

TECHNICAL NOTE

MD8470A

Signalling Tester

W-CDMA Technology

ANRITSU CORPORATION

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Overview of W-CDMA Physical Channels (L1) and Protocol (L2, L3) Introduction

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Slide 1

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**Part 3: How to connect between MS
and BTS**

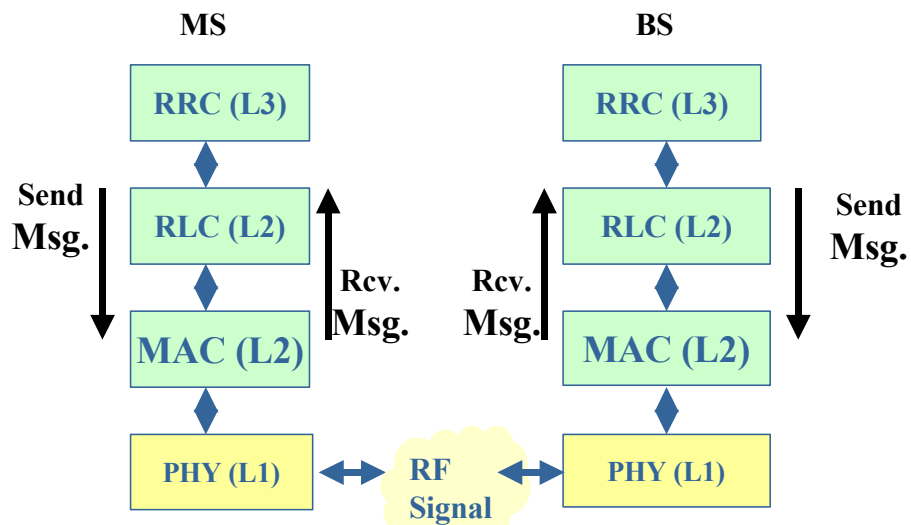
Part 4: EProtocol Sequence Examples

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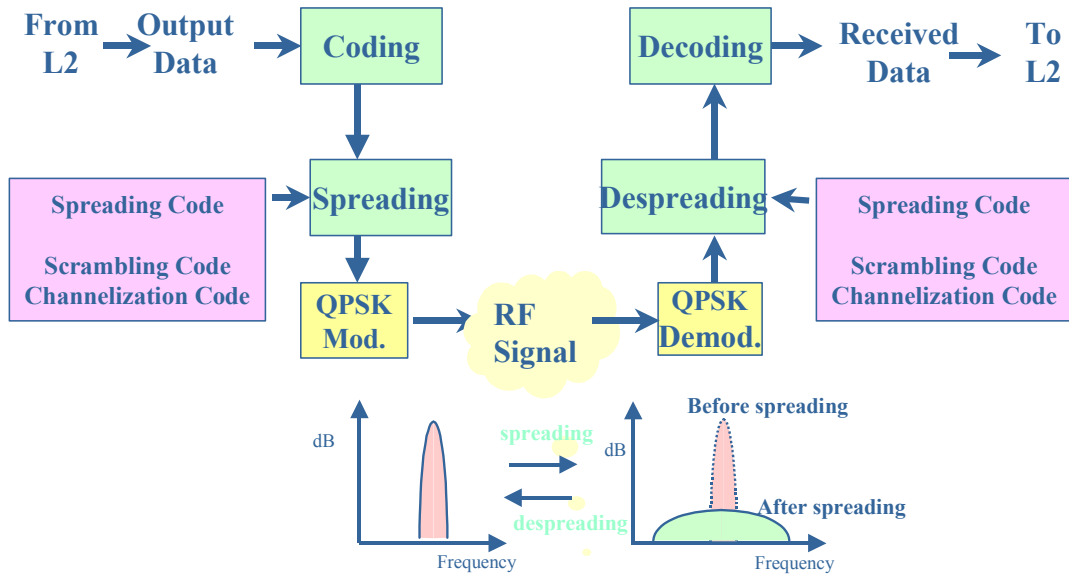
Configuration of Layers



