

同步过程

小区搜索

小区搜索过程是 UE 获得和小区时间和频率同步，并检测物理层小区 ID 的过程。

为进行小区搜索，UE 需接收下列同步信号：主同步信号（PSS）和辅同步信号（SSS）。

主辅同步信号在 TS 38.211 中定义。

UE 应假设 PBCH、PSS 和 SSS 在连续的 OFDM 符号内接收，并且形成 SS/PBCH 块。

对于半帧中的 SS/PBCH 块，候选 SS/PBCH 块的 OFDM 符号索引和第 1 个 OFDM 符号索引根据下列情况确定：

- 15 KHz 子载波间隔：候选 SS/PBCH 块的第 1 个 OFDM 符号有索引 $\{2, 8\} + 14 \cdot n$ 。对于载波频率小于等于 3 GHz，有 $n=0, 1$ 。对于载波频率大于 3 GHz 且小于 6 GHz，有 $n=0, 1, 2, 3$ 。
- 30 KHz 子载波间隔：候选 SS/PBCH 块的第 1 个 OFDM 符号有索引 $\{4, 8, 16, 20\} + 28 \cdot n$ 。对于载波频率小于等于 3 GHz，有 $n=0$ 。对于载波频率大于 3 GHz 且小于 6 GHz，有 $n=0, 1$ 。
- 30 KHz 子载波间隔：候选 SS/PBCH 块的第 1 个 OFDM 符号有索引 $\{2, 8\} + 14 \cdot n$ 。对于载波频率小于等于 3 GHz，有 $n=0, 1$ 。对于载波频率大于 3 GHz 且小于 6 GHz，有 $n=0, 1, 2, 3$ 。

- 120 KHz 子载波间隔：候选 SS/PBCH 块的第 1 个 OFDM 符号有索引{4, 8, 16, 20} + 28*n。对于载波频率大于 6 GHz，有 n=0, 1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 17, 18。
- 240 KHz 子载波间隔：候选 SS/PBCH 块的第 1 个 OFDM 符号有索引{8, 12, 16, 20, 32, 36, 40, 44} + 56*n。对于载波频率大于 6 GHz，有 n=0, 1, 2, 3, 5, 6, 7, 8。

一个半帧中的候选 SS/PBCH 块在时域上以升序从 0 到 $L-1$ 进行编号。对于 $L=4$ 或 $L>4$ ，UE 应根据与每个半帧内 SS/PBCH 块索引一一对应的 PBCH 中传输的 DM-RS 序列索引，分别确定 SS/PBCH 块索引的 2 或 3 个 LSB 比特。对于 $L=64$ ，UE 应根据高层参数[SSB-index-explicit]确定每个半帧内 SS/PBCH 块索引的 3 个 MSB 比特。

注：DM-RS 序列索引在 TS 38.211 中定义。

UE 可通过参数[SSB-transmitted-SIB1]被配置，SS/PBCH 块索引对于与 SS/PBCH 块对应重叠的 REs，UE 不应接收其他信号或信道。UE 也可通过高层参数[SSB-transmitted]在每个服务小区被配置，SS/PBCH 块索引对于与 SS/PBCH 块对应重叠的 REs，UE 不应接收其他信号或信道。[通过 [SSB-transmitted] 配置优先于通过 [SSB-transmitted-SIB1]配置。]

注：May be removed and captured in 38.211。

对于每个服务小区中 SS/PBCH 块的接收，UE 可以在每个服务小区通过高层参数 [SSB-timing] 每半帧周期性地被配置。如果对于 SS/PBCH 块的接收，UE 没有每半帧被周期性配置，则 UE 应假设以半帧为周期。UE 应假设在服务小区中，对于所有 SS/PBCH 块，周期是相同的。

对于初始小区的选择，UE 可以假设 SS/PBCH 块半帧出现的周期为 2 帧。

传输定时调整

Timing for secondary cell activation / deactivation

无线链路监测

为了向高层指示失步/同时状态，UE 应监测主小区的下行无线链路质量。

此处暂省略 300+字，具体内容详见原文档。

[链路重配置过程]

在一个服务小区内为了 [RSRP x 或 SINR] 测量，UE 可以配置一组 CSI-RS 资源或一组 SS/PBCH 块索引。UE 应假设 CSI-RS 采用非零传输功率。每个 CSI-RS 资源参数通过高层信令配置，这些参数包括：

- [资源配置]
- [周期]

- [天线端口]
- [传输功率]
- [伪随机序列生成参数]
- [QCL 参数]
- [...]

