**3****GPP TSG RAN WG1 #107-e R1-xxxxxx**

**e-Meeting, November 11th – 19th, 2021**

***Agenda item:*** ***8.14.1***

**Title: [DRAFT] TR section – Power evaluation**

**Source: Moderator (Qualcomm)**

**Document for: Discussion**

This document, if agreed, is going to be the power consumption evaluation section 9.3 of R17 XR TR.

*(Moderator’s note: In the text in this document, the source index and the corresponding component will be further updated as the following table. Note that in the final TR, the number could be revised to be consistent with other section if needed. )*

|  |  |
| --- | --- |
| Source 1 | Apple |
| Source 2 | AT&T |
| Source 3 | CATT |
| Source 4 | CEWiT |
| Source 5 | China Unicom |
| Source 6 | CMCC |
| Source 7 | Ericsson |
| Source 8 | FUTUREWEI |
| Source 9 | Huawei |
| Source 10 | Intel |
| Source 11 | InterDigital |
| Source 12 | ITRI |
| Source 13 | LG |
| Source 14 | MediaTek |
| Source 15 | Nokia, NSB |
| Source 16 | Qualcomm |
| Source 17 | OPPO |
| Source 18 | vivo |
| Source 19 | Xiaomi |
| Source 20 | ZTE |

**=============== Start of Text update for TR section – Capacity Results in 9.3 =====================**

## UE Power Consumption Evaluation

### Baseline Power Evaluation Results

This section includes the baseline power consumption results. PS schemes considered in this section includes AlwaysOn, R15/16/17 power saving schemes such as CDRX, cross slot scheduling and MIMO layer adaptation by BWP switching, PDCCH monitoring adaptation.

* AlwaysOn: In this scheme, UE is always available for scheduling (i.e., no DRX off period). When UE is not receiving/transmitting DL/UL data, UE is assumed to keep monitoring PDCCH.
* R15/16 CDRX: Connected mode DRX scheme is assumed. (Note that no R16 wake up signal is considered.)
* Cross slot scheduling and MIMO layer adaptation by BWP switching: R16 dynamic BWP switching across different BWP with different configuration of minimum K0 and maximum MIMO layers.
* R17 PDCCH monitoring adaptation: UE skipping PDCCH monitoring based on a dynamically indicated PDCCH skipping indication and/or search space set group switching (SSSG) indication. In this scheme, it is assumed that network will send PDCCH skipping command with skipping duration(s)[[1]](#footnote-1).
* Genie: In this scheme, UE is assumed to be in a sleep state (e.g., micro/light/deep sleep as defined in TR38.840) whenever there is neither DL data reception nor UL transmission.

#### FR1

##### DL+UL Joint Evaluation

###### DU

Table 1 Summary of FR1, DL+UL joint power evaluation results for DU

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG (%), Note 1,3 | | Source |
| Mean (%) | Range (%) |
| DU | VR | 30 | R15/16 CDRX | High | 3.94 | 2.24 ~ 7.0 | Source 18, Source 7, Source 16 |
| Low | 3 | 2.44 ~ 3.56 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 19.98 |  | Source 18 |
| Low | 21.06 |  | Source 18 |
| 45 | R15/16 CDRX | High | 3.04 |  | Source 16 |
| Low |  |  |  |
| CG | 30 | R15/16 CDRX | High | 4.52 | 2.85~7 | Source 7, Source 16 |
| Low |  |  |  |
| AR (UL 1 stream) | 30 | R15/16 CDRX | High | 2.1 | 1.62 ~ 2.58 | Source 18 |
| Low | 3.09 | 2.39 ~ 3.79 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 12.25 |  | Source 18 |
| Low | 18.26 |  | Source 18 |
| AR (UL 2 streams) | 30 | R15/16 CDRX | High | 2.57 | 0.79 ~ 4.29 | Source 18, Source 16 |
| Low | 1.27 | 0.91 ~ 1.63 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 11.25 |  | Source 18 |
| Low | 12.12 |  | Source 18 |
| Note 1: PSG (Power Saving Gain) is computed for the cases only with marginal loss in % of DL+UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR

**Observations**

* In FR1, DL+UL joint evaluation, DU, VR30 and high load, it is observed from Source 18, Source 16 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 8/6/6) provides the mean power saving gain of 3.94% in the range of 2.24 ~ 7.00% with *marginal*[[2]](#footnote-2) loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, DU, VR30 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain is 19.98% with marginal loss in DL+UL UE satisfied rate.

Table 2 Source specific data: FR1, DL+UL, DU, VR 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index\* | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 244 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 13 | 13 |  |  | 92.43% |  |
| Source 18 | 245 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 13 | 13 |  |  | 90.11% | 3.31% |
| Source 18 | 246 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 13 | 13 |  |  | 91.58% | 2.24% |
| Source 18 | 250 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 13 | 13 |  |  | 92.19% | 19.98% |
| Source 7 | 10 | R1-2112160 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 |  |  | 90.00% | 0.00% |
| Source 7 | 11 | R1-2112160 | Genie | 0 | 0 | 0 |  | H | 4 | 4 |  |  | 90.00% | 17.00% |
| Source 7 | 12 | R1-2112160 | R15/16CDRX | 4 | 3 | 0 |  | H | 4 | 4 |  |  | 80.00% | 7.00% |
| Source 16 | 5 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 11 | 11 | 95.33% | 99.74% | 95.33% | 0.00% |
| Source 16 | 6 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 11 | 11 | 94.37% | 99.74% | 94.37% | 3.22% |
| Source 16 | 7 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 11 | 11 | 91.00% | 50.82% | 47.53% | 7.30% |
| Source 16 | 8 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 11 | 11 | 95.33% | 99.74% | 95.33% | 18.18% |
| Source 16 | 54 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 11 | 11 | 97.14% | 100.00% | 97.14% | 0.00% |
| Source 16 | 55 | R1-2112720 | R15/16CDRX | 16 | 12 | 12 |  | H | 11 | 11 | 89.35% | 79.83% | 69.87% | 1.78% |
| Source 16 | 58 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 11 | 11 | 97.14% | 100.00% | 97.14% | 24.62% |
| \*data row index N means it is the N’th row in the results sheet each company has provided. | | | | | | | | | | | | | | |

**Observations**

* In FR1, DL+UL joint evaluation, DU, VR30, low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 3% in the range of 2.44 ~ 3.56% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, DU, VR30, low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 21.06% with marginal loss in DL+UL UE satisfied rate.

Table 3 Source specific data: FR1, DL+UL, DU, VR 30Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 236 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 7 | 13 |  |  | 100.00% |  |
| Source 18 | 237 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 7 | 13 |  |  | 100.00% | 3.56% |
| Source 18 | 238 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 7 | 13 |  |  | 100.00% | 2.44% |
| Source 18 | 242 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 7 | 13 |  |  | 100.00% | 21.06% |

**Observation**

* In FR1, DL+UL joint evaluation, DU, VR45, high load, it is observed from Source 16 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (8/6/6) provides the mean power saving gain of 3.04% with marginal loss in DL+UL UE satisfied rate.

Table 4 Source specific data: FR1, DL+UL, DU, VR 45Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 17 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 7 | 7 | 95.13% | 100.00% | 95.13% | 0.00% |
| Source 16 | 18 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 7 | 7 | 94.29% | 100.00% | 94.29% | 3.04% |
| Source 16 | 19 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 7 | 7 | 89.66% | 47.62% | 43.54% | 7.08% |
| Source 16 | 20 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 7 | 7 | 95.13% | 100.00% | 95.13% | 17.36% |

No results available for the case of FR1, DL+UL, DU, VR 45Mbps, low load.

CG

**Observation**

* In FR1, DL+UL joint evaluation, DU, CG30, high load, it is observed from Source 7, Source 16 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/3/0, 8/4/6, 8/6/6) provides the mean power saving gain is 4.52% in the range of 2.85 ~ 7% with marginal loss in DL+UL UE satisfied rate.

Table 5 Source specific data: FR1, DL+UL, DU, CG 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 7 | 1 | R1-2112160 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 |  |  | 90.00% | 0.00% |
| Source 7 | 2 | R1-2112160 | Genie | 0 | 0 | 0 |  | H | 4 | 4 |  |  | 90.00% | 17.00% |
| Source 7 | 3 | R1-2112160 | R15/16CDRX | 4 | 3 | 0 |  | H | 4 | 4 |  |  | 89.00% | 7.00% |
| Source 16 | 29 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 15 | 15 | 91.75% | 99.87% | 91.75% | 0.00% |
| Source 16 | 30 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 15 | 15 | 91.68% | 51.05% | 47.05% | 6.66% |
| Source 16 | 31 | R1-2112720 | R15/16CDRX | 8 | 4 | 6 |  | H | 15 | 15 | 91.62% | 99.87% | 91.62% | 3.73% |
| Source 16 | 32 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 15 | 15 | 91.75% | 99.87% | 91.75% | 2.85% |
| Source 16 | 33 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 15 | 15 | 91.75% | 99.87% | 91.75% | 17.74% |

No results available for FR1, DL+UL, DU, CG30, low load

AR

AR with UL 1 stream

**Observations**

* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 1 stream, high load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 2.1% in the range of 1.62 ~ 2.58% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 1 stream, high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 12.25% with marginal loss in DL+UL UE satisfied rate.