Part 1: Layer1

Layer 1 functions are modulation and demodulation

Configuration of Physical Layer (L1)



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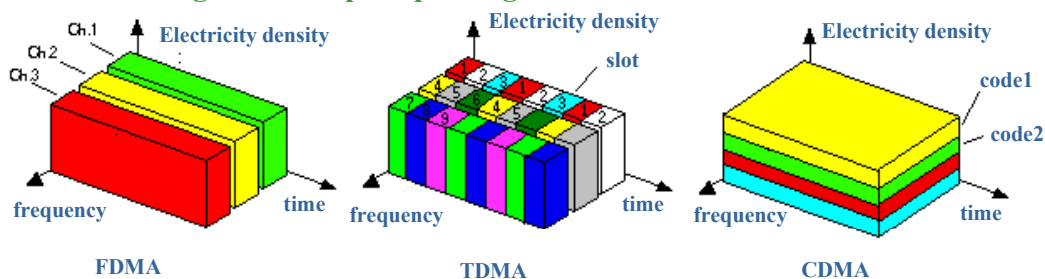
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Appendix: CDMA characteristics

CDMA (Code Division Multiple Access)

Many terminals can use the same frequency at the same time because a different spreading code is established for every terminal

- superior concealment
- strong against interference waves and interruption waves
- enables up to 1.5 times as many subscribers as TDMA (because of variable speed coding, control voice interlock output)
- not interrupted at handover
- strong for multi-path phasing

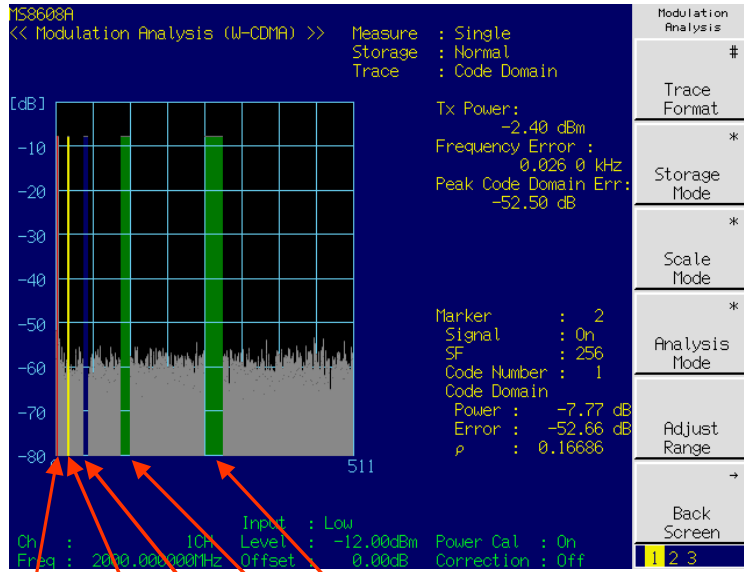


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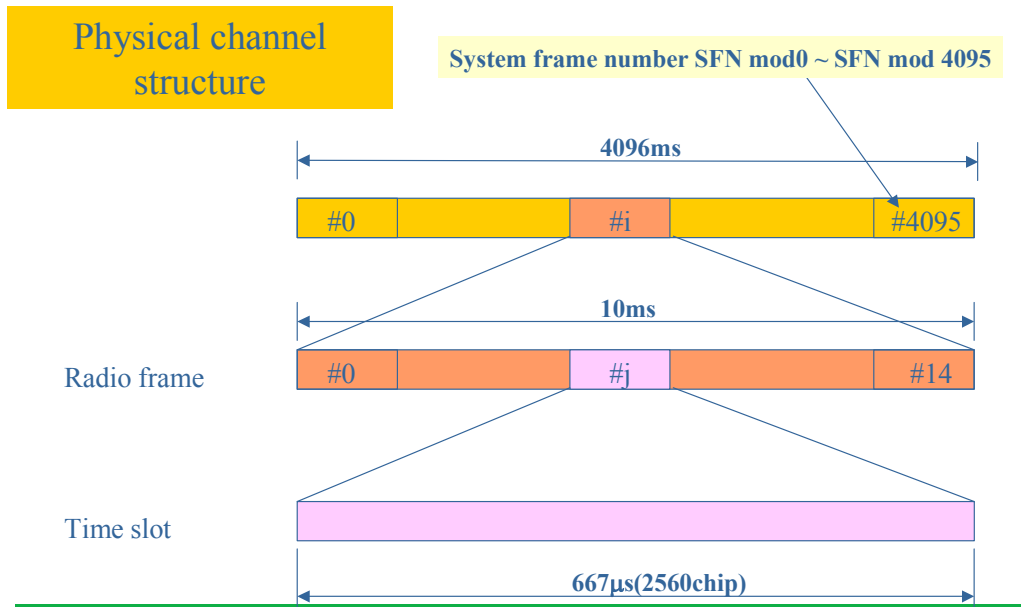
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Appendix: SF

