

Internal

BSC6900 Data Configuration — Radio Layer Data

BSC6900V900R012

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Objectives

After this course, you will master:

- ▣ The configuration procedure, commands and parameters of logical cell
- ▣ The neighboring cell relationship and configuration commands



Reference

- 《 (For Customer)BSC6900 UMTS Product Documentation(V900R012C00_01)-EN 》
- 《 BSC6900 UMTS Initial Configuration Guide(V900R012C00_01) 》



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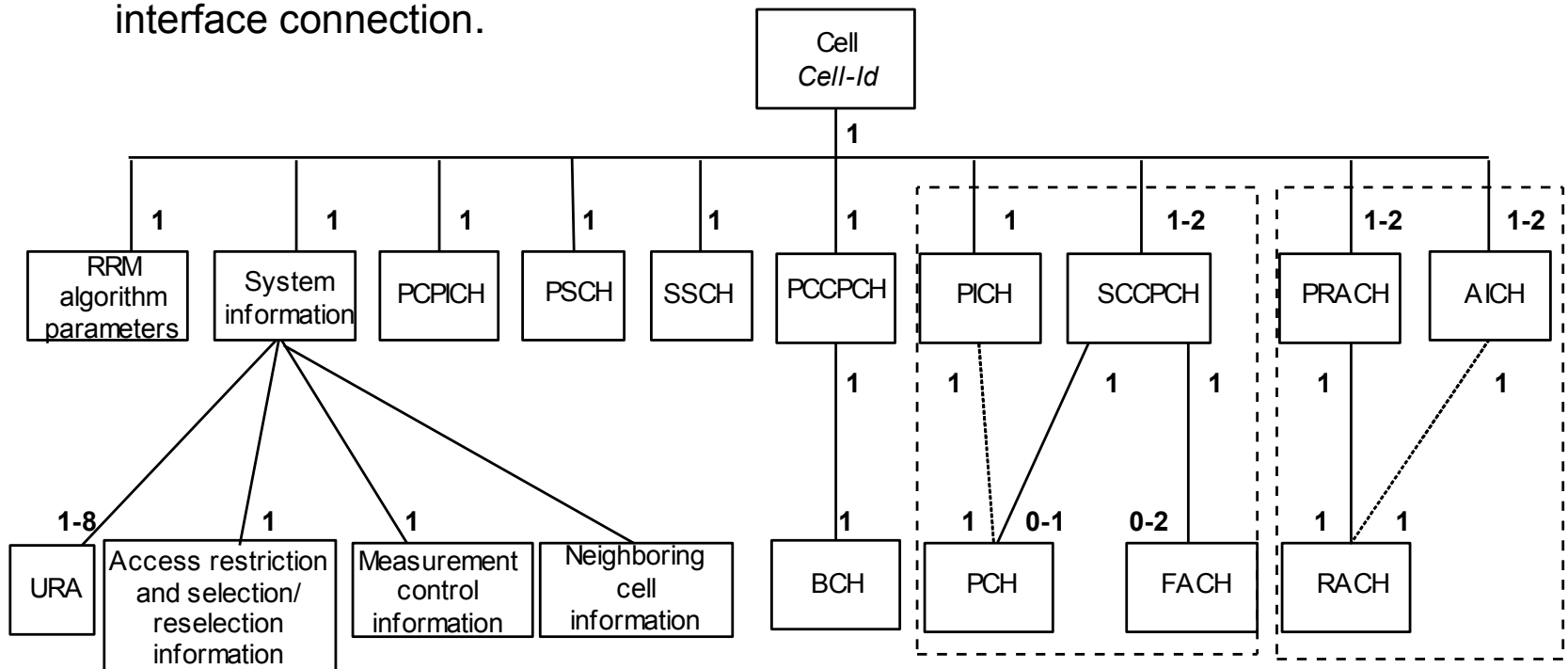
Overview

- Logical Cell Module

- Logical cell is the basic unit for UE to register and access UTRAN network.