Table 6 Source specific data: FR1, DL+UL, DU, AR 30Mbps w/ UL 1 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 276 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 9 | 9 |  |  | 92.59% | - |
| Source 18 | 277 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 9 | 9 |  |  | 91.89% | 2.58% |
| Source 18 | 278 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 9 | 9 |  |  | 92.06% | 1.62% |
| Source 18 | 282 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 9 | 9 |  |  | 92.24% | 12.25% |

**Observations**

* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 1 stream, low load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 3.09% in the range of 2.39 ~ 3.79% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 1 stream, low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 18.26% with marginal loss in DL+UL UE satisfied rate.

Table 7 Source specific data: FR1, DL+UL, DU, AR 30Mbps w/ UL 1 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 268 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 5 | 9 |  |  | 96.51% | - |
| Source 18 | 269 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 5 | 9 |  |  | 96.19% | 3.79% |
| Source 18 | 270 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 5 | 9 |  |  | 96.51% | 2.39% |
| Source 18 | 274 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 5 | 9 |  |  | 96.19% | 18.26% |

AR with UL 2 streams

**Observations**

* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 2 streams, high load, it is observed from Source 18, Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 8/4/6, 8/6/6) provides the mean power saving gain is 2.57% in the range of 0.79 ~ 4.29% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 2 streams, high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 11.25% with marginal loss in DL+UL UE satisfied rate.

Table 8 Source specific data: FR1, DL+UL, DU, AR 30Mbps w/ UL 2 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 308 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 7 | 7 |  |  | 92.06% | - |
| Source 18 | 309 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 7 | 7 |  |  | 91.16% | 1.51% |
| Source 18 | 310 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 7 | 7 |  |  | 91.61% | 0.79% |
| Source 18 | 314 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 7 | 7 |  |  | 91.61% | 11.25% |
| Source 16 | 44 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 3 | 3 | 99.80% | 94.05% | 93.85% | 0.00% |
| Source 16 | 45 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 3 | 3 | 99.80% | 44.44% | 44.44% | 7.80% |
| Source 16 | 46 | R1-2112720 | R15/16CDRX | 8 | 4 | 6 |  | H | 3 | 3 | 99.80% | 94.44% | 94.25% | 4.29% |
| Source 16 | 47 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 3 | 3 | 99.77% | 94.33% | 94.10% | 3.67% |

**Observations**

* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 2 streams, low load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 1.27% in the range of 0.91% ~ 1.63% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, DU, AR30 w/ UL 2 streams, low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 12.12% with marginal loss in DL+UL UE satisfied rate.

Table 9 Source specific data: FR1, DL+UL, DU, AR 30Mbps w/ UL 2 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 300 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 7 |  |  | 100.00% | - |
| Source 18 | 301 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 7 |  |  | 100.00% | 1.63% |
| Source 18 | 302 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 7 |  |  | 100.00% | 0.91% |
| Source 18 | 306 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 7 |  |  | 100.00% | 12.12% |

###### InH

Table 10 Summary of FR1, DL+UL joint power evaluation results for InH

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | Source |
| Mean (%) | Range (%) |
| InH | VR | 30 | R15/16 CDRX | High | 4.19 | 2.33 ~6 | Source 18, Source 16, Source 20 |
| Low | 3.18 | 2.64 ~ 3.71 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 21.78 |  | Source 18 |
| Low | 22.35 |  | Source 18 |
| 45 | R15/16 CDRX | High | 5.78 | 2.91 ~ 7.22 | Source 16, Source 20 |
| Low |  |  |  |
| CG | 30 | R15/16 CDRX | High | 3.88 | 2.85 ~ 4.5 | Source 16, Source 20 |
| Low |  |  |  |
| AR (UL 1 stream) | 30 | R15/16 CDRX | High | 2.16 | 1.69 ~ 2.62 | Source 18 |
| Low | 3.4 | 2.59 ~ 4.2 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 13.28 |  | Source 18 |
| Low | 21.17 |  | Source 18 |
| AR (UL 2 streams) | 30 | R15/16 CDRX | High | 3.72 | 0.83 ~ 8.04 | Source 18, Source 16 |
| Low | 1.42 | 1.02 ~ 1.81 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 12.51 |  | Source 18 |
| Low | 14.47 |  | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL+UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR

**Observations**

* In FR1, DL+UL joint evaluation, InH, VR30, high load, it is observed from Source 18, Source 20, Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 10/8/4, 8/6/6) provides the mean power saving gain is 4.19% in the range of 2.33 ~ 6% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, InH, VR30, high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 21.78% with marginal loss in DL+UL UE satisfied rate.

Table 11 Source specific data: FR1, DL+UL, InH, VR 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 228 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 92.50% | - |
| Source 18 | 229 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 10 | 10 |  |  | 91.25% | 3.45% |
| Source 18 | 230 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 10 | 10 |  |  | 91.81% | 2.33% |
| Source 18 | 234 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 91.81% | 21.78% |
| Source 20 | 1 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 2 | H | 11 | 11 | 93.18% | 100.00% | 93.18% | 0.00% |
| Source 20 | 2 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 3 | H | 11 | 11 | 93.18% | 100.00% | 93.18% | 0.00% |
| Source 20 | 5 | R1-2111351 | R15 CDRX | 10 | 8 | 4 | Note 1, 2 | H | 11 | 11 | 90.15% | 100.00% | 90.15% | 6.00% |
| Source 20 | 6 | R1-2111351 | R15 CDRX | 10 | 8 | 4 | Note 1, 3 | H | 11 | 11 | 90.15% | 100.00% | 90.15% | 6.00% |
| Source 16 | 9 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 9 | 9 | 92.73% | 100.00% | 92.73% | 0.00% |
| Source 16 | 10 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 9 | 9 | 92.59% | 100.00% | 92.59% | 3.18% |
| Source 16 | 11 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 9 | 9 | 89.29% | 49.74% | 43.92% | 7.18% |
| Source 16 | 12 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 9 | 9 | 92.73% | 100.00% | 92.73% | 20.38% |
| Note 1. DL and UL were simulated separately and collected traces are combined as a single timeline for DL+UL joint power evaluation.  Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Quantization) for UL power model | | | | | | | | | | | | | | |

**Observations**

* In FR1, DL+UL joint evaluation, InH, VR30, low load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 3.18% in the range of 2.64 ~ 3.71% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, InH, VR30, low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 22.35% with marginal loss in DL+UL UE satisfied rate.

Table 12 Source specific data: FR1, DL+UL, InH, VR 30Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 220 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | - |
| Source 18 | 221 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 5 | 10 |  |  | 100.00% | 3.71% |
| Source 18 | 222 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 5 | 10 |  |  | 100.00% | 2.64% |
| Source 18 | 226 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | 22.35% |
| Source 20 | 3 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 2 | L | 10 | 11 | 93.00% | 100.00% | 93.00% | 0.00% |
| Source 20 | 4 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 3 | L | 10 | 11 | 93.00% | 100.00% | 93.00% | 0.00% |
| Note 1. DL and UL were simulated separately and collected traces are combined as a single timeline for DL+UL joint power evaluation.  Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Quantization) for UL power model | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL joint evaluation, InH, VR45, high load, it is observed from Source 20, Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 8/6/6) provides the mean power saving gain is 5.78% in the range of 2.91% ~ 7.22% with marginal loss in DL+UL UE satisfied rate.

Table 13 Source specific data: FR1, DL+UL, InH, VR 45Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 11 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 2 | H | 7 | 7 | 91.00% | 100.00% | 91.00% | 0.00% |
| Source 20 | 12 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1,3 | H | 7 | 7 | 91.00% | 100.00% | 91.00% | 0.00% |
| Source 20 | 13 | R1-2111351 | R15 CDRX | 10 | 8 | 4 | Note 1, 2 | H | 7 | 7 | 87.00% | 100.00% | 87.00% | 7.22% |
| Source 20 | 14 | R1-2111351 | R15 CDRX | 10 | 8 | 4 | Note 1,3 | H | 7 | 7 | 87.00% | 100.00% | 87.00% | 7.22% |
| Source 16 | 21 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 6 | 6 | 90.59% | 100.00% | 90.59% | 0.00% |
| Source 16 | 22 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 6 | 6 | 89.82% | 100.00% | 89.82% | 2.91% |
| Source 16 | 23 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 6 | 6 | 82.56% | 49.69% | 40.59% | 6.69% |
| Source 16 | 24 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 6 | 6 | 90.59% | 100.00% | 90.59% | 19.34% |
| Source 16 | 24 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 6 | 6 | 90.59% | 100.00% | 90.59% | 19.34% |
| Note 1. DL and UL were simulated separately and collected traces are combined as a single timeline for DL+UL joint power evaluation. Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Quantization) for UL power model | | | | | | | | | | | | | | |

No results available for FR1, DL+UL, InH, VR45, low load case.