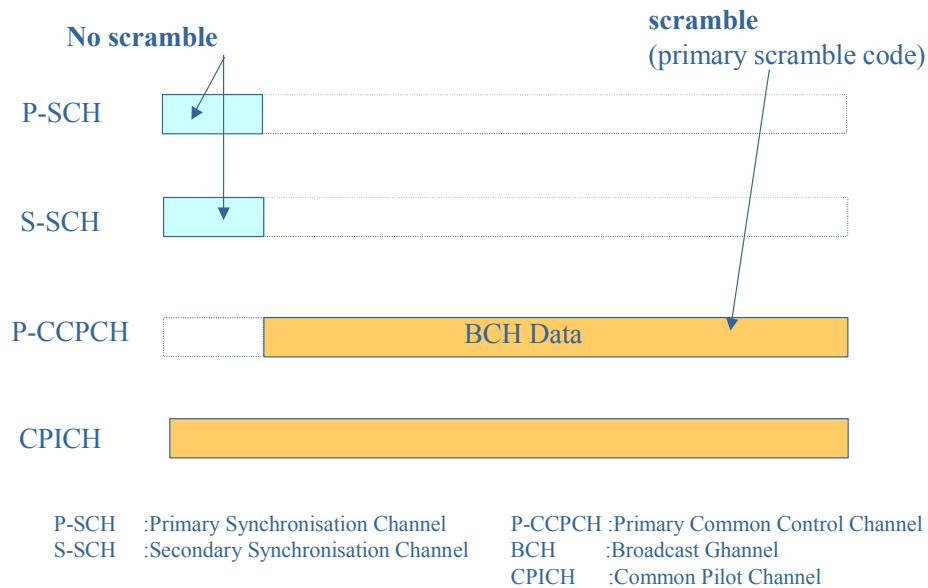


SF=256 , 128 , 64 , 32 , 16

Appendix: Time frames



Appendix: Time frames of SCH and P-CCPCH



W-CDMA

- **Downlink Channel**
 - **P-CPICH, P-SCH, S-SCH, P-CCPCH, S-CCPCH**
 - **S-CPICH**
 - **AICH**
 - **PICH**
 - **PDSCH (not supported)**
 - **DPCCH, DPDCH**
 - **various rates and services**

W-CDMA

- **Uplink Channel**
 - **PRACH**
 - **PCPCH (not supported now)**
 - **DPCCH, DPDCH**
 - **various rate and services**