[Editor' s note: For reconfiguration request, there are also no existing agreements to describe preamble retransmissions, or the window for the UE to receive a response, or the configuration of the CORESET where the PDCCH scheduling the response is transmitted, etc.]

上行功率控制

物理上行共享信道

UE behaviour

Power headroom

物理上行控制信道

UE behaviour

探测参考信号

物理随机接入信道

在时隙 i 内，对于服务小区 c ，UE 通过下式确定 PRACH 传输功率：

$$P_{\text{PRACH},c}(i) = \min\{P_{\text{CMAX},c}(i), P_{\text{PRACH,target}} + \text{PL}_c\}$$
$$P_{\text{PRACH},c}(i) = \min\{P_{\text{CMAX},c}(i), P_{\text{PRACH,target}} + \text{PL}_c\} \text{ dBm}$$

其中 $P_{\text{CMAX},c}(i)$ 是在 TS 38.133 中定义的服务小区 c 中在时隙 i 的 UE 传输功率， $P_{\text{PRACH,target}}$ 由高层参数 [preambleReceivedTargetPower] 提供， PL_c 是 UE 计算对于服务小区 c 的路径损耗，单位为 dB。为了确定 $P_{\text{PRACH},c}(i)$ ，UE 计算路径损耗 PL_c 。路径损耗根据 SS/PBCH 块得到，即 $\text{PL}_c = \text{SS/PBCH Block Power} - \text{higher layer filtered RSRP}$ ，其中 SS/PBCH Block Power 由 [SystemInformationBlockType1] 提供，RSRP 在 TS 38.215 中定义，高层滤波器配置在 TS 38.331 中定义。

如果一个随机接入响应窗口内，如 5.2 小节中描述，UE 不接收随机接入响应，随机接入响应包含了一个与 UE 发送的前导序列对应的前导 ID，UE 将为随后的 PRACH 传输确定传输功率，如果有的话。[TS 38.321]

载波聚合

双连接

随机接入过程

在进行初始化的物理随机接入过程之前，L1 应该从高层接收一组 SS/PBCH 块索引，并且应向高层提供一组对应的 RSRP 测量。

在进行初始化的物理随机接入过程之前，L1 应该从高层接收以下信息：

- PRACH 传输参数（PRACH 前导格式，用于 PRACH 传输的时域和频域资源）
- 用于决定小区中根序列及其在前导序列集合中的循环移位值的参数（逻辑根序列表格索引、循环移位 N_{cs} 、集合类型（受限集合和非受限集合））

从物理层来看，物理层随机接入过程包括 PRACH 中随机接入前导（Msg1）的发送，PDSCH（Msg2）中的随机接入响应（RAR），PUSCH 中的 Msg3 和 PDSCH 中的 Msg4。

批注：Tentatively, Msg3 and Msg4 will be described as part of the RA procedure due to various differences from PUSCH/PDSCH after RRC connection.

随机接入前导

L1 过程通过 PRACH 传输请求被触发，PRACH 传输由高层来配置。高层对 PRACH 传输的配置包括：

- 对于 PRACH 传输，高层参数[PRACH-config]提供的配置

- 对于 PRACH 传输，高层参数[PRACH-cell-idx]提供的服务小区索引
- 前导索引，PRACH 格式， $P_{PRACH,target}$ ，相应的 RA-RNTI，PRACH 资源
- [对于 PRACH 传输的重复次数，也作为请求的一部分由高层指示]

A PRACH format is selected from the preamble sequence set for the corresponding preamble sequence length using the preamble index.