CG

**Observation**

* In FR1, DL+UL joint evaluation, InH, CG30, high load, it is observed from Source 20. Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 8/4/6, 8/6/6) provides the mean power saving gain is 3.88% in the range of 2.85 ~ 4.5% with marginal loss in DL+UL UE satisfied rate.

Table 14 Source specific data: FR1, DL+UL, InH, CG 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 19 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 2 | H | 12 | 12 | 96.53% | 100.00% | 96.53% | 0.00% |
| Source 20 | 20 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 | Note 1, 3 | H | 12 | 12 | 96.53% | 100.00% | 96.53% | 0.00% |
| Source 20 | 21 | R1-2111351 | R15 CDRX | 10 | 8 | 4 | Note 1, 2 | H | 12 | 12 | 88.88% | 100.00% | 88.88% | 4.50% |
| Source 20 | 22 | R1-2111351 | R15 CDRX | 10 | 8 | 4 | Note 1, 3 | H | 12 | 12 | 88.88% | 100.00% | 88.88% | 4.50% |
| Source 16 | 34 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 11 | 11 | 91.36% | 100.00% | 91.36% | 0.00% |
| Source 16 | 35 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 11 | 11 | 91.67% | 49.09% | 45.15% | 6.69% |
| Source 16 | 36 | R1-2112720 | R15/16CDRX | 8 | 4 | 6 |  | H | 11 | 11 | 91.97% | 100.00% | 91.97% | 3.68% |
| Source 16 | 37 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 11 | 11 | 91.36% | 100.00% | 91.36% | 2.85% |
| Source 16 | 38 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 11 | 11 | 91.36% | 100.00% | 91.36% | 19.70% |
| Note 1. DL and UL were simulated separately and collected traces are combined as a single timeline for DL+UL joint power evaluation.  Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Quantization) for UL power model | | | | | | | | | | | | | | |

No results available for FR1, DL+UL, InH, CG30, low load case.

AR

AR with UL 1 stream

**Observations**

* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 1 stream, high load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 2.16% in the range of 1.69 ~ 2.62% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 1 stream, high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 13.28% with marginal loss in DL+UL UE satisfied rate.

Table 15 Source specific data: FR1, DL+UL, InH, AR 30Mbps, UL 1 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 260 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 92.50% | - |
| Source 18 | 261 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 10 | 10 |  |  | 91.67% | 2.62% |
| Source 18 | 262 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 10 | 10 |  |  | 91.94% | 1.69% |
| Source 18 | 266 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 91.94% | 13.28% |

**Observations**

* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 1 stream, low load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 3.4% in the range of 2.59 ~ 4.2% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 1 stream, low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 21.17% with marginal loss in DL+UL UE satisfied rate.

Table 16 Source specific data: FR1, DL+UL, InH, AR 30Mps, UL 1 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 252 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | - |
| Source 18 | 253 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 5 | 10 |  |  | 100.00% | 4.20% |
| Source 18 | 254 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 5 | 10 |  |  | 100.00% | 2.59% |
| Source 18 | 258 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | 21.17% |

AR with UL 2 streams

**Observations**

* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 2 streams, high load, it is observed from Source 18, Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 8/4/6, 8/6/6) provides the mean power saving gain is 2.64% in the range of 0.83 ~ 4.41% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 2 streams, high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 12.51% with marginal loss in DL+UL UE satisfied rate.

Table 17 Source specific data: FR1, DL+UL, InH, AR 30Mbps, UL 2 streams, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 292 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 92.22% | - |
| Source 18 | 293 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 10 | 10 |  |  | 90.83% | 1.59% |
| Source 18 | 294 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 10 | 10 |  |  | 91.67% | 0.83% |
| Source 18 | 298 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 91.67% | 12.51% |
| Source 16 | 49 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 3 | 3 | 99.44% | 94.44% | 93.89% | 0.00% |
| Source 16 | 50 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 3 | 3 | 99.44% | 44.44% | 44.44% | 8.04% |
| Source 16 | 51 | R1-2112720 | R15/16CDRX | 8 | 4 | 6 |  | H | 3 | 3 | 99.72% | 94.17% | 93.89% | 4.41% |
| Source 16 | 52 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 3 | 3 | 99.44% | 94.72% | 94.44% | 3.72% |
| Source 16 | 53 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 3 | 3 | 99.44% | 94.44% | 93.89% | 20.44% |

**Observations**

* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 2 streams, low load, it is observed from Source 18 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain is 1.42% in the range of 1.02 ~ 1.81% with marginal loss in DL+UL UE satisfied rate.
* In FR1, DL+UL joint evaluation, InH, AR30 w/ UL 2 streams, low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation provides the mean power saving gain is 14.47% with marginal loss in DL+UL UE satisfied rate.

Table 18 Source specific data: FR1, DL+UL, InH, AR 30Mbps, UL 2 streams, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 284 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | - |
| Source 18 | 285 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 5 | 10 |  |  | 100.00% | 1.81% |
| Source 18 | 286 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 5 | 10 |  |  | 100.00% | 1.02% |
| Source 18 | 290 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | 14.47% |

###### UMa

Table 19 Summary of FR1, DL+UL joint power evaluation results for UMa

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | Source |
| Mean (%) | Range (%) |
| UMa | VR | 30 | R15/16 CDRX | High | 3.89 |  | Source 16 |
| 45 | R15/16 CDRX | High | 3.52 |  | Source 16 |
| CG | 30 | R15/16 CDRX | High | 4.1 |  | Source 16 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL+UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR

**Observation**

* In FR1, DL+UL joint evaluation, UMa, VR30, high load, it is observed from Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (8/6/6) provides the mean power saving gain is 3.89% with marginal loss in DL+UL UE satisfied rate.

Table 20 Source specific data: FR1, DL+UL, UMa, VR 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 13 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 | 93.37% | 94.22% | 93.20% | 0.00% |
| Source 16 | 14 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 4 | 4 | 93.20% | 93.71% | 93.71% | 3.89% |
| Source 16 | 15 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 4 | 4 | 92.86% | 50.00% | 49.66% | 8.19% |
| Source 16 | 16 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 4 | 4 | 93.37% | 94.22% | 93.20% | 8.79% |

No results available for FR1, DL+UL, UMa, VR30, low load

**Observation**

* In FR1, DL+UL joint evaluation, UMa, VR45, high load, it is observed from Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (8/6/6) provides the mean power saving gain is 3.52% with marginal loss in DL+UL UE satisfied rate.

Table 21 Source specific data: FR1, DL+UL, UMa, VR 45Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 25 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 3 | 3 | 91.59% | 95.08% | 91.59% | 0.00% |
| Source 16 | 26 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 3 | 3 | 91.59% | 94.92% | 91.59% | 3.52% |
| Source 16 | 27 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 3 | 3 | 90.00% | 48.73% | 45.87% | 7.71% |
| Source 16 | 28 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 3 | 3 | 91.59% | 95.08% | 91.59% | 8.70% |

No results available for FR1, DL+UL, UMa, VR45, low load

CG

**Observation**

* In FR1, DL+UL joint evaluation, UMa, CG30, high load, it is observed from Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (8/4/6, 8/6/6) provides the mean power saving gain is 4.10% in the range of 3.51% ~ 4.69% with marginal loss in DL+UL UE satisfied rate.

Table 22 Source specific data: FR1, DL+UL, UMa, CG 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 39 | R1-2112720 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 6 | 6 | 91.95% | 92.86% | 91.16% | 0.00% |
| Source 16 | 40 | R1-2112720 | R15/16CDRX | 8 | 6 | 4 |  | H | 6 | 6 | 92.06% | 45.58% | 44.79% | 7.72% |
| Source 16 | 41 | R1-2112720 | R15/16CDRX | 8 | 4 | 6 |  | H | 6 | 6 | 92.29% | 92.63% | 91.38% | 4.69% |
| Source 16 | 42 | R1-2112720 | R15/16CDRX | 8 | 6 | 6 |  | H | 6 | 6 | 92.40% | 92.29% | 91.16% | 3.51% |
| Source 16 | 43 | R1-2112720 | Genie | 0 | 0 | 0 |  | H | 6 | 6 | 91.95% | 92.86% | 91.16% | 9.04% |

No results available for FR1, DL+UL, UMa, CG30, low load

AR

No results are available.