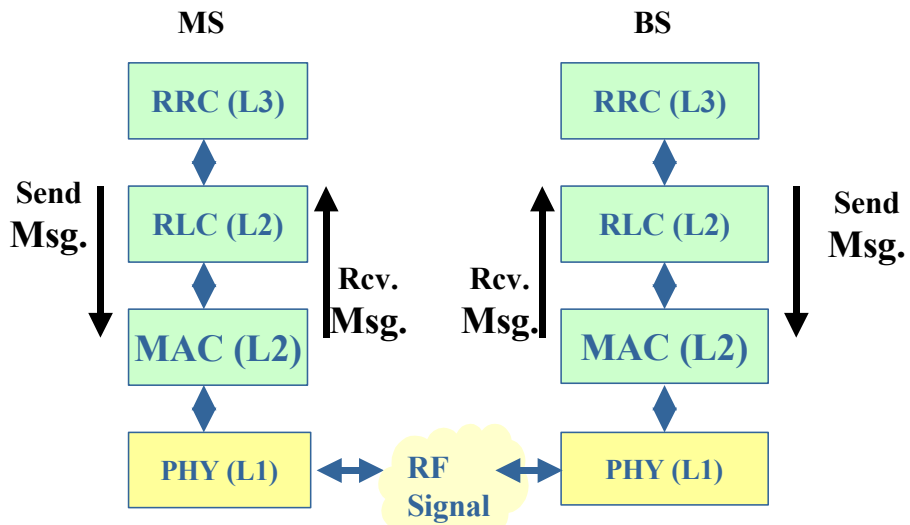
Part 2: Layer2 and Layer3

Layer 2 functions are

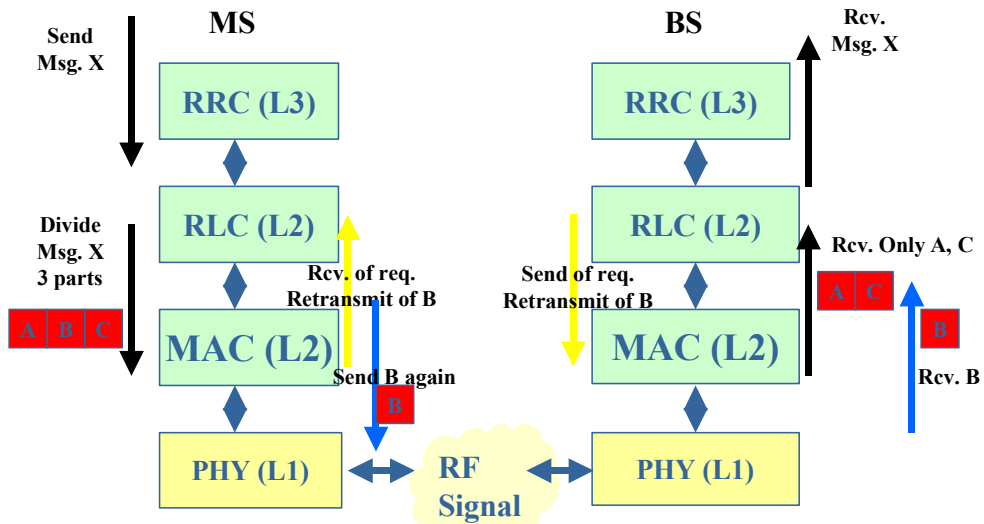
- **converting between L1 format and L3 format, and**
- **retransmitting**

Layer3 functions are sending and receiving messages

Configuration of Layers



Configuration of Retransmit



Part 3: How to connect between MS and BTS

How to connect between MS and BTS

- 1. MS receives P-SCH and synchronizes slot timing of BS**
 - Sync Codes of P-SCH are known
- 2. MS receives S-SCH and synchronizes frame timing of BS**
 - Search the 64 kinds of S-SCH Sync Codes (refer to S-SCH.doc)
 - Based on S-SCH Sync Codes, MS can get Scrambling Code
- 3. MS receives P-CPICH and matches the absolute phase**
- 4. MS receives P-CCPCH for Receiving BCH**

Appendix: Sync Codes

3G TS 25.213 version 3.2.0

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3G TS 25.213 V3.2.0(DRAFT) (2000-03)

Table 4: Allocation of SSCs for secondary SCH.