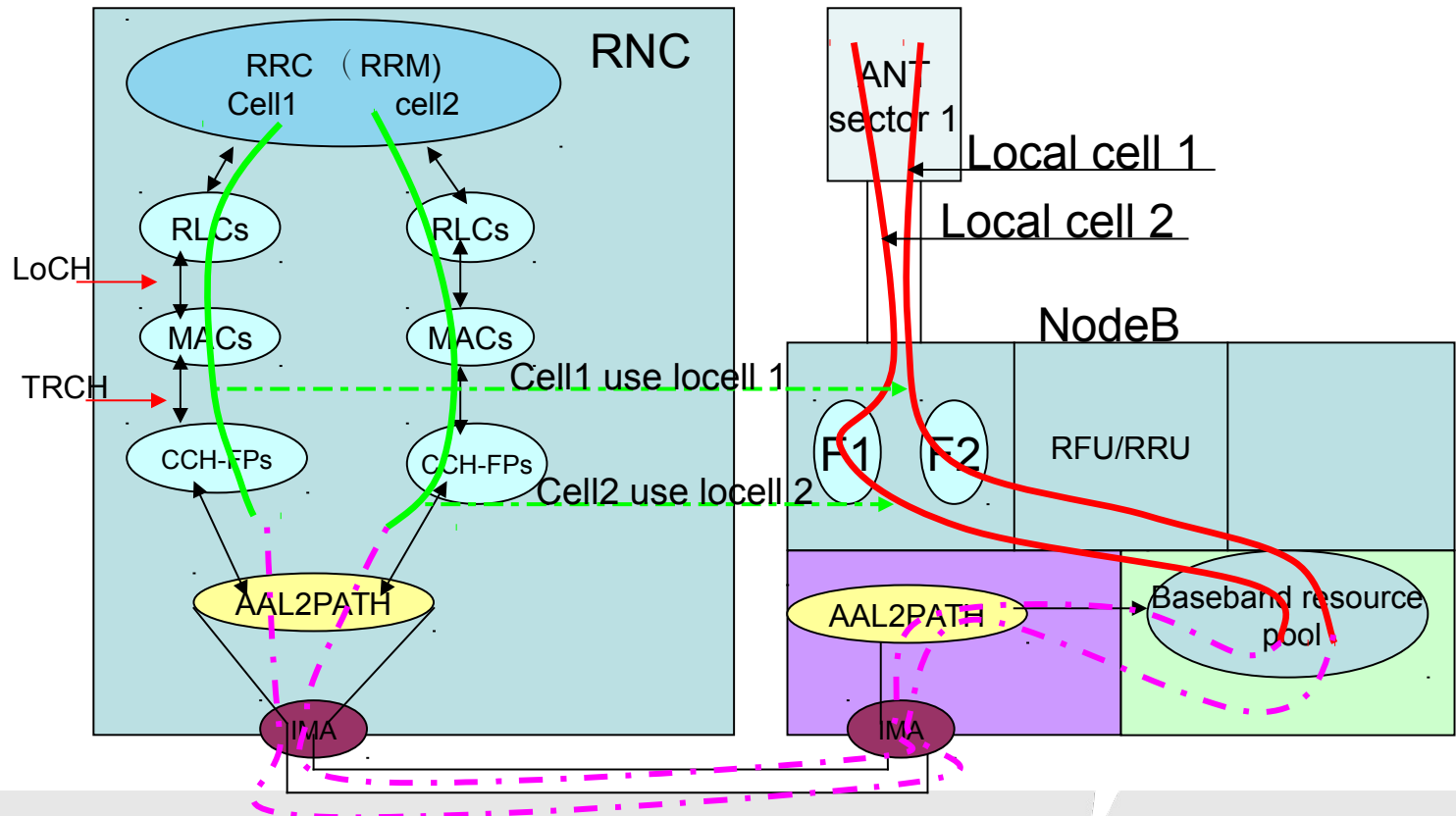
- Cell informs UE its access capability on uu interface by system information broadcast.

- One cell includes all common resource and management algorithm for one uu interface connection.



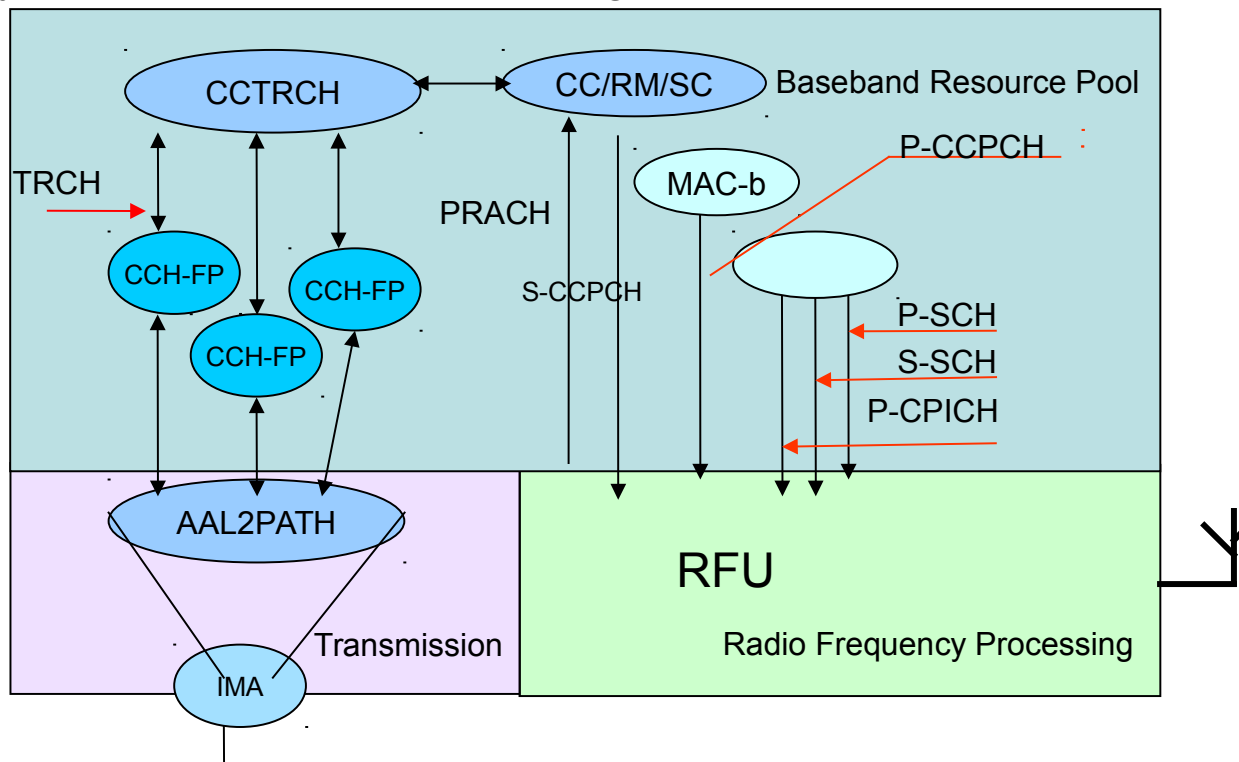
Overview

- Logical Cell Module – mapping on the equipment
 - One logical cell includes uu interface layer 3 control algorithm, layer 2 resource and common physical channel resource.
 - Common physical channel resource in logical cell is supported by local cell on NodeB.



Overview

- Local cell on NodeB
 - Local cell on NodeB mainly includes baseband and radio frequency resource. One NodeB includes several local cells, supplying physical resource for several logical cells.