##### DL-only Evaluation

###### DU

Table 23 Summary of FR1, DL-only power evaluation results for DU

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | source |
| Mean (%) | Range (%) |  |
| DU | VR/AR | 30 | R15/16 CDRX | High | 8.45 | 3.03 ~ 21.0 | Source 9, Source 18, Source 15, Source 7, Source 10 |
| Low | 4.64 | 3.57 ~ 5.76 | Source 9, Source 18 |
| R17 PDCCH monitoring adaptation | High | 18.86 |  | Source 18 |
| Low | 22.65 |  | Source 18 |
| 45 | R15/16 CDRX | High | 4.40 | 3.1~4.61 | Source 18, Source 14, Source 15 |
| Low | 4.55 | 3.53~5.56 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 15.69 | 12.66~18.73 | Source 18 |
| Low | 21.95 |  | Source 18 |
| cross-slot scheduling + MIMO layer adaptation by BWP switching | High | 9.33 |  | Source 14 |
| cross-slot scheduling + MIMO layer adaptation + PDCCH skipping by BWP switching | High | 9.78 |  | Source 14 |
| CG | 30 | R15/16 CDRX | High | 8.4 | 3.3 ~ 20 | Source 9, Source 14, Source 15, Source 7 |
| Low | 10.3 | 3.57 ~ 15.7 | Source 9, Source 10 |
| R17 PDCCH monitoring adaptation | High | 12.86 |  | Source 14 |
| Low |  |  |  |
| cross-slot scheduling + MIMO layer adaptation by BWP switching | High | 8.13 |  | Source 14 |
| Low |  |  |  |
| cross-slot scheduling + MIMO layer adaptation + PDCCH skipping by BWP switching | High | 8.53 |  | Source 14 |
| Low |  |  |  |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/AR

**Observations**

* In FR1, DL only evaluation, DU, VR/AR30 and high load, it is observed from Source 9, Source 18, Source 10, Source 15, Source 7, Source 16 that the R15/16CDRX with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 8/6/6, 8/4/6, 4/2/2, 10/8/2, 10/8/3) scheme provides the mean power saving gain of 8.45% in the range of 3.03 ~ 21.00% with *marginal[[3]](#footnote-3)* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.
* In FR1, DL only evaluation, DU, VR/AR30 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 18.86% with *marginal* loss in DL UE satisfied rate.

Table 24 Source specific data: FR1, DL-only, DU, AR/VR 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | 1 | R1-2110811 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 5 | 5 | 92.00% | 0.00% |
| Source 9 | 2 | R1-2110811 | R15/16CDRX | 10 | 5 | 4 |  | H | 5 | 5 | 61.05% | 14.68% |
| Source 9 | 3 | R1-2110811 | R15/16CDRX | 10 | 8 | 4 |  | H | 5 | 5 | 88.29% | 5.53% |
| Source 9 | 4 | R1-2110811 | R15/16CDRX | 16 | 8 | 8 |  | H | 5 | 5 | 0.00% | 10.70% |
| Source 9 | 5 | R1-2110811 | R15/16CDRX | 16 | 14 | 4 |  | H | 5 | 5 | 90.67% | 3.46% |
| Source 18 | 41 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 13 | 13 | 92.43% | - |
| Source 18 | 42 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 13 | 13 | 90.11% | 4.70% |
| Source 18 | 43 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 13 | 13 | 91.58% | 3.03% |
| Source 18 | 47 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 13 | 13 | 92.43% | 18.86% |
| Source 10 | 1 | R1-2111521 | Always On | 0 | 0 | 0 |  | H | 4 | 5 | 96.00% | 0.00% |
| Source 10 | 2 | R1-2111521 | Genie | 0 | 0 | 0 |  | H | 4 | 5 | 96.00% | 58.30% |
| Source 10 | 3 | R1-2111521 | CDRX | 8 | 6 | 6 |  | H | 4 | 5 | 94.00% | 10.80% |
| Source 10 | 4 | R1-2111521 | CDRX | 8 | 4 | 6 |  | H | 4 | 5 | 82.75% | 15.70% |
| Source 19 | 3 | R1-2112573 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 7 | 7 | 92.44% | - |
| Source 19 | 4 | R1-2112573 | Genie | 0 | 0 | 0 |  | H | 7 | 7 | 92.44% | 41.71% |
| Source 15 | 36 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 6 | 6 | 83.00% | 21.00% |
| Source 15 | 37 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 6 | 6 | 61.00% | 18.00% |
| Source 15 | 38 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 6 | 6 | 0.00% | 15.80% |
| Source 15 | 39 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 6 | 6 | 93.00% | 9.20% |
| Source 15 | 40 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 6 | 6 | 52.00% | 17.00% |
| Source 11 | 21 | R1-2111830 | AlwaysOn - baseline | - | - | - |  | H | 3 | 3 | 100.00% | 0.00% |
| Source 11 | 22 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 3 | 3 | 75.00% | 6.925% |
| Source 11 | 23 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 3 | 3 | 76.00% | 16.758% |
| Source 11 | 24 | R1-2111830 | R15/16CDRX | 16 | 8 | 8 |  | H | 3 | 3 | 20.00% | 10.945% |
| Source 11 | 25 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 3 | 3 | 88.33% | 7.221% |
| Source 7 | 14 | R1-2112160 | AlwaysOn – baseline | 0 | 0 | 0 |  | H | 4 | 4 | 90.00% | 0.00% |
| Source 7 | 15 | R1-2112160 | Genie | 0 | 0 | 0 |  | H | 4 | 4 | 90.00% | 41.00% |
| Source 7 | 16 | R1-2112160 | R15/16CDRX | 10 | 8 | 3 |  | H | 4 | 4 | 84.00% | 4.00% |
| Source 7 | 17 | R1-2112160 | R15/16CDRX | 10 | 5 | 5 |  | H | 4 | 4 | 29.00% | 8.00% |
| Source 16 | 60 | R1-2112720 | ALWAYS ON | 0 | 0 | 0 |  | H | 11 | 11 | 97.75% | 0.00% |

**Observations**

* In FR1, DL only evaluation, DU, VR/AR30 and low load, it is observed from Source 9, Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 10/8/4, 16/14/4) provides the mean power saving gain of 4.64% in the range of 3.57 ~ 5.76% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, DU, VR/AR30 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 22.65% with *marginal* loss in DL UE satisfied rate.

Table 25 Source specific data: FR1, DL-only, DU, AR/VR 30Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | 16 | R1-2110811 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 3 | 5 | 98.41% | 0.00% |
| Source 9 | 17 | R1-2110811 | R15/16CDRX | 10 | 5 | 4 |  | L | 3 | 5 | 78.25% | 15.24% |
| Source 9 | 18 | R1-2110811 | R15/16CDRX | 10 | 8 | 4 |  | L | 3 | 5 | 97.78% | 5.76% |
| Source 9 | 19 | R1-2110811 | R15/16CDRX | 16 | 8 | 8 |  | L | 3 | 5 | 0.00% | 11.01% |
| Source 9 | 20 | R1-2110811 | R15/16CDRX | 16 | 14 | 4 |  | L | 3 | 5 | 97.94% | 3.57% |
| Source 18 | 33 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 7 | 13 | 100.00% | - |
| Source 18 | 34 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 7 | 13 | 100.00% | 5.57% |
| Source 18 | 35 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 7 | 13 | 100.00% | 3.65% |
| Source 18 | 39 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 7 | 13 | 100.00% | 22.65% |
| Source 19 | 1 | R1-2112573 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 7 | 99.50% | - |
| Source 19 | 2 | R1-2112573 | Genie | 0 | 0 | 0 |  | L | 4 | 7 | 99.50% | 44.24% |

**Observations**

* In FR1, DL only evaluation, DU, VR/AR45 and high load, it is observed from Source 18, Source 15, Source 11 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 10/8/2) provides the mean power saving gain of 4.40% in the range of 3.10 ~ 6.61% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, DU, VR/AR45 and high load, it is observed from Source 18, Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 15.69% in the range of 12.66~18.73% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, DU, VR/AR45 and high load, it is observed from Source 14 that the cross-slot scheduling + MIMO layer adaptation by BWP switching provides the mean power saving gain of 9.33% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, DU, VR/AR45 and high load, it is observed from Source 14 that the cross-slot scheduling + MIMO layer adaptation + PDCCH skipping by BWP switching provides the mean power saving gain of 9.78% with *marginal* loss in DL UE satisfied rate.

Table 26 Source specific data: FR1, DL-only, DU, AR/VR 45Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 57 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 6 | 6 | 95.63% | - |
| Source 18 | 58 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 6 | 6 | 93.12% | 4.69% |
| Source 18 | 59 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 6 | 6 | 94.18% | 3.10% |
| Source 18 | 63 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 6 | 6 | 94.44% | 18.73% |
| Source 20 | 40 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 |  | H | 7 | 7 | 96.60% | 0.00% |
| Source 19 | 11 | R1-2112573 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 5 | 5 | 94.71% | - |
| Source 19 | 12 | R1-2112573 | Genie | 0 | 0 | 0 |  | H | 5 | 5 | 94.71% | 39.55% |
| Source 15 | 41 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 4 | 4 | 69.00% | 14.50% |
| Source 15 | 42 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 4 | 4 | 40.00% | 10.80% |
| Source 15 | 43 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 4 | 4 | 0.00% | 7.90% |
| Source 15 | 44 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 4 | 4 | 88.00% | 3.20% |
| Source 15 | 45 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 4 | 4 | 24.00% | 9.50% |
| Source 11 | 26 | R1-2111830 | AlwaysOn - baseline | - | - | - |  | H | 2 | 2 | 95.00% | 0.00% |
| Source 11 | 27 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 2 | 2 | 63.00% | 6.30% |
| Source 11 | 28 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 2 | 2 | 63.00% | 15.54% |
| Source 11 | 29 | R1-2111830 | R15/16CDRX | 16 | 8 | 8 |  | H | 2 | 2 | 13.00% | 9.67% |
| Source 11 | 30 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 2 | 2 | 80.00% | 6.61% |
| Source 14 | 6 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 7 | 7 | 91.75% | 0.00% |
| Source 14 | 7 | R1-2109555 | R15/16CDRX | 10 | 5 | 5 |  | H | 7 | 7 | 68.01% | 5.73% |
| Source 14 | 8 | R1-2109555 | Custom : cross-slot  + MIMO layer adaptation  by BWP switching | 0 | 0 | 0 |  | H | 7 | 7 | 88.93% | 9.33% |
| Source 14 | 9 | R1-2109555 | Custom : cross-slot  + MIMO layer adaptation  + PDCCH skipping  by BWP switching | 0 | 0 | 0 |  | H | 7 | 7 | 86.12% | 9.78% |
| Source 14 | 10 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 7 | 7 | 90.00% | 12.66% |

**Observations**

* In FR1, DL only evaluation, DU, VR/AR45 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 4.55% in the range of 3.53 ~ 5.56% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL-only evaluation, DU, VR/AR45 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 21.95% with *marginal* loss in DL UE satisfied rate.