Scrambling Code Group	slot number															
	#0	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	
Group 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Group 2	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	
Group 3	1	2	1	15	5	2	12	18	6	11	2	16	11	15	12	
Group 4	1	2	3	1	9	6	2	5	8	4	4	5	3	7	7	
Group 5	1	2	16	6	6	11	16	6	12	1	15	12	16	11	2	
Group 6	1	3	4	7	4	1	5	3	2	6	2	8	7	6	8	
Group 7	1	4	11	3	4	10	2	11	2	10	12	12	9	3	3	
Group 8	1	5	6	6	14	3	10	2	13	9	2	5	14	7	13	
Group 9	1	6	10	10	4	11	2	13	16	11	13	6	4	11	10	
Group 10	1	6	13	2	14	2	6	5	5	13	10	9	1	14	10	
Group 11	1	7	8	6	7	2	4	3	8	3	2	6	6	4	5	
Group 12	1	7	10	9	10	2	1	15	1	6	16	6	15	2	2	
Group 13	1	8	12	8	9	4	13	16	5	1	13	5	12	4	6	
Group 14	1	8	14	10	14	1	15	15	5	5	11	4	10	5	4	
Group 15	1	9	2	15	15	16	10	7	9	1	10	6	2	16	9	
Group 16	1	9	15	6	16	2	13	14	10	11	7	4	5	12	3	
Group 17	1	10	9	11	16	7	16	4	16	5	2	12	13	24	14	
Group 18	1	11	14	4	13	2	21	10	12	16	9	5	15	6	3	
Group 19	1	12	12	13	14	7	2	8	14	2	1	13	11	8	11	
Group 20	1	12	15	9	4	14	13	16	7	6	2	10	13	13	3	
Group 21	1	15	4	3	7	6	10	13	12	5	14	16	8	2	11	
Group 22	1	16	3	12	11	9	13	5	8	2	14	7	4	10	15	
Group 23	2	2	5	10	15	11	2	10	11	8	5	13	3	12	8	
Group 24	2	2	12	3	15	5	8	3	5	14	12	9	8	9	14	
Group 25	2	3	6	16	12	16	3	13	13	6	7	9	2	12	7	
Group 26	2	3	9	2	15	4	14	14	7	5	5	15	4	12	12	
Group 27	2	4	7	9	9	4	9	11	2	14	5	14	11	16	10	
Group 28	2	4	13	12	12	7	15	10	5	2	15	9	13	7	4	
Group 29	2	5	9	9	3	14	14	15	12	14	5	5	2	15	15	
Group 30	2	5	11	7	2	11	9	4	16	7	16	9	14	14	4	
Group 31	2	6	2	13	3	3	12	8	7	16	6	9	16	13	12	
Group 32	2	6	9	7	7	16	13	1	12	2	13	12	9	16	8	
Group 33	2	7	12	15	2	12	4	10	13	15	13	4	5	5	10	
Group 34	2	7	14	16	5	2	9	16	11	11	5	11	5	11	14	
Group 35	2	8	5	12	3	2	14	14	8	15	3	9	12	15	9	
Group 36	2	9	13	7	12	13	16	16	16	6	4	8	15	15	11	
Group 37	2	10	3	2	13	16	8	10	8	13	11	11	16	5	5	
Group 38	2	11	16	3	13	9	14	10	15	10	6	7	7	14	3	
Group 39	2	16	4	2	16	14	11	4	11	14	9	6	1	2	1	
Group 40	3	3	4	6	11	12	13	6	12	14	4	5	13	5	14	
Group 41	3	3	6	6	18	9	15	5	9	10	6	4	15	4	10	
Group 42	3	4	5	14	4	6	12	13	11	8	5	11	11	12	14	
Group 43	3	4	9	16	10	4	16	15	3	5	10	5	15	5	6	
Group 44	3	4	16	10	5	10	4	9	9	16	16	6	3	5	15	
Group 45	3	5	12	11	14	5	11	13	3	8	14	6	11	4	4	
Group 46	3	6	4	10	6	5	9	15	4	15	5	16	16	9	10	
Group 47	3	7	8	9	16	11	12	4	15	11	4	7	16	2	14	
Group 48	3	7	16	11	4	15	2	15	11	12	12	7	5	9	16	
Group 49	3	8	7	15	4	9	15	12	3	16	4	16	12	11	11	
Group 50	3	8	15	4	10	4	16	4	16	11	15	12	11	3	10	10