在所指示的 PRACH 资源上，前导使用所选择的 PRACH 格式发送，传输功率为 4.4 节描述的 P_{PRACH} 。

定时

随机接入响应

UE 通过高层[TS 38.321]在一个约束窗内，采用所指示的 RA-RNTI 尝试检测 PDCCH。窗口开始于最早的 CORESET 的符号。对于 Type1-PDCCH 公共搜索空间，UE 配置了 CORESET。Type1-PDCCH 公共搜索空间在 7.1 节进行了定义，在前导序列传输的[X]个符号之后。随机接入响应窗口的长度由高层参数[rar-windowlength]提供。

如果 UE 在时间窗内，采用所指示的 RA-RNTI 和相应的 DL-SCH 传输块检测 PDCCH，UE 将传输块传递到高层。高层分析传输块并向物理层指示上行授权。如果在时间窗内，UE 不检测 PDCCH 或相应的 DL-SCH 传输块，则 UE 过程如[TS 38.321]中的描述。

如果 UE 在时间窗内，采用所指示的 RA-RNTI 和相应的 DL-SCH 传输块检测 PDCCH，高层指示[XX]比特的上行授权到物理层。这一过程被称为物理层的随机接入响应（RAR）。UE 应接收 PDCCH 和 PDSCH。作为包含[SystemInformationBlockType1]的 PDSCH 的接收，PDSCH 包含了具有相同子载波间隔和相同 CP 的 DL-SCH 传输块。[XX]比特的内容，开始于 MSB，结束于 LSB：

[...]

批注：To be completed as the contents of the UL grant in the RAR are determined.

Msg3 PUSCH

对于 Msg3 PUSCH 传输，高层参数[msg3-tp]指示 UE 是否应用变换预编码（transform precoding），变换预编在[TS 38.211]中描述。

Msg3 PUSCH 传输的子载波间隔由高层参数[msg3-scs]提供。

UE 应在相同的服务小区内发送 PRACH 和 Msg3 PUSCH。

Msg4 PDSCH

Msg4 PDSCH 传输的子载波间隔与 PDSCH 相同提供随机接入响应。

UE procedure for reporting control information

If a UE is configured with a SCG, the UE shall apply the procedures described in this subclause for both MCG and SCG.

- When the procedures are applied for MCG, the terms 'secondary cell', 'secondary cells', 'serving cell', 'serving cells' in this clause refer to secondary cell, secondary cells, serving cell, serving cells belonging to the MCG respectively.
- When the procedures are applied for SCG, the terms 'secondary cell', 'secondary cells', 'serving cell', 'serving cells' in this clause refer to secondary cell, secondary cells (not including PSCell), serving cell, serving cells belonging to the SCG respectively. The term 'primary cell' in this clause refers to the PSCell of the SCG.

If the UE is configured with a PUCCH-SCell, the UE shall apply the procedures described in this clause for both primary PUCCH group and secondary PUCCH group

- When the procedures are applied for the primary PUCCH group, the terms 'secondary cell', 'secondary cells', 'serving cell', 'serving cells' in this clause refer to secondary cell, secondary cells, serving cell, serving cells belonging to the primary PUCCH group respectively.
- When the procedures are applied for secondary PUCCH group, the terms 'secondary cell', 'secondary cells', 'serving cell', 'serving cells' in this clause refer to secondary cell, secondary cells (not including the PUCCH-SCell), serving cell, serving cells belonging to the secondary PUCCH group respectively. The term 'primary cell' in this clause refers to the PUCCH-SCell of the secondary PUCCH group.

UE procedure for HARQ-ACK codebook determination

CBG-based HARQ-ACK codebook determination

If a UE is configured [per serving cell] with higher layer parameter [CBG-DL], the UE receives PDSCH transmissions that include code block groups (CBGs) of a transport block.

If the UE is configured by higher layer parameter [CBG-DL] to receive PDSCH transmissions that include CBGs of a transport block, the UE is configured by higher layer parameter [CBGs_per_TB] [per serving cell] a maximum number $N_{\text{HARQ-ACK}}^{\text{CBG-TB,max}}$ of CBGs for generating respective HARQ-ACK information bits for an initial reception of a transport block [when the PDSCH transmission includes one transport block].

For a number of C code blocks (CBs) in the transport block, the UE determines a number of CBGs as

$N_{\text{HARQ-ACK}}^{\text{CBG-TB}} = \min(N_{\text{HARQ-ACK}}^{\text{CBG-TB,max}}, C)$. Each of the first $N_{\text{HARQ-ACK}}^{\text{CBG-TB,1}} = \text{mod}(C, N_{\text{HARQ-ACK}}^{\text{CBG-TB}})$ CBGs includes $\lceil C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rceil$ CBs, where CBG $n_{\text{CBG}}, 0 \leq n_{\text{CBG}} < N_{\text{HARQ-ACK}}^{\text{CBG-TB,1}}$, includes CBs $n_{\text{CB}}, \lceil C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rceil + n_{\text{CB}}, 0 \leq n_{\text{CB}} < \lceil C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rceil$, and each of the last $N_{\text{HARQ-ACK}}^{\text{CBG-TB,2}} = N_{\text{HARQ-ACK}}^{\text{CBG-TB}} - \text{mod}(C, N_{\text{HARQ-ACK}}^{\text{CBG-TB}})$ CBGs includes $\lfloor C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rfloor$ CBs, where CBG

批注：[HARQ-ACK information bits] The actual number of bits to report can be different – e.g. with bundling.

批注：[initial] For retransmissions, decisions are needed for dynamic/semi-static HARQ-ACK codebook determination and for possible DCI indications.

批注：[a] No decision currently exists for 2 TBs (e.g. same number for both TBs, separately configured number per TB).

$n_{\text{CBG}}, N_{\text{HARQ-ACK}}^{\text{CBG-TB1}} \leq n_{\text{CBG}} < N_{\text{HARQ-ACK}}^{\text{CBG-TB1}} + N_{\text{HARQ-ACK}}^{\text{CBG-TB2}}$, includes CBs $N_{\text{HARQ-ACK}}^{\text{CBG-TB1}} \cdot \lfloor C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rfloor + (n_{\text{CBG}} - N_{\text{HARQ-ACK}}^{\text{CBG-TB1}}) \cdot \lfloor C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rfloor + n_{\text{CB}}$, $0 \leq n_{\text{CB}} < \lfloor C/N_{\text{HARQ-ACK}}^{\text{CBG-TB}} \rfloor$. The UE generates $N_{\text{HARQ-ACK}}^{\text{CBG-TB1}} + N_{\text{HARQ-ACK}}^{\text{CBG-TB2}}$ HARQ-ACK information bits through a one-to-one mapping with the $N_{\text{HARQ-ACK}}^{\text{CBG-TB1}} + N_{\text{HARQ-ACK}}^{\text{CBG-TB2}}$ CBGs.

A retransmission of a transport block to a UE, corresponding to a same HARQ process as a previous transmission of the transport block to the UE, includes the same CBs in a CBG as the initial transmission of the transport block.

If a DCI format scheduling the retransmission of the transport block includes a CBG transmission indication (CBGTI) field of $N_{\text{HARQ-ACK}}^{\text{CBG-TB,max}}$ bits where the first $N_{\text{HARQ-ACK}}^{\text{CBG-TB}}$ bits of the CBGTI field have a one-to-one mapping with the $N_{\text{HARQ-ACK}}^{\text{CBG-TB}}$ CBGs, [the UE determines whether or not a CBG is retransmitted based on a corresponding value of the CBGTI field]. [If a UE is configured with higher layer parameter $[cbgcodebooksizeDetermination = cc]$], the HARQ-ACK codebook includes the $N_{\text{HARQ-ACK}}^{\text{CBG-TB,max}}$ HARQ-ACK information bits. If the UE generates a HARQ-ACK codebook in response to a retransmission of a transport block, corresponding to a same HARQ process as a previous transmission of the transport block, the UE generates an ACK for each CBG that the UE correctly decoded in a previous transmission of the transport block.

If a UE is not configured with higher layer parameter [CBG-DL], the UE generates a HARQ-ACK information bit for each transport block.

批注：[the UE determines whether or not a CBG is retransmitted based on a corresponding value of the CBGTI field] Placeholder text – will be modified once the specifics for the operation of the CBGTI field are decided.

批注：[cc] LTE terminology for indicating semi-static codebook (can be modified once RRC terminology is finalized). Statement in brackets will be removed if only semi-static codebook determination is supported for CBG-based HARQ-ACK.

UE procedure for reporting HARQ-ACK

HARQ-ACK reporting in physical uplink shared channel

HARQ-ACK reporting in physical uplink control channel

如果 UE 没有配置为 PUSCH 和 PUCCH 同时传输，并且 UE 不传输 PUSCH，且不传输 CSI 或 positive/negative SR，则 UE 应传输 HARQ-ACK

- on PUCCH format 0 if
 - the transmission is over 1 symbol or 2 symbols,
 - the number of HARQ-ACK information bits is 1 or 2
- on PUCCH format 1 if
 - the transmission is over 4 or more symbols,
 - the number of HARQ-ACK information bits is 1 or 2
- on PUCCH format 2 if
 - the transmission is over 1 symbol or 2 symbols,
 - the number of HARQ-ACK information bits is more than 2
- on PUCCH format 3 if
 - the transmission is over 4 or more symbols,
 - the number of HARQ-ACK information bits is more than [2]

UE 在一个时隙的 $N_{\text{slot},\mu} N_{\text{symb}} N_{\text{symb}/\text{slot},\mu}$ 个符号上发送一个或多个 PUCCH。对于 PUCCH 传输时隙的参考，如果 UE 在 PDCCH 上检测 DCI 格式，其中 PDCCH 通过一

定数量的符号调度 PDSCH 的接收，这些符号的最后一个符号在时隙 n 内，则 UE 应在 PUCCH 传输中提供相应的 HARQ-ACK 信息，PUCCH 在时隙 $n+k$ 上传输，其中 k 是时隙数，且通过 DCI 格式中的 [DL-data-DL-acknowledgement] 字段来指示。[DL-data-DL-acknowledgement] 字段的值映射到时隙数的值，见 Table 9.1.2-1 中的定义。

Table 9.1.2-1: Mapping of [DL-data-DL-acknowledgement] values to numbers of slots

[DL-data-DL-acknowledgement]	k
'00'	1 st value for a number of slots configured by higher layers
'01'	2 nd value for a number of slots configured by higher layers
'10'	3 rd value for a number of slots configured by higher layers
'11'	4 th value for a number of slots configured by higher layers

批注：Dynamic indication of symbols within a slot or joint indication of time/frequency/code PUCCH resources is not precluded pending specific RAN1 agreements.

HARQ-ACK procedures for one configured serving cell

HARQ-ACK procedures for more than one configured serving cell

UE procedure for reporting SR

批注：There are currently no RAN1 decisions on SR transmission structure and possible multiplexing with HARQ-ACK/CSI

UE procedure for reporting multiple UCI types

UCI repetition procedure

UE procedure for receiving control information

If the UE is configured with a SCG, the UE shall apply the procedures described in this clause for both MCG and SCG

- When the procedures are applied for MCG, the terms 'secondary cell', 'secondary cells', 'serving cell', 'serving cells' in this clause refer to secondary cell, secondary cells, serving cell, serving cells belonging to the MCG respectively.
- When the procedures are applied for SCG, the terms 'secondary cell', 'secondary cells', 'serving cell', 'serving cells' in this clause refer to secondary cell, secondary cells (not including PSCell), serving cell, serving cells belonging to the SCG respectively. The term 'primary cell' in this clause refers to the PSCell of the SCG.

UE 应在一个或多个激活的服务小区或 BWPs 上，根据相应的搜索空间，在一个或多个 CORESET 内监听一组 PDCCH 候选集，其中搜索空间是根据所监听的 DCI 格式译码每个 PDCCH 候选。

批注：[PDCCH 候选集] Can add more details later, such as per activated cell, etc., based on respective agreements.

批注：[DCI formats] Can remain applicable for potentially mapping multiple DCI formats to a same size (as for LTE DCI format 0 and DCI format 1A).

UE procedure for determining physical downlink control channel assignment in common search space

UE 应在下列一个或多个搜索空间内监听 PDCCH 候选：

- o a Type0-PDCCH common search space for a DCI format scrambled by a [SI-RNTI] on a primary cell

- a Type1-PDCCH common search space for a DCI format scrambled by a [RA-RNTI] on a primary cell
- a Type2-PDCCH common search space for a DCI format scrambled by a [INT-RNTI]

[UE 应在没有载波指示域的情况下监听 PDCCH 候选。]

如果 UE 通过高层配置为以 [INT-RNTI] 加扰的 CRC 译码 DCI 格式，UE 也在 [每个服务小区] 配置 [一组] PRBs 和一组 OFDM 符号。如果 UE 以 [INT-RNTI] 加扰的 CRC 检测 DCI 格式，UE 可以假设不在这组 PRBs 和 OFDM 符号中发送。UE 通过高层参数 [int-PRBs-unit] 配置 PRBs 的指示粒度。UE 通过高层参数 [int-symbols-unit] 配置 OFDM 符号的指示粒度。UE 通过高层参数 [Num-PDCCH-cand] 来配置对于 DCI 格式的每个 CCE 聚合等级下的若干 PDCCH 候选，其中 DCI 格式使用 [INT-RNTI] 加扰的 CRC。

批注：[[INT-RNTI] 加扰的 CRC] Eventually, this DCI format will have a name and will be used to remove this part.

UE procedure for determining physical downlink control channel assignment in UE-specific search space

对于每个服务小区，高层信令给 UE 配置 Q_Q 个 CORESETs。对于 CORESET q_q ， $0 \leq q < Q$ ，配置包括：

- 高层参数[`CORESET-start-symb`]提供第 1 个 OFDM 符号
- 高层参数[`CORESET-time-duration`]提供若干连续的 OFDM 符号
- 高层参数[`CORESET-freq-dom`]提供一组 RBs 集合
- 高层参数[`CORESET-trans-type`]提供 CCE-to-REG 映射
- 对于交织的 CCE-to-REG 映射，高层参数[`CORESET-REG-bundle-size`]提供 REG bundle 大小
- [高层参数[`CORESET-QCL-ConfigId`]]提供天线端口 quasi-collocation]

对于非交织的 CCE-to-REG 映射，REG bundle 大小等于 6。UE 可以假设一个 REG bundle 内的所有 REGs 上传输的 PDCCH 应用相同的预编码。

批注 :[对于非交织的 CCE-to-REG 映射 ,REG bundle 大小等于 6。] Can be updated if additional REG bundle sizes are defined for non-interleaved transmissions.

每个 CORESET 包含一组从 0 到 $N_{\text{CCE},q} - 1$ 编号的 CCEs，其中 $N_{\text{CCE},q}$ 是 CORESET q 中的 CCEs 个数。

UE 所监听的 PDCCH 候选集定义在 PDCCH UE 特定搜索空间。PDCCH UE 特定搜索空间在聚合等级 $L \in \{1, 2, 4, 8\}$ 上定义为，对于 CCE 聚合等级 L 的一组 PDCCH 候选。对于一个 DCI 格式，UE 在每个服务小区内通过高层参数 [Num-PDCCH-cand]配置每个 CCE 聚合等级 下的一组 PDCCH 候选。

批注：[UE 特定搜索空间] Cross-carrier scheduling, including use of different numerologies, will be captured through the search space.