Table 27 Source specific data: FR1, DL-only, DU, AR/VR 45Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 49 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 3 | 6 | 100.00% | - |
| Source 18 | 50 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 3 | 6 | 100.00% | 5.56% |
| Source 18 | 51 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 3 | 6 | 100.00% | 3.53% |
| Source 18 | 55 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 3 | 6 | 100.00% | 21.95% |
| Source 19 | 9 | R1-2112573 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 3 | 5 | 99.7% | - |
| Source 19 | 10 | R1-2112573 | Genie | 0 | 0 | 0 |  | L | 3 | 5 | 99.7% | 43.73% |

CG

**Observations**

* In FR1, DL only evaluation, DU, CG30 and high load, it is observed from Source 9, Source 15, Source 11, Source 7, Source 14 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 4/2/2, 8/4/4, 10/8/2, 16/12/4, 10/8/2, 10/8/3, 10/5/5) provides the mean power saving gain of 8.4% in the range of 3.3 ~ 20.0% with *marginal* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.
* In FR1, DL only evaluation, DU, CG30 and high load, it is observed from Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 12.86% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, DU, CG30 and high load, it is observed from Source 14 that the cross-slot scheduling + MIMO layer adaptation by BWP switching provides the mean power saving gain of 8.13% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, DU, CG30 and high load, it is observed from Source 14 that the cross-slot scheduling + MIMO layer adaptation + PDCCH skipping by BWP switching provides the mean power saving gain of 8.53% with *marginal* loss in DL UE satisfied rate.

Table 28 Source specific data: FR1, DL-only, DU, CG 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | 31 | R1-2110811 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 7 | 7 | 90.88% | 0.00% |
| Source 9 | 32 | R1-2110811 | R15/16CDRX | 10 | 5 | 4 |  | H | 7 | 7 | 77.96% | 13.83% |
| Source 9 | 33 | R1-2110811 | R15/16CDRX | 10 | 8 | 4 |  | H | 7 | 7 | 90.00% | 5.26% |
| Source 9 | 34 | R1-2110811 | R15/16CDRX | 16 | 8 | 8 |  | H | 7 | 7 | 74.42% | 9.71% |
| Source 9 | 35 | R1-2110811 | R15/16CDRX | 16 | 14 | 4 |  | H | 7 | 7 | 89.96% | 3.30% |
| Source 19 | 7 | R1-2112573 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 8 | 8 | 92.88% | - |
| Source 19 | 8 | R1-2112573 | Genie | 0 | 0 | 0 |  | H | 8 | 8 | 92.88% | 39.83% |
| Source 15 | 31 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 8 | 8 | 88.00% | 20.00% |
| Source 15 | 32 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 8 | 8 | 84.00% | 16.70% |
| Source 15 | 33 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 8 | 8 | 70.00% | 13.60% |
| Source 15 | 34 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 8 | 8 | 93.00% | 8.80% |
| Source 15 | 35 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 8 | 8 | 76.00% | 15.40% |
| Source 11 | 16 | R1-2111830 | AlwaysOn - baseline | - | - | - |  | H | 5 | 5 | 96.00% | 0.00% |
| Source 11 | 17 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 5 | 5 | 84.50% | 6.31% |
| Source 11 | 18 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 5 | 5 | 76.25% | 14.73% |
| Source 11 | 19 | R1-2111830 | R15/16CDRX | 16 | 8 | 8 |  | H | 5 | 5 | 64.25% | 9.53% |
| Source 11 | 20 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 5 | 5 | 86.25% | 5.98% |
| Source 7 | 5 | R1-2112160 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 | 90.00% | 0.00% |
| Source 7 | 6 | R1-2112160 | Genie | 0 | 0 | 0 |  | H | 4 | 4 | 90.00% | 41.00% |
| Source 7 | 7 | R1-2112160 | R15/16CDRX | 10 | 8 | 3 |  | H | 4 | 4 | 89.00% | 4.00% |
| Source 7 | 8 | R1-2112160 | R15/16CDRX | 10 | 5 | 5 |  | H | 4 | 4 | 83.00% | 8.00% |
| Source 14 | 1 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 13 | 13 | 91.48% | 0.00% |
| Source 14 | 2 | R1-2109555 | R15/16CDRX | 10 | 5 | 5 |  | H | 13 | 13 | 80.00% | 5.63% |
| Source 14 | 3 | R1-2109555 | Custom : cross-slot  + MIMO layer adaptation  by BWP switching | 0 | 0 | 0 |  | H | 13 | 13 | 90.74% | 8.13% |
| Source 14 | 4 | R1-2109555 | Custom : cross-slot  + MIMO layer adaptation  +PDCCH skipping by BWP switching | 0 | 0 | 0 |  | H | 13 | 13 | 90.04% | 8.53% |
| Source 14 | 5 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 13 | 13 | 90.29% | 12.86% |

**Observations**

* In FR1, DL only evaluation, DU, CG30 and low load, it is observed from Source 9, Source 10 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/5/4, 10/8/4, 16/8/8, 16/14/4, 8/6/6/, 8/4/6) provides the mean power saving gain of 10.3% in the range of 3.57 ~ 15.7% with *marginal* loss in DL UE satisfied rate.

Table 29 Source specific data: FR1, DL-only, DU, CG 30Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | 46 | R1-2110811 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 3 | 7 | 99.68% | 0.00% |
| Source 9 | 47 | R1-2110811 | R15/16CDRX | 10 | 5 | 4 |  | L | 3 | 7 | 99.21% | 15.20% |
| Source 9 | 48 | R1-2110811 | R15/16CDRX | 10 | 8 | 4 |  | L | 3 | 7 | 99.64% | 5.75% |
| Source 9 | 49 | R1-2110811 | R15/16CDRX | 16 | 8 | 8 |  | L | 3 | 7 | 97.62% | 10.79% |
| Source 9 | 50 | R1-2110811 | R15/16CDRX | 16 | 14 | 4 |  | L | 3 | 7 | 99.64% | 3.57% |
| Source 10 | 5 | R1-2111521 | Always On | 0 | 0 | 0 |  | L | 4 | 6 | 98.00% | 0.00% |
| Source 10 | 6 | R1-2111521 | Genie | 0 | 0 | 0 |  | L | 4 | 6 | 98.00% | 58.30% |
| Source 10 | 7 | R1-2111521 | CDRX | 8 | 6 | 6 |  | L | 4 | 6 | 95.00% | 10.80% |
| Source 10 | 8 | R1-2111521 | CDRX | 8 | 4 | 6 |  | L | 4 | 6 | 92.00% | 15.70% |
| Source 19 | 5 | R1-2112573 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | - |
| Source 19 | 6 | R1-2112573 | Genie | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | 44.24% |

###### InH

Table 30 Summary of FR1, DL-only power evaluation results for InH

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | Source |
| Mean (%) | Range (%) |
| InH | VR/AR | 30 | R15/16 CDRX | High | 9.67 | 2.39 ~ 20.90 | Source 18, Source 3, Source 15, Source 11, Source 12, Source 20 |
| Low | 4.7 | 3.67 ~ 5.72 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 20.73 |  | Source 18 |
| Low | 23.33 |  | Source 18 |
| VR/AR | 45 | R15/16 CDRX | High | 7.61 | 2.83 ~ 15.7 | Source 18, Source 20, Source 15, Source 11 |
| low | 4.39 | 3.46 ~ 5.32 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 17.15 | 14.41 ~ 19.89 | Source 18, Source 14 |
| Low | 22.16 |  | Source 18 |
| Cross-slot + MIMO layer adaptation by BWP switching | High | 8.84 |  | Source 14 |
| Cross-slot + MIMO layer adaptation + PDCCH skipping by BWP switching | High | 9.31 |  | Source 14 |
| CG | 30 | R15/16 CDRX | High | 13.11 | 4.2 ~ 20.9 | Source 15, Source 20, Source 11 |
| Low |  |  |  |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/AR

**Observations**

* In FR1, DL only evaluation, InH, VR/AR30 and high load, it is observed from Source 18, Source 3, Source 15, Source 11, Source 12, Source 20 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 16/12/4, 6/4/2, 10/8/4, 4/2/2, 8/4/4, 10/8/2, 16/8/8, 16/8/4, 16/8/6, 16/10/8, 16/12/8) provides the mean power saving gain of 9.67% in the range of 2.39 ~ 20.90% with *marginal* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.
* In FR1, DL only evaluation, InH, VR/AR30 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 20.73% with *marginal* loss in DL UE satisfied rate.