3GPP

3G TS 25.213 version 3.2.0

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3G TS 25.213 V3.2.0(DRAFT) (2000-03)

Scrambling Code Group	slot number														
	#0	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14
Group 51	3	10	10	15	16	5	4	6	16	4	3	15	9	6	9
Group 52	3	13	11	5	4	12	4	11	6	6	5	3	14	13	12
Group 53	3	14	7	9	14	10	13	8	7	8	10	4	4	13	9
Group 54	5	5	8	14	16	13	6	14	13	7	8	15	6	15	7
Group 55	5	6	11	7	10	8	5	8	7	12	12	10	6	9	11
Group 56	5	6	13	8	13	5	7	7	6	16	14	15	6	10	15
Group 57	5	7	9	10	7	13	6	12	9	12	11	8	8	6	10
Group 58	5	8	8	10	9	8	12	5	11	10	11	12	7	7	7
Group 59	5	10	10	12	8	11	9	7	8	9	5	12	6	7	6
Group 60	5	10	12	6	5	12	8	9	7	6	7	8	11	11	9
Group 61	5	13	15	14	8	6	7	16	8	7	13	14	5	16	8
Group 62	9	10	13	10	11	15	15	9	16	12	14	13	16	14	11
Group 63	9	11	12	15	12	9	13	13	11	14	10	16	15	14	16

5.3 Modulation

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How to connect between MS and BTS

- MS reaches state 4, and then starts registration, Termination, etc.

- 5: UE sends PRACH
- 6: UE receives S-CCPCH
- 7: UE sends DPDCH and receives DPDCH



5. Please answer (PRACH)

6. Dedicated CH Info. (S-CCPCH)

7. Wireless Protocol negotiation

7. Communication(Voice, etc.)

7. Disconnection



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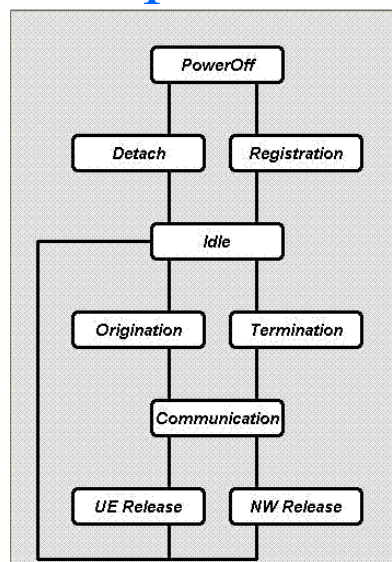
Part 4: Protocol Sequence Examples

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Protocol Sequence Overview



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W-CDMA (Protocol Sequence)

Sample Sequence of Registration 1

```
/******  
/* 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) | */  
/* */  
/******
```

W-CDMA (Protocol Sequence)

Sample Sequence of Registration 1

```
/******  
/* 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 */  
/******
```

W-CDMA (Protocol Sequence)

**Sample Sequence
of Registration 2**

```

/*****
/* 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) | */
/*****

```

W-CDMA (Protocol Sequence)

**Sample Sequence
of Registration 2**

```

/*****
/* 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 */
/*****

```

W-CDMA (Protocol Sequence)

**Sample Sequence
of Registration &
PDP activation
(H3G case)**

```
/* *****  
/* 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) | */  
/* */  
/* *****
```

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W-CDMA (Protocol Sequence)

**Sample Sequence
of Registration &
PDP activation
(H3G UE case)**

```
/* *****  
/* 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) | */  
/* |----- SM 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 PDP Context Accept ----->| */  
/* | (AM-Mode DPCH-DCH-DCCH) | */  
/* */  
/* End Of Sequence */  
/* *****
```

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W-CDMA

Sample Sequence of Voice & Video Origination

```

/*****
/* 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) | */
/* |<---- 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) | */
/* |<---- MM CM Service Accept ---->| */
/* | (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 */
*****/

```

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W-CDMA

Sample Sequence of Voice & Video Termination

```

/*****
/* 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 Confirmed ---->| */
/* | (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 */
*****/