对于连续接收 (non-DRX) 模式操作, UE 在根据 $W_{PDCCH,q}$ 个符号周期, 监听 CORESET q 中的 PDCCH 候选, 其中对于 CORESET q 的 $W_{PDCCH,q}$ 由高层参数 [CORESET-monitor-period] 配置。

批注：[CORESET-monitor-period] Need to determine how, based on configured periodicity, UE monitors PDCCH and whether it is a CORESET or a search space parameter. Allowed periodicity values (symbol, slot, etc.) are TBD (start from 1 symbol) and are to be included in RAN2 specifications (likely not visible in 38.213).

服务小区中的 UE, 在 UE 特定的搜索空间监听 PDCCH 的候选, 如果 UE 没有配置载波指示域, UE 应在没有载波指示域的条件下监听 PDCCH 候选。服务小区中的 UE, 在 UE 特定的搜索空间监听 PDCCH 的候选, 如果 UE 配置了载波指示域, 则 UE 应使用载波指示域监听 PDCCH 候选。

如果 UE 在另一个服务小区上被配置使用对应于 secondary cell 的载波指示来监听 PDCCH 候选, UE 不希望在 secondary cell 上监听 PDCCH 候选。[对于服务小区中的 UE 监听 PDCCH 候选, UE 应至少在同一个服务小区内监听 PDCCH 候选。]

Bandwidth part operation

批注 : It will be attempted, as much as possible, to capture all BWP operation aspects in this Subclause while referring to other Subclauses. Potential overlaps will be resolved as the specifications progress.

批注 : Text is subject to revisions as descriptions in 38.211 and 38.213 are aligned.

A UE configured for operation in bandwidth parts (BWPs) of a serving cell, is configured by higher layers for the serving cell a set of bandwidth parts (BWPs) for receptions by the UE (DL BWP set) or a set of BWPs for transmissions by the UE (UL BWP set). For each DL BWP or UL BWP in a set of DL BWPs or UL BWPs, respectively, the UE is configured the following for the serving cell as defined in [4, TS 38.211]:

- a subcarrier spacing provided by higher layer parameter *[DL-BWP-micro]* or *[DL-BWP-micro]*
- a cyclic prefix provided by higher layer parameter *[DL-BWP-CP]* or *[UL-BWP-CP]*,
- a number of contiguous PRBs provided by higher layer parameter *[DL-BWP-BW]* or *[UL-BWP-BW]*,
- [an offset of the first PRB in the number of contiguous PRBs relative to the first PRB by higher layer parameter *[DL-BWP-loc]* or *[UL-BWP-loc]*], *q* control resource sets, as described in Subclause 10.2, if the BWP is a DL BWP

批注 : [BWP] Regarding the CSS, the agreement for its configuration is ambiguous. Which CSS configuration is it (e.g. is it for SIB scheduling, for GC-PDCCH, ...)? Maybe multiple CSS configurations are applicable as in Subclause 10.1? Reference to primary cell in the agreement points to SIB scheduling but clarification is needed for what the CSS intends to do, whether the respective BWP is same as the BWP from initial access,

A UE receives PDCCH and PDSCH in a DL BWP according to a configured subcarrier spacing and CP length for the DL BWP. A UE transmits PUCCH and PUSCH in an UL BWP according to a configured subcarrier spacing and CP length for the UL BWP. A UE can be configured, by higher layer parameter *[activated-DL-BWP]*, a DL BWP subset from a configured DL BWP set for DL receptions. A UE can be configured by higher layer parameter *[activated-UL-BWP]* an UL BWP subset from a configured UL BWP set for UL transmissions

批注：[transmissions] Activation/deactivation by DCI requires further details (e.g. it is FFS whether it is a DCI scheduling PDSCH/PUSCH in a configured BWP or a separate DCI). Deactivation by a timer also requires further details (e.g. no separate specifications if it is the DRX timer). A separate timer may be described in RRC specifications as for the DRX timer.

Configurations and assumptions independent of physical channels or signals

批注：[signals] To capture reserved resources, potential LTE-NR coexistence aspects, etc. For LTE-NR DC with single UL Tx, corresponding agreement regarding configuration of DL-reference UL/DL configuration affects only LTE operation, is suitable for LTE specifications, and is not captured (unless it is extended to NR-NR DC).

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