Table 31 Source specific data: FR1, DL-only, InH, VR/AR 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 9 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 10 | 10 | 92.50% | - |
| Source 18 | 10 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 10 | 10 | 91.25% | 4.88% |
| Source 18 | 11 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 10 | 10 | 91.81% | 3.24% |
| Source 18 | 15 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 10 | 10 | 92.17% | 20.73% |
| Source 3 | 1 | R1-2111234 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 12 | 12 | 95.83% | 0.00% |
| Source 3 | 2 | R1-2111234 | R15/16CDRX | 16 | 12 | 4 |  | H | 12 | 12 | 90.97% | 2.39% |
| Source 3 | 3 | R1-2111234 | R15/16CDRX | 6 | 4 | 2 |  | H | 12 | 12 | 88.89% | 6.14% |
| Source 20 | 27 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 |  | H | 11 | 11 | 93.18% | 0.00% |
| Source 20 | 28 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 |  | H | 10 | 11 | 93.00% | 0.00% |
| Source 20 | 29 | R1-2111351 | R15 CDRX | 10 | 8 | 4 |  | H | 11 | 11 | 90.15% | 6.20% |
| Source 15 | 6 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 5 | 5 | 90.00% | 20.90% |
| Source 15 | 7 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 5 | 5 | 83.00% | 18.20% |
| Source 15 | 8 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 5 | 5 | 0.00% | 16.20% |
| Source 15 | 9 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 5 | 5 | 93.00% | 9.30% |
| Source 15 | 10 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 5 | 5 | 74.00% | 17.30% |
| Source 11 | 6 | R1-2111830 | AlwaysOn - baseline | - | - | - |  | H | 5 | 5 | 96.80% | 0.00% |
| Source 11 | 7 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 5 | 5 | 58.00% | 6.14% |
| Source 11 | 8 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 5 | 5 | 57.60% | 15.5% |
| Source 11 | 9 | R1-2111830 | R15/16CDRX | 16 | 8 | 8 |  | H | 5 | 5 | 14.40% | 8.77% |
| Source 11 | 10 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 5 | 5 | 82.80% | 6.55% |
| Source 12 | 12 | R1-2112175 | R15/16CDRX | 4 | 2 | 2 |  | H | 4 | 4 | 97.91% | 14.86% |
| Source 12 | 13 | R1-2112175 | R15/16CDRX | 8 | 4 | 4 |  | H | 4 | 4 | 95.83% | 13.28% |
| Source 12 | 14 | R1-2112175 | R15/16CDRX | 16 | 8 | 8 |  | H | 4 | 4 | 85.42% | 10.22% |
| Source 12 | 15 | R1-2112175 | R15/16CDRX | 16 | 8 | 2 |  | H | 4 | 4 | 68.75% | 16.31% |
| Source 12 | 16 | R1-2112175 | R15/16CDRX | 16 | 8 | 4 |  | H | 4 | 4 | 81.25% | 14.79% |
| Source 12 | 17 | R1-2112175 | R15/16CDRX | 16 | 8 | 6 |  | H | 4 | 4 | 83.33% | 12.46% |
| Source 12 | 18 | R1-2112175 | R15/16CDRX | 16 | 2 | 8 |  | H | 4 | 4 | 12.50% | 27.51% |
| Source 12 | 19 | R1-2112175 | R15/16CDRX | 16 | 4 | 8 |  | H | 4 | 4 | 35.42% | 20.18% |
| Source 12 | 20 | R1-2112175 | R15/16CDRX | 16 | 6 | 8 |  | H | 4 | 4 | 58.33% | 14.87% |
| Source 12 | 21 | R1-2112175 | R15/16CDRX | 16 | 10 | 8 |  | H | 4 | 4 | 95.83% | 5.97% |
| Source 12 | 22 | R1-2112175 | R15/16CDRX | 16 | 12 | 8 |  | H | 4 | 4 | 100.00% | 5.30% |

**Observations**

* In FR1, DL only evaluation, InH, VR/AR30 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4,16/14/4) provides the mean power saving gain of 4.7% in the range of 3.67 ~ 5.72% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR/AR30 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 23.33% with *marginal* loss in DL UE satisfied rate.

Table 32 Source specific data: FR1, DL-only, InH, VR/AR 30Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 1 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 5 | 10 | 100.00% | - |
| Source 18 | 2 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 5 | 10 | 100.00% | 5.72% |
| Source 18 | 3 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 5 | 10 | 100.00% | 3.67% |
| Source 18 | 7 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 5 | 10 | 100.00% | 23.33% |

**Observations**

* In FR1, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 18, Source 20, Source 15, Source 11 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 10/8/4, 4/2/2, 8/4/4, 10/8/2) provides the mean power saving gain of 7.61% in the range of 2.83 ~ 15.7% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 18, Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 17.15% in the range of 14.41% ~ 19.89% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 14 that cross-slot + MIMO layer adaptation by BWP switching scheme provides the mean power saving gain of 8.84% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 14 that cross-slot + MIMO layer adaptation + PDCCH skipping by BWP switching scheme provides the mean power saving gain of 9.31% with *marginal* loss in DL UE satisfied rate.

Table 33 Source specific data: FR1, DL-only, InH, VR/AR 45Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 25 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 5 | 5 | 96.67% | - |
| Source 18 | 26 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 5 | 5 | 92.78% | 4.68% |
| Source 18 | 27 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 5 | 5 | 94.44% | 2.83% |
| Source 18 | 31 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 5 | 5 | 96.67% | 19.89% |
| Source 20 | 32 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 |  | H | 7 | 7 | 91.00% | 0.00% |
| Source 20 | 33 | R1-2111351 | R15 CDRX | 10 | 8 | 4 |  | H | 7 | 7 | 87.00% | 7.40% |
| Source 15 | 11 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 3 | 3 | 95.00% | 15.70% |
| Source 15 | 12 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 3 | 3 | 84.70% | 12.10% |
| Source 15 | 13 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 3 | 3 | 0.00% | 9.40% |
| Source 15 | 14 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 3 | 3 | 97.00% | 4.00% |
| Source 15 | 15 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 3 | 3 | 63.00% | 10.80% |
| Source 11 | 11 | R1-2111830 | AlwaysOn - baseline | - | - | - |  | H | 3 | 3 | 98.00% | 0.00% |
| Source 11 | 12 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 3 | 3 | 63.34% | 5.76% |
| Source 11 | 13 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 3 | 3 | 63.34% | 15.12% |
| Source 11 | 14 | R1-2111830 | R15/16CDRX | 16 | 8 | 8 |  | H | 3 | 3 | 14.67% | 8.53% |
| Source 11 | 15 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 3 | 3 | 85.30% | 6.54% |
| Source 14 | 11 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 | 91.67% | 0.00% |
| Source 14 | 12 | R1-2109555 | R15/16CDRX | 10 | 5 | 5 |  | H | 4 | 4 | 70.83% | 4.45% |
| Source 14 | 13 | R1-2109555 | Custom : cross-slot  + MIMO layer adaptation  by BWP switching | 0 | 0 | 0 |  | H | 4 | 4 | 88.73% | 8.84% |
| Source 14 | 14 | R1-2109555 | Custom : cross-slot  + MIMO layer adaptation  +PDCCH skipping by BWP switching | 0 | 0 | 0 |  | H | 4 | 4 | 84.80% | 9.31% |
| Source 14 | 15 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 4 | 4 | 90.00% | 14.41% |

**Observations**

* In FR1, DL only evaluation, InH, VR/AR45 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4,16/14/4) provides the mean power saving gain of 4.39% in the range of 3.46 ~ 5.32% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR/AR45 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 22.16% with *marginal* loss in DL UE satisfied rate.

Table 34 Source specific data: FR1, DL-only, InH, VR/AR 45Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 23 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 3 | 5 | 100% | - |
| Source 18 | 24 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 3 | 5 | 100% | 5.32% |
| Source 18 | 25 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 3 | 5 | 100% | 3.46% |
| Source 18 | 29 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 3 | 5 | 100% | 22.16% |

CG

**Observations**

* In FR1, DL only evaluation, InH, CG30 and high load, it is observed from Source 20, Source 15, Source 11 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 4/2/2, 8/4/4, 16/8/8, 10/8/2, 10/5/5, 10/8/2) provides the mean power saving gain of 13.11% in the range of 4.2 ~ 20.90% with *marginal* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.