```

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W-CDMA

Sample Sequence of Packet Origination

```
/* ***** */
/* 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) | */
/* |<---- MM CM Service Accept ---->| */
/* | (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 */
/* ***** */
```

W-CDMA

Sample Sequence of Making a call from MS

```
/* Receive Message: RRC Connction Request */
{
  for(;;){
    RcvMessage( &BtsNo, &Frame, &Lo_Ch, &Lo_No, RcvData, NO_TIMEOUT );
    if( (Frame == RLC_TR_DATA_IND) &&
        (RcvData[0] == RRC_CONNECTION_REQUEST) ) {
      break;
    }
  };
};

/* CCCH RLC Re-Establish */
CrlcConfig(UNIT_BTS1, CRLC_UM_ESTABLISH, CCCH, 0, &CrlcConfigCCCH, RRC, NO_TIMEOUT);

/* Send Message: RRC Connection Setup */
{
  UCHAR SndData[] = {
    RRC_CONNECTION_SETUP, /* Message Type */
    /* UE Information Elements */
    0x00, /* Initial UE identity */
    0x00, /* Activation time */
    0x00, /* New U-RNTI */
    0x00, /* New C-RNTI */
    0x00, /* UTRAN DRX cycle length coefficient */
    0x00, /* Re-establishment timer */
    0x00, /* Capability update requirement */
    0x00, /* Downlink information common for all radio links */
    0x00, /* Downlink information per radio link list */
    0x00 /* Downlink information for each radio link */
  };

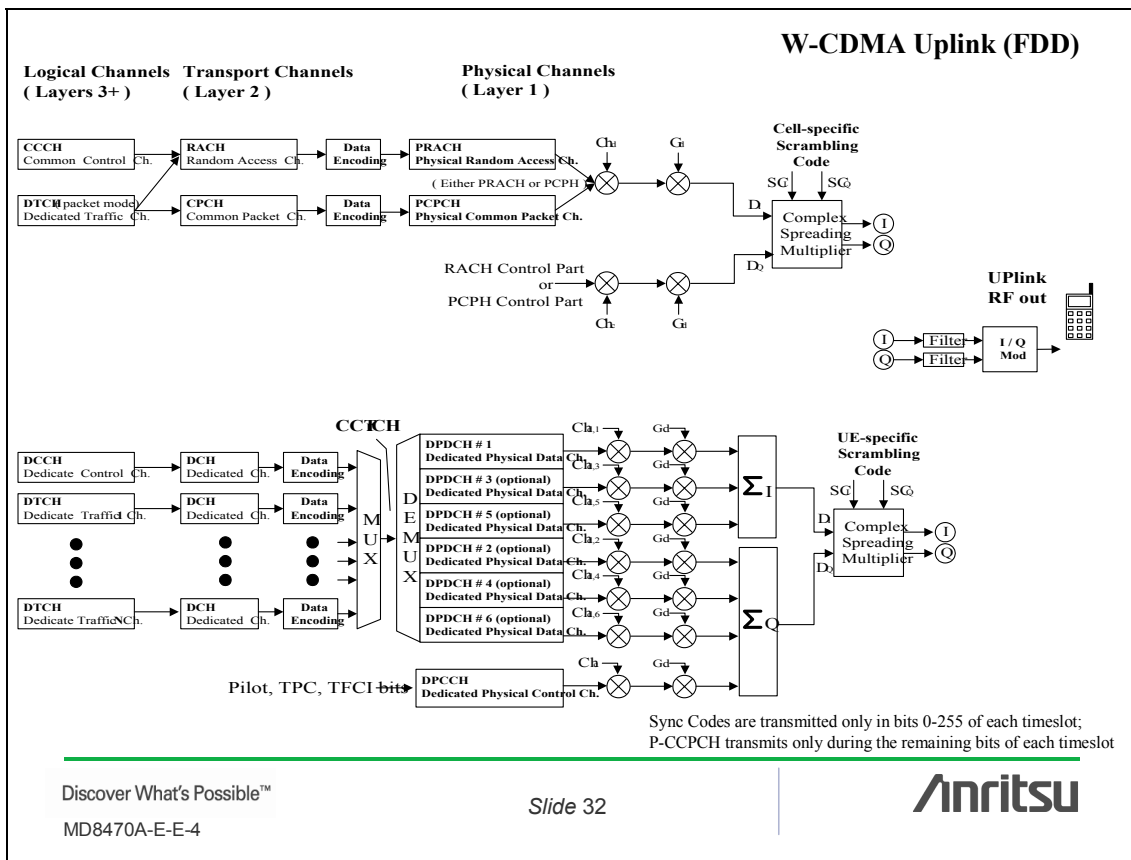
  SndMessage(UNIT_BTS1, RLC_UM_DATA_REQ, D_CCCH, 0, SndData, sizeof(SndData));
};
```

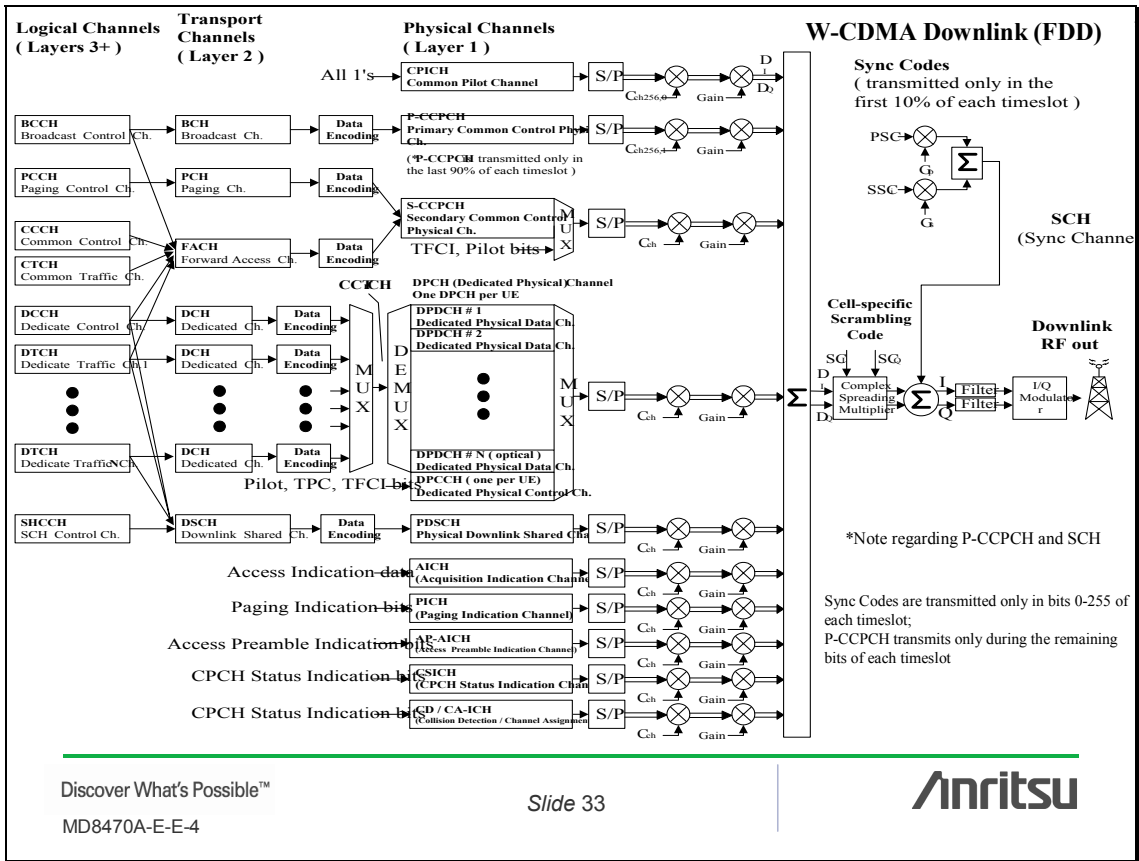
Appendices

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