LOCAL CELL = baseband resource + RF resource + antenna feeder

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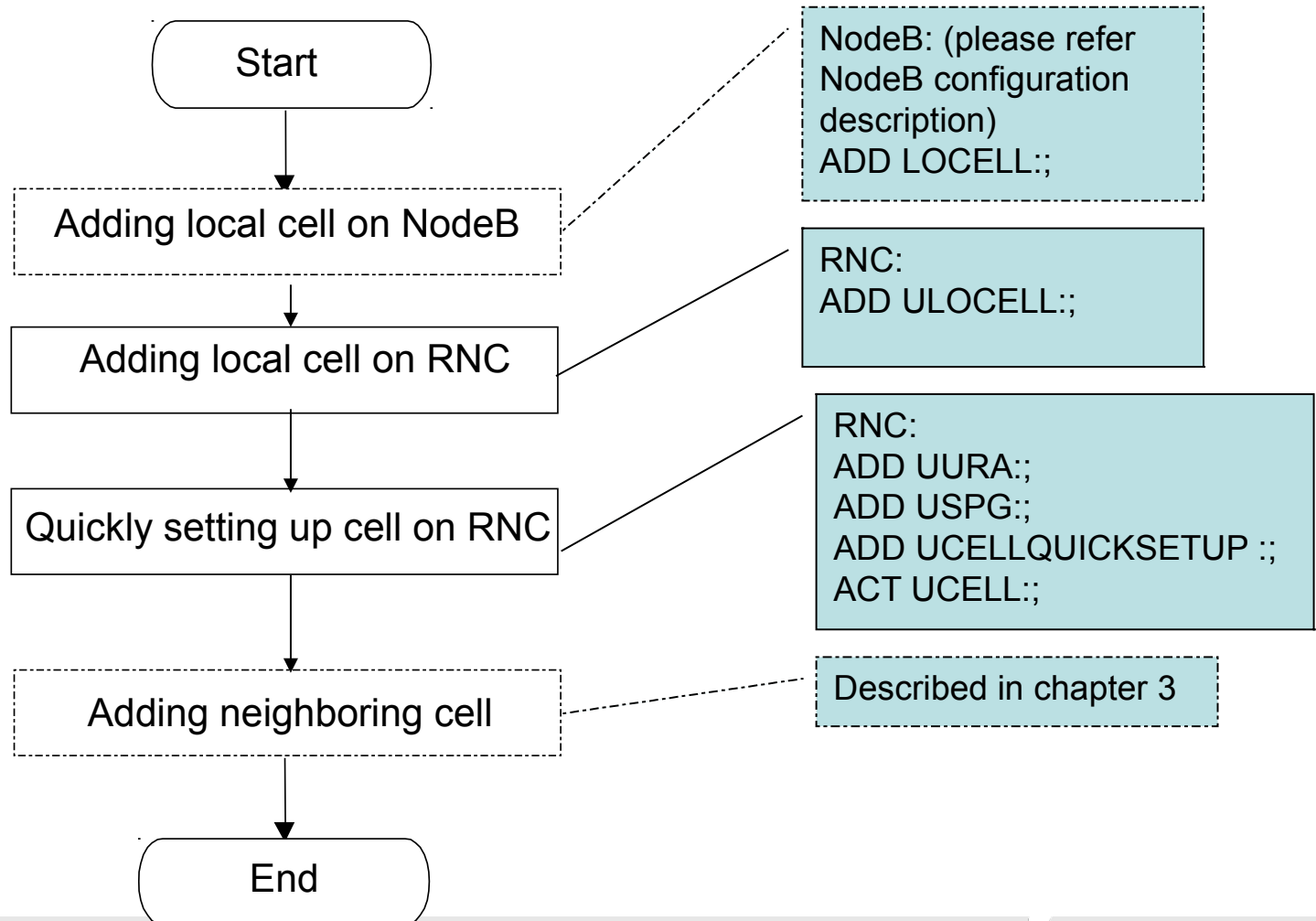
Chapter 2 Cell Data Configuration

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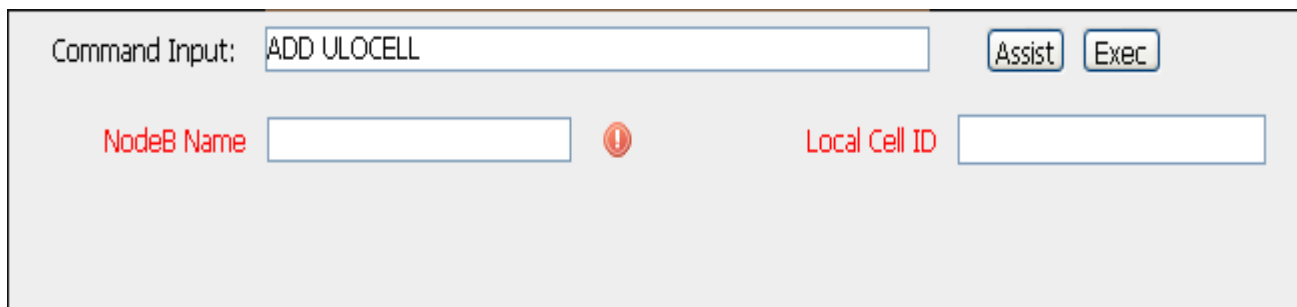
Cell Data Configuration

- Cell data configuration flow



Cell Data Configuration---MML Commands and Parameters

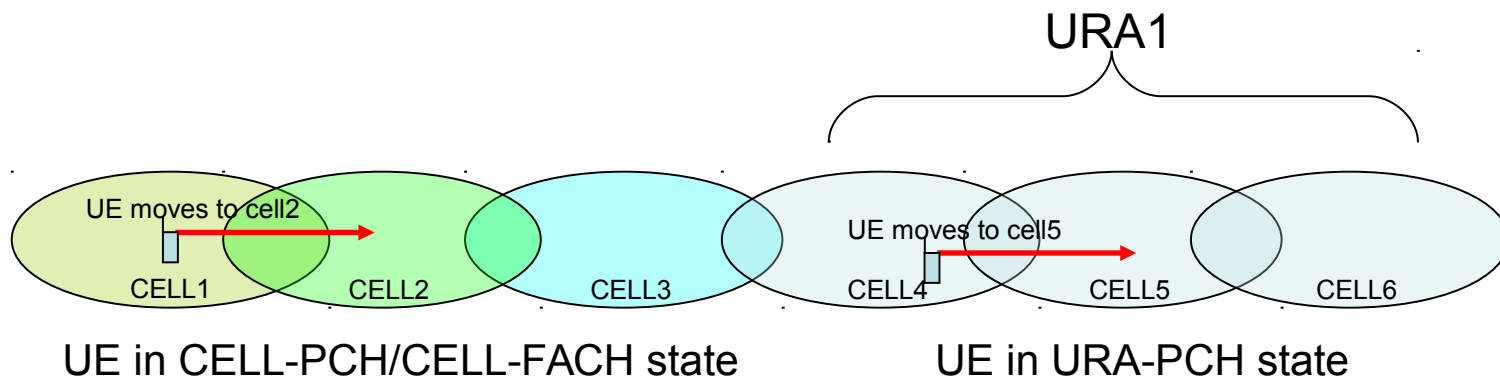
- Adding local cell on RNC(ADD ULOCELL:;)
 - Local cell must be configured on NodeB, and the status of local cell on NodeB is enable.
 - If the local cell ID on RNC is different with the ID on NodeB, cell will not be set up.



The screenshot shows a command input interface. At the top, the text "Command Input:" is followed by a text box containing "ADD ULOCELL". To the right of this text box are two buttons: "Assist" and "Exec". Below the command input, there are two input fields. The first is labeled "NodeB Name" in red text and has a red warning icon (an exclamation mark inside a circle) to its right. The second is labeled "Local Cell ID" in red text. Both input fields are currently empty.

Cell Data Configuration---MML Commands and Parameters

- Adding URA on RNC (ADD UURA:;)
 - When add a cell, we should configuration the URA the cell belonging to.
 - The range of URA is designed by network planning person.
 - The URA is used to transfer RRC connection state to URA_PCH, reducing CELL UPDATE signal when UE in CELL_PCH/CELL_FACH.



✓ When UE moves from cell1 to cell2, UE sent cell update to inform UTRAN Its cell-level location

✓ When UE moves from cell4 to cell5, UE need not sent cell update to inform UTRAN Its cell-level location, because UTRAN just Records the URA location of the UE

Cell Data Configuration---MML Commands and Parameters

- Adding cell on RNC (ADD UCELLQUICKSETUP)
 - The following slides explain the main parameters.

Command Input:	<input type="text" value="ADD UCELLQUICKSETUP"/>	<input type="button" value="Assist"/>	<input type="button" value="Exec"/>
Cell ID	<input type="text"/>	Cell Name	<input type="text"/>
Peer Cell Is Valid Or Not	<input type="text" value="INVALID(Invalid)"/>	Cn Operator Group Index	<input type="text"/>
Band Indicator	<input type="text"/>	DL Primary Scrambling Code	<input type="text"/>
Time Offset	<input type="text"/>	Location Area Code	<input type="text"/>
Service Area Code	<input type="text"/>	RAC Configuration Indication	<input type="text"/>
Service Priority Group Identity	<input type="text"/>	URA number	<input type="text"/>
NodeB Name	<input type="text"/>	Local Cell ID	<input type="text"/>
CBS support	<input type="text" value="FALSE"/>	Max Transmit Power of Cell	<input type="text" value="430"/>

Cell Data Configuration---MML Commands and Parameters

- Adding cell on RNC (ADD UCELLQUICKSETUP)
 - Parameters: peer cell is valid or not, peer cell ID
 - These two parameters is related to RNC pool. When RNC supports this feature, one NodeB can belong to two RNCs.
 - Peer cell ID is the corresponding cell ID on NodeB, which is on peer RNC in RNC pool.
 - Related configuration
 - ADD URNCPOOL
 - ADD URNCPOOLMEMBER

Cell Data Configuration---MML Commands and Parameters

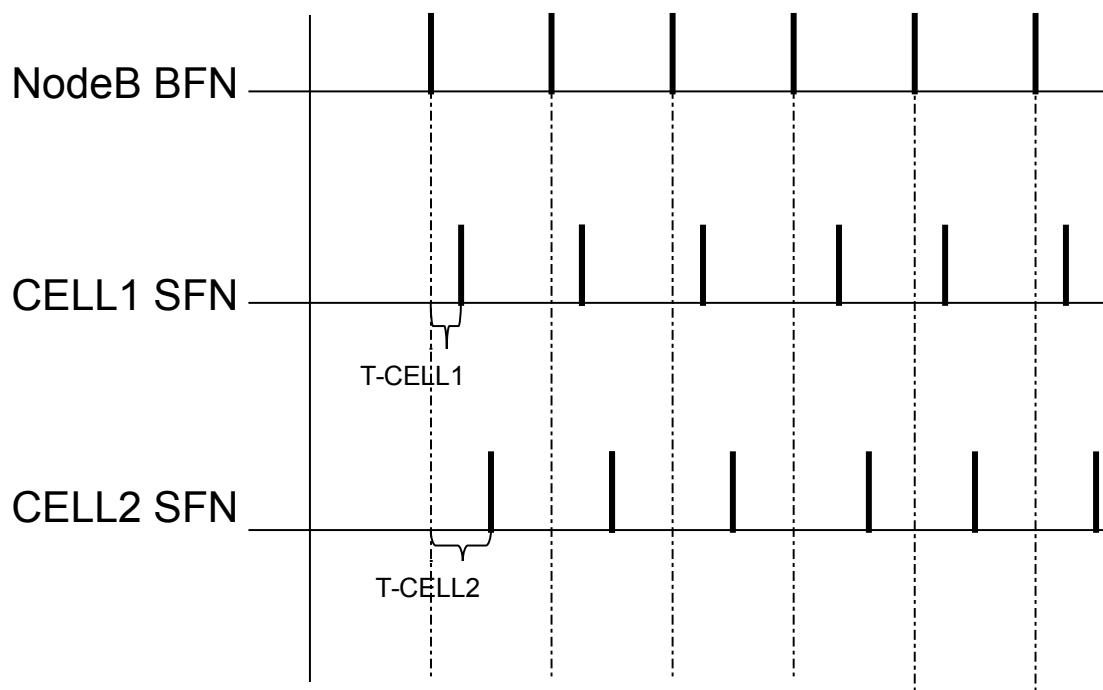
- Adding cell on RNC (ADD UCELLQUICKSETUP)
 - Parameters: CN Operator Group Index
 - This parameters is related to MOCN. MOCN is one RAN sharing technology, it supports different CN operator sharing cell resource.
 - When one cell belongs to several CN operators, we need configure this parameter.
 - Related configuration:
 - ADD UCNOPERATOR
 - ADD UCNOPERGROUP

Cell Data Configuration---MML Commands and Parameters

- Adding cell on RNC (ADD UCELLQUICKSETUP)
 - Parameters: Service priority group identity
 - In Multi-band networking, we use SPG to differentiate cell group with different priorities.
 - When add SPG, we can define different priorities for different services.
 - Services choose handover goal cells depending on SPG parameter.
 - Parameters: DL primary scrambling code
 - Downlink use primary scrambling code to scramble.
 - There are 512 DL primary scrambling codes. Usually DL primary scrambling code is supplied by network planning person.
 - Neighboring intra-frequency cells can't use the same DL primary scrambling code.

Cell Data Configuration---MML Commands and Parameters

- Adding cell on RNC (ADD UCELLQUICKSETUP)
 - Parameters: Time offset [chip]
 - This parameter is used to differentiate neighboring inter-frequency cells SFN in the same NodeB. In order to UE differentiates the SCH of two cells.



Cell Data Configuration---MML Commands and Parameters

- Adding cell on RNC (**ADD UCELLQUICKSETUP**)

- Parameter : Max transmit power of cell

- Max transmit power of logical cell , it is not the fact transmit power.
 - The fact transmit power includes common channel transmit power and dedicate channel transmit power.
 - Max transmit power of logical cell can't greater than the Max transmit power of local cell, otherwise, cell can't be set up.

- parameter : PCPICH transmit power

- PCPICH has the constant transmit power. The quality and strength of PCPICH signal decide the radius of cell handover and cell reselection.
 - We need to plan PCPICH transmit power of neighboring cells. Otherwise, it will bring pilot pollution.

Cell Data Configuration---MML Commands and Parameters

- Adding cell on RNC (**ADD UCELLQUICKSETUP**)
 - Parameter : Cell VP limit indicator
 - If the value of this parameter is “TRUE”, the cell can’t do VP service.
 - Application example : there is a cell which covers the martial base, in order to prevent breach of confidence by VP, we can set this parameter to “TRUE”.
- Act cell on RNC (**ACT UCELL::;**)
 - When we finish the front configuration, we use this command to act all related configuration of this cell.
 - We can observe the cell set up signal flow triggered by this command on lub interface trace.

Cell Data Configuration---MML Commands and Parameters

- Other commands and operations :
 - ▣ Modify the Max transmit power and PCPICH transmit power of cell:
 - **MOD UCELL**: MaxTxPower=400, PCPICHPower=330;
 - ▣ Display the status of cell :
 - **DSP UCELL**::;
 - ▣ Trace cell signal :
 - We can trace lub interface signal on RNC, NodeB
 - Cell real-time performance monitoring
 - We can monitor the cell code tree, RTWP, DL transmit power by real-time performance monitoring on RNC, NodeB.

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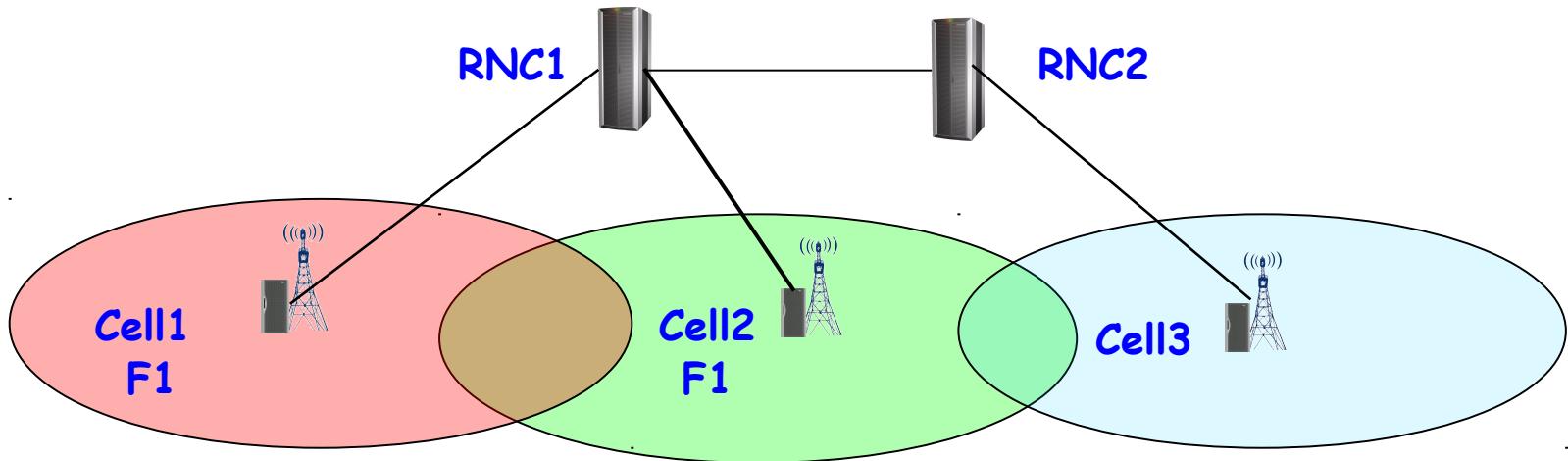


Neighboring Cell Configuration

- UE can do cell handover and cell reselection between cells after configuring neighboring cell.
- Neighboring cell relationship is bidirectional.
- Depending on cell frequency, neighboring cell can be divided to intra-frequency neighboring cell, inter-frequency neighboring cell and GSM neighboring cell.
- Neighboring cell parameters are supplied by network planning person.

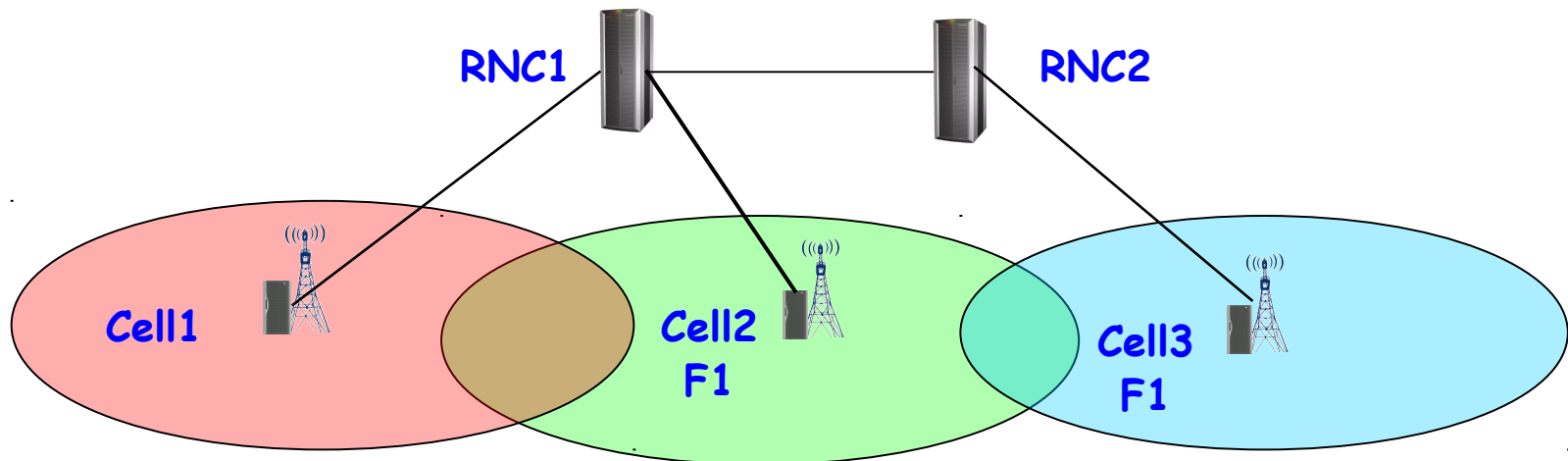
Neighboring Cell Configuration

- Adding Intra-frequency Neighboring Cell
 - When the neighboring cells belongs to the same RNC, for example cell1, cell2
 - **ADD UINTRAFREQNCCELL**



Neighboring Cell Configuration

- Adding Intra-frequency Neighboring Cell
 - When the neighboring cell belongs to another RNC, for example cell2, cell3
 - **ADD UEXT3GCELL**
 - **ADD UNRNCURA** to add the URA information of the intra-frequency neighboring BSC6900. (Optional)
 - **ADD UINTRAFREQNCELL**



Neighboring Cell Configuration

- Commands and Parameters : **ADD UEXT3GCELL**

RNC ID the neighboring cell belonging to

Related parameters

Command Input:	<input type="text" value="ADD UEXT3GCELL"/>	<input type="button" value="Assist"/>	<input type="button" value="Exec"/>
Neighboring RNC ID	<input type="text"/>	Cell ID of Neighboring RNC	<input type="text"/>
Cell Host Type	<input type="text" value="SINGLE_HOST"/>	Cell Name	<input type="text"/>
CN Operator Group Index	<input type="text"/>	DL Primary Scrambling Code	<input type="text"/>
Band Indicator	<input type="text"/>	TX Diversity Indication	<input type="text"/>
Location Area Code	<input type="text"/>	RAC Configuration Indication	<input type="text"/>
Min Quality Level Ind	<input type="text" value="FALSE(Not configure the"/>	Min RX Level Ind	<input type="text" value="FALSE(Not configure the"/>
Max Allowed UE UL TX Power Ind	<input type="text" value="FALSE(Not configure the"/>	Use of HCS	<input type="text" value="NOT_USED(Non HCS cel"/>
Support DPC mode Change ind	<input type="text" value="FALSE"/>	Cell Capability Container	<input type="text"/>

Neighboring Cell Configuration

- Commands and Parameters : **ADD UINTRAFREQNCELL**

The screenshot shows the configuration interface for the command `ADD UINTRAFREQNCELL`. The interface includes a command input field, buttons for `Assist` and `Exec`, and various configuration parameters. Three callout boxes highlight specific fields:

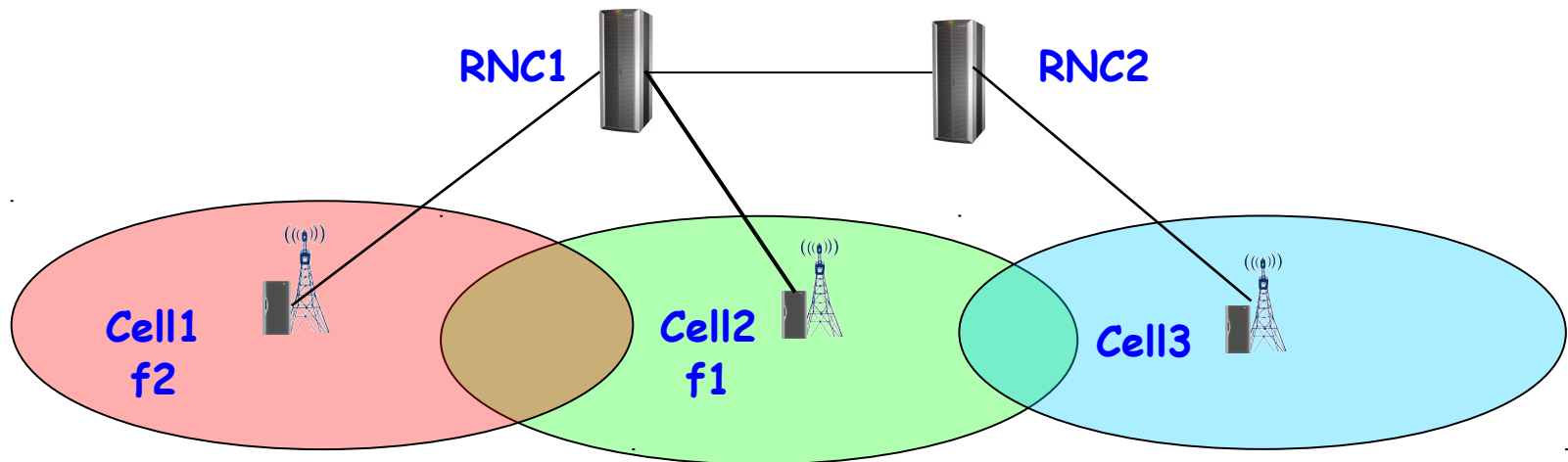
- Source cell ID**: Points to the `RNC ID` field.
- RNC ID neighboring cell belonging to**: Points to the `RNC ID of a neighboring cell` field.
- Neighboring cell ID**: Points to the `Neighboring Cell ID` field.

The configuration parameters are as follows:

Parameter	Value
Command Input	ADD UINTRAFREQNCELL
RNC ID	
RNC ID of a neighboring cell	
Neighboring Cell Oriented CIO	0
Affect 1B Threshold Flag	AFFECT
IdleQoffset1sn	0
SIB12 Indicator	FALSE(Do not send)
Neighboring Cell Priority Flag	FALSE
Cell ID	
Neighboring Cell ID	
Affect 1A Threshold Flag	AFFECT
SIB11 Indicator	TRUE(Send)
IdleQoffset2sn	0
HCS Cell Reselect Penalty Timer	D0
MBMS Neighboring Cell Indicator	TRUE

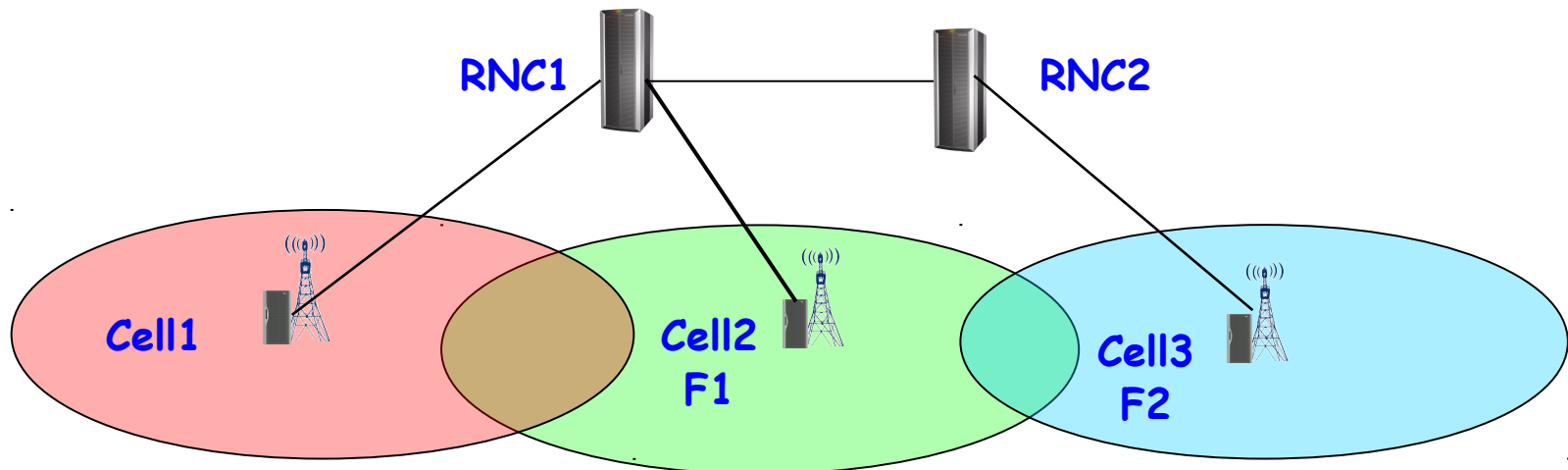
Neighboring Cell Configuration

- Adding Inter-frequency neighboring cell
 - When the neighboring cells belongs to the same RNC, for example cell1, cell2
 - **ADD UINTERFREQNCELL**



Neighboring Cell Configuration

- Adding Inter-frequency Neighboring Cell
 - When the neighboring cell belongs to another RNC, for example cell2, cell3
 - **ADD UEXT3GCELL**
 - **ADD UNRNCURA** , to add the URA information of the inter-frequency neighboring BSC6900. (Optional)
 - **ADD UINTERFREQNCELL**



Neighboring Cell Configuration

- Commands and Parameters : **ADD UINTERFREQNCELL**

The screenshot shows the configuration interface for the **ADD UINTERFREQNCELL** command. The command input field contains **ADD UINTERFREQNCELL**, with **Assist** and **Exec** buttons to its right. The interface is divided into two columns of parameters:

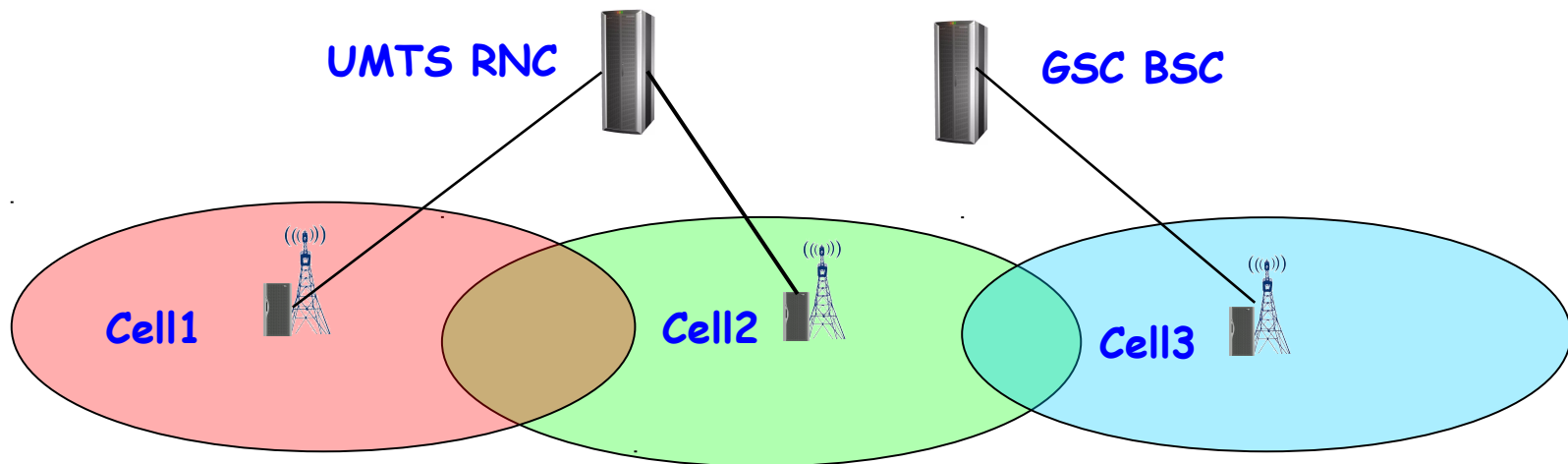
Parameter	Value
Command Input:	ADD UINTERFREQNCELL
RNC ID	[Empty field]
RNC ID of a neighboring cell	[Empty field]
Neighboring Cell Oriented CIO	0
IdleQoffset1sn	0
SIB12 Indicator	FALSE(Do not send)
Priority of Coverage-Based Inter-Frequency Handover	2
Neighboring Cell Priority Flag	FALSE
Cell ID	[Empty field]
Neighboring Cell ID	[Empty field]
SIB11 Indicator	TRUE(Send)
IdleQoffset2sn	0
HCS Cell Reselect Penalty Timer	D0
Blind Handover Flag	FALSE
Drd Ec/NO Threshold	-18

Callouts from the diagram point to the following fields:

- Source cell ID**: Points to the **RNC ID** field.
- RNC ID neighboring cell belonging to**: Points to the **RNC ID of a neighboring cell** field.
- Neighboring cell ID**: Points to the **Neighboring Cell ID** field.

Neighboring Cell Configuration

- Adding GSM Neighboring Cell
 - **ADD UEXT2GCELL** , add a GSM cell
 - **ADD U2GNCELL** , add the GSM cell as a neighboring cell of the serving cell.




Neighboring Cell Configuration

- Commands and Parameters : **ADD UEXT2GCELL**

Network parameters for GSM cell

Command Input:

GSM Cell Index	<input type="text"/>		GSM Cell Name	<input type="text"/>
Neighboring BSC Index	<input type="text"/>		Switch of Periodic Load Reporting	<input type="text" value="v"/>
Mobile Country Code	<input type="text"/>		Mobile Network Code	<input type="text"/>
CN Operator Group Index	<input type="text"/>		Location Area Code	<input type="text"/>
RAC Configuration Indication	<input type="text" value="v"/>		GSM cell ID	<input type="text"/>
Network Color Code	<input type="text"/>		BS Color Code	<input type="text"/>
Inter-RAT Cell Frequency Number	<input type="text"/>		Inter-RAT Cell Frequency Band Indicator	<input data-bbox="1284 1021 1632 1063" type="text" value="GSM900_DCS1800_BAND1"/>
Inter-RAT cell type	<input type="text" value="v"/>		Use of HCS	<input data-bbox="1284 1113 1632 1156" type="text" value="NOT_USED(Non HCS cel"/>

Neighboring Cell Configuration

- Commands and Parameters : **ADD U2GNCELL**

Command Input: <input type="text" value="ADD U2GNCELL"/>		<input type="button" value="Assist"/>	<input type="button" value="Exec"/>
RNC ID	<input type="text"/>	Cell ID	<input type="text"/>
GSM Cell Index	<input type="text"/>	Neighboring Cell-Oriented CIO	<input type="text" value="0"/>
Qoffset1sn	<input type="text" value="0"/>	Min RX Level	<input type="text" value="-50"/>
HCS Cell Reselect Penalty Timer	<input type="text" value="D0"/>	HCS Cell Reselect TempOffset1	<input type="text" value="D3"/>
Blind Handover Flag	<input type="text" value="FALSE"/>	DRD Ec/No Threshold	<input type="text" value="-18"/>
SIB11 Indicator	<input type="text" value="TRUE(Send)"/>	SIB12 Indicator	<input type="text" value="FALSE(Do not send)"/>
Neighboring Cell Priority Flag	<input type="text" value="FALSE"/>	Flag of MBDR Cell	<input type="text" value="FALSE(Do not send)"/>
MBDR Cell Priority	<input type="text" value="0"/>		

GSM cell ID (points to RNC ID field)

Source cell ID (points to Cell ID field)

Thank you

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