Table 35 Source specific data: FR1, DL-only, InH, CG 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 36 | R1-2111351 | AlwaysOn-baseline | 0 | 0 | 0 |  | H | 12 | 12 | 96.53% | 0.00% |
| Source 20 | 37 | R1-2111351 | R15 CDRX | 10 | 8 | 4 |  | H | 12 | 12 | 88.88% | 4.20% |
| Source 15 | 1 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 5 | 5 | 96.80% | 20.90% |
| Source 15 | 2 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 5 | 5 | 96.70% | 18.20% |
| Source 15 | 3 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 5 | 5 | 95.00% | 16.20% |
| Source 15 | 4 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 5 | 5 | 98.50% | 9.30% |
| Source 15 | 5 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 5 | 5 | 96.30% | 17.30% |
| Source 11 | 1 | R1-2111830 | AlwaysOn - baseline | - | - | - |  | H | 7 | 7 | 97.57% | 0.00% |
| Source 11 | 2 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 7 | 7 | 79.90% | 5.52% |
| Source 11 | 3 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 7 | 7 | 64.71% | 13.63% |
| Source 11 | 4 | R1-2111830 | R15/16CDRX | 16 | 8 | 8 |  | H | 7 | 7 | 55.70% | 6.95% |
| Source 11 | 5 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 7 | 7 | 83.30% | 5.68% |
| Source 12 | 1 | R1-2112175 | R15/16CDRX | 4 | 2 | 2 |  | H | 9 | 9 | 57.40% | 14.51% |
| Source 12 | 2 | R1-2112175 | R15/16CDRX | 8 | 4 | 4 |  | H | 9 | 9 | 56.40% | 12.62% |
| Source 12 | 3 | R1-2112175 | R15/16CDRX | 16 | 8 | 8 |  | H | 9 | 9 | 46.29% | 9.74% |
| Source 12 | 4 | R1-2112175 | R15/16CDRX | 16 | 8 | 2 |  | H | 9 | 9 | 20.37% | 15.35% |
| Source 12 | 5 | R1-2112175 | R15/16CDRX | 16 | 8 | 4 |  | H | 9 | 9 | 29.63% | 13.37% |
| Source 12 | 6 | R1-2112175 | R15/16CDRX | 16 | 8 | 6 |  | H | 9 | 9 | 39.81% | 11.42% |
| Source 12 | 7 | R1-2112175 | R15/16CDRX | 16 | 2 | 8 |  | H | 9 | 9 | 5.56% | 28.88% |
| Source 12 | 8 | R1-2112175 | R15/16CDRX | 16 | 4 | 8 |  | H | 9 | 9 | 10.18% | 20.03% |
| Source 12 | 9 | R1-2112175 | R15/16CDRX | 16 | 6 | 8 |  | H | 9 | 9 | 27.78% | 14.39% |
| Source 12 | 10 | R1-2112175 | R15/16CDRX | 16 | 10 | 8 |  | H | 9 | 9 | 53.70% | 5.37% |
| Source 12 | 11 | R1-2112175 | R15/16CDRX | 16 | 12 | 8 |  | H | 9 | 9 | 70.37% | 4.92% |

No input for FR1, DL-only, CG30, low load case

###### UMa

Table 36 Summary of FR1, DL-only power evaluation results for UMa

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | Source |
| Mean (%) | Range (%) |
| UMa | VR/AR | 30 | R15/16 CDRX | High | 4.13 | 3.23 ~ 5.02 | Source 18 |
| Low | 5.16 | 4.05 ~ 6.26 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 20.54 |  | Source 18 |
| Low | 25.15 |  | Source 18 |
| 45 | R15/16 CDRX | High | 4.03 | 3.13 ~ 4.92 | Source 18 |
| Low | 4.89 | 3.97 ~ 5.81 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 20.17 |  | Source 18 |
| Low | 23.25 |  | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/AR

**Observations**

* In FR1, DL only evaluation, UMa, VR/AR30 and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/8, 16/14/4) provides the mean power saving gain of 4.13% in the range of 3.23 ~ 5.02% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, UMa, VR/AR30 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 20.54% with *marginal* loss in DL UE satisfied rate.

Table 37 Source specific data: FR1, DL-only, UMa, VR/AR, 30Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 73 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 8 | 8 | 93.75% | - |
| Source 18 | 74 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 8 | 8 | 91.47% | 5.02% |
| Source 18 | 75 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 8 | 8 | 92.85% | 3.23% |
| Source 18 | 79 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 8 | 8 | 93.75% | 20.54% |

**Observations**

* In FR1, DL only evaluation, UMa, VR/AR30 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 5.16% in the range of 4.05 ~ 6.26% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, UMa, VR/AR30 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 25.15% with *marginal* loss in DL UE satisfied rate.

Table 38 Source specific data: FR1, DL-only, UMa, VR/AR, 30Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 65 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 8 | 98.81% | - |
| Source 18 | 66 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 8 | 98.41% | 6.26% |
| Source 18 | 67 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 8 | 98.81% | 4.05% |
| Source 18 | 71 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 8 | 98.81% | 25.15% |

**Observations**

* In FR1, DL only evaluation, UMa, VR/AR45 and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 4.03% in the range of 3.13 ~ 4.92% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, UMa, VR/AR45 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 20.17% with *marginal* loss in DL UE satisfied rate.

Table 39 Source specific data: FR1, DL-only, UMa, VR/AR, 45Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 89 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 | 94.05% | - |
| Source 18 | 90 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 4 | 4 | 92.46% | 4.92% |
| Source 18 | 91 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 4 | 4 | 93.25% | 3.13% |
| Source 18 | 95 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 4 | 4 | 93.33% | 20.17% |

**Observations**

* In FR1, DL only evaluation, UMa, VR/AR45 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4/, 16/14/4) provides the mean power saving gain of 4.89% in the range of 3.97 ~ 5.81% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, UMa, VR/AR45 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 23.25% with *marginal* loss in DL UE satisfied rate.

Table 40 Source specific data: FR1, DL-only, UMa, VR/AR, 45Mbps, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 81 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 2 | 4 | 96.83% | - |
| Source 18 | 82 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 2 | 4 | 96.83% | 5.81% |
| Source 18 | 83 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 2 | 4 | 96.83% | 3.97% |
| Source 18 | 87 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 2 | 4 | 96.83% | 23.25% |

CG

No results were submitted

##### UL-only Evaluation

###### DU

Table 41 Summary of FR1, UL-only power evaluation results for DU

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | UL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | source |
| Mean (%) | Range (%) |  |
| DU | VR/CG UL Pose | 0.2 | R15/16 CDRX | High | 31.95 | 26.62 ~ 37.27 | Source 18 |
| Low |  |  |  |
| 0.048 | R16 cross slot scheduling | High | 20.84 |  | Source 14 |
| R17 PDCCH monitoring adaptation | High | 15.32 |  | Source 14 |
| R17 PDCCH monitoring adaptation + R16 cross slot scheduling | High | 28.58 |  | Source 14 |
|  | AR UL 1 stream (scene) | 10 | R15/16 CDRX | High | 8.48 | 4.25 ~ 14.6 | Source 18, Source 15 |
| Low | 5.62 | 4.26 ~ 6.97 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 26.76 | 19.36 ~ 34.15 | Source 18, Source 14 |
| Low | 35.84 |  | Source 18 |
| R16 cross slot scheduling | high | 24.33 |  | Source 14 |
| R17 PDCCH monitoring adaptation + cross slot scheduling | high | 32.80 |  | Source 14 |
| AR UL 2 streams (pose, scene) | 10.2 | R15/16 CDRX | High | 2.17 | 1.99 ~ 3.43 | Source 18 |
| Low | 2.51 | 1.79 ~ 3.23 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 23.02 |  | Source 18 |
| Low | 24.16 |  | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/CG

**Observations**

* In FR1, UL only evaluation, DU, VR/CG UL pose (250Hz) and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/2/1, 8/3/1) provides the mean power saving gain of 31.95% in the range of 26.62 ~ 37.27% with *marginal[[4]](#footnote-4)* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, VR/CG UL pose (60Hz) and high load, it is observed from Source 14 that the R16 cross slot scheduling scheme provides the mean power saving gain of 20.48% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, VR/CG UL pose (60Hz) and high load, it is observed from Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 15.32% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, VR/CG UL pose (60Hz) and high load, it is observed from Source 14 that the R17 PDCCH monitoring adaptation + cross slot scheduling scheme provide the mean power saving gain of 28.58% with *marginal* loss in UL UE satisfied rate.

Table 42 Source specific data: FR1, UL-only, DU, VR/CG-Pose only, 0.2Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 158 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 | UL pose rate 250Hz | H | 20 | 20 | 99.99% | - |
| Source 18 | 159 | R1-2111046 | R15/16CDRX | 4 | 2 | 1 | UL pose rate 250Hz | H | 20 | 20 | 94.84% | 26.62% |
| Source 18 | 160 | R1-2111046 | R15/16CDRX | 8 | 3 | 1 | UL pose rate 250Hz | H | 20 | 20 | 93.81% | 37.27% |
| Source 14 | 16 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 | UL pose rate 60Hz | H | 13 | 13 | 100.00% | 0.00% |
| Source 14 | 17 | R1-2109555 | Cross slot scheduling | 0 | 0 | 0 | UL pose rate 60Hz | H | 13 | 13 | 100.00% | 20.48% |
| Source 14 | 18 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 | UL pose rate 60Hz | H | 13 | 13 | 100.00% | 15.32% |
| Source 14 | 19 | R1-2109555 | Custom : R17 PDCCH monitoring adaptation  + cross slot | 0 | 0 | 0 | UL pose rate 60Hz | H | 13 | 13 | 100.00% | 28.58% |

AR

AR with UL 1 stream

**Observations**

* In FR1, UL only evaluation, DU, AR UL 1 stream and high load, it is observed from Source 18, Source 15 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 4/2/2, 8/4/4, 16/8/8, 10/8/2, 10/5/5) provides the mean power saving gain of 8.48% in the range of 4.25 ~ 14.60% with *marginal* loss in UL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.
* In FR1, UL only evaluation, DU, AR UL 1 stream and high load, it is observed from Source 18, Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 26.76% in the range of 19.36 ~ 34.15% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, AR UL 1 stream and high load, it is observed from Source Source 14 that the cross-slot scheduling scheme provides the mean power saving gain of 24.33% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, AR UL 1 stream and high load, it is observed from Source Source 14 that the R17 PDCCH skipping + cross slot scheduling scheme provides the mean power saving gain of 32.80% with *marginal* loss in UL UE satisfied rate.

Table 43 Source specific data: FR1, UL-only, DU, AR UL 1 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 166 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 9 | 9 | 92.95% | - |
| Source 18 | 167 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 9 | 9 | 91.53% | 6.73% |
| Source 18 | 168 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 9 | 9 | 91.17% | 4.25% |
| Source 18 | 170 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 9 | 9 | 91.77% | 34.15% |
| Source 15 | 46 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 4 | 4 | 91.20% | 14.60% |
| Source 15 | 47 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 4 | 4 | 91.40% | 10.80% |
| Source 15 | 48 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 4 | 4 | 91.40% | 7.50% |
| Source 15 | 49 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 4 | 4 | 91.30% | 5.80% |
| Source 15 | 50 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 4 | 4 | 91.40% | 9.70% |
| Source 14 | 24 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 6 | 6 | 100.00% | 0.00% |
| Source 14 | 25 | R1-2109555 | Cross slot scheduling | 0 | 0 | 0 |  | H | 6 | 6 | 100.00% | 24.33% |
| Source 14 | 26 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 6 | 6 | 100.00% | 19.36% |
| Source 14 | 27 | R1-2109555 | Custom : R17 PDCCH monitoring adaptation  + cross slot | 0 | 0 | 0 |  | H | 6 | 6 | 100.00% | 32.80% |

**Observations**

* In FR1, UL only evaluation, DU, AR UL 1 stream and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 5.62% in the range of 4.26 ~ 6.97% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, AR UL 1 stream and low load, it is observed from Source 18 that the R16 PDCCH skipping scheme provides the mean power saving gain of 35.84% with *marginal* loss in UL UE satisfied rate.

Table 44 Source specific data: FR1, UL-only, DU, AR UL 1 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 161 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 5 | 9 | 97.14% | - |
| Source 18 | 162 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 5 | 9 | 97.14% | 6.97% |
| Source 18 | 163 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 5 | 9 | 97.14% | 4.26% |
| Source 18 | 165 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 5 | 9 | 96.51% | 35.84% |

AR with UL 2 streams

**Observations**

* In FR1, UL only evaluation, DU, AR UL 2 stream and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 2.17% in the range of 1.99 ~ 3.43% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, AR UL 2 stream and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 23.02% with *marginal* loss in UL UE satisfied rate.

Table 45 Source specific data: FR1, UL-only, DU, AR 2 streams, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 215 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 7 | 7 | 92.29% | - |
| Source 18 | 216 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 7 | 7 | 90.70% | 3.43% |
| Source 18 | 217 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 7 | 7 | 92.06% | 1.99% |
| Source 18 | 219 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 7 | 7 | 91.16% | 23.02% |

**Observations**

* In FR1, UL only evaluation, DU, AR UL 2 stream and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 2.51% in the range of 1.79 ~ 3.23% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, DU, AR UL 2 stream and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 24.16% with *marginal* loss in UL UE satisfied rate.

Table 46 Source specific data: FR1, UL-only, DU, AR 2 streams, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 210 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 7 | 100.00% | - |
| Source 18 | 211 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 7 | 100.00% | 3.23% |
| Source 18 | 212 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 7 | 100.00% | 1.79% |
| Source 18 | 214 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 7 | 100.00% | 24.16% |

###### InH

Table 47 Summary of FR1, UL-only power evaluation results for InH

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | UL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | source |
| Mean (%) | Range (%) |  |
| InH | VR/CG UL Pose | 0.2 | R15/16 CDRX | High | 31.58 | 26.33 ~ 36.83 | Source 18 |
| Low |  |  |  |
| 0.048 | Cross slot scheduling | High | 20.56 |  | Source 14 |
| Low |  |  |  |
| R17 PDCCH monitoring adaptation | High | 15.29 |  | Source 14 |
| Low |  |  |  |
| R17 PDCCH monitoring adaptation + cross slot scheduling | High | 28.60 |  | Source 14 |
| Low |  |  |  |
| AR UL 1 stream (scene) | 10 | R15/16 CDRX | High | 13.04 | 4.8 ~ 21.64 | Source 18, Source 15 |
| Low | 6.60 | 5.03 ~ 8.17 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 28.43 | 17.63 ~ 39.21 | Source 18, Source 14 |
| Low | 41.99 |  | Source 18 |
| R16 cross slot scheduling | High | 23.87 |  | Source 14 |
| Low |  |  |  |
| R17 PDCCH monitoring adaptation + R16 cross slot scheduling | High | 31.56 |  | Source 14 |
| Low |  |  |  |
| AR UL 2 streams (pose, scene) | 10.2 | R15/16 CDRX | High | 3.16 | 2.34 ~ 3.97 | Source 18 |
| Low | 3.6 | 2.38 ~ 4.82 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 25.63 |  | Source 18 |
| Low | 28.15 |  | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/CG

**Observations**

* In FR1, UL only evaluation, InH, VR/CG UL pose (250Hz) and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/2/1, 8/3/1) provides the mean power saving gain of 31.58% in the range of 26.33 ~ 36.83% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, VR/CG UL pose (60Hz) and high load, it is observed from Source 14 that the cross-slot scheduling scheme provides the mean power saving gain of 20.56% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, VR/CG UL pose (60Hz) and high load, it is observed from Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 15.29% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, VR/CG UL pose (60Hz) and high load, it is observed from Source 14 that the R17 PDCCH monitoring adaptation + cross slot scheduling scheme provides the mean power saving gain of 28.60% with *marginal* loss in UL UE satisfied rate.

Table 48 Source specific data: FR1, UL-only, InH, VR/CG Pose only, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 145 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 | UL Pose rate  250Hz | H | 20 | 20 | 100.00% | - |
| Source 18 | 146 | R1-2111046 | R15/16CDRX | 4 | 2 | 1 | UL Pose rate  250Hz | H | 20 | 20 | 94.31% | 26.33% |
| Source 18 | 147 | R1-2111046 | R15/16CDRX | 8 | 3 | 1 | UL Pose rate  250Hz | H | 20 | 20 | 93.33% | 36.83% |
| Source 14 | 20 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 | UL Pose rate  60Hz | H | 9 | 9 | 100.00% | 0.00% |
| Source 14 | 21 | R1-2109555 | Cross slot scheduling | 0 | 0 | 0 | UL Pose rate  60Hz | H | 9 | 9 | 100.00% | 20.56% |
| Source 14 | 22 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 | UL Pose rate  60Hz | H | 9 | 9 | 100.00% | 15.29% |
| Source 14 | 23 | R1-2109555 | Custom : R17  PDCCH skipping  + cross slot | 0 | 0 | 0 | UL Pose rate  60Hz | H | 9 | 9 | 100.00% | 28.60% |

AR

AR with UL 1 stream

**Observations**

* In FR1, UL only evaluation, InH, AR UL 1 stream and high load, it is observed from Source 18, Source 15 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 4/2/2, 8/4/4, 16/8/8/, 10/8/2, 10/5/5) provides the mean power saving gain of 13.04% in the range of 4.8 ~ 21.64% with *marginal* loss in UL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.
* In FR1, UL only evaluation, InH, AR UL 1 stream and high load, it is observed from Source 18, Source 14 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 28.43% in the range of 17.65 ~ 39.21% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, AR UL 1 stream and high load, it is observed from Source 14 that the R16 cross slot scheduling scheme provides the mean power saving gain of 23.87% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, AR UL 1 stream and high load, it is observed from Source 14 that the R17 PDCCH monitoring adaptation + R16 cross slot scheduling scheme provides the mean power saving gain of 31.56% with *marginal* loss in UL UE satisfied rