering Req. -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- GMM AuthenticAndCiphering Resp.----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- Security Mode Command -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Security Mode Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- SM Active PDP Context Request ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- Radio Bearer Setup -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |----- Radio Bearer Setup Complete ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* |<---- SM Active PDP Context Accept -----| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* End Of Sequence */  
/******
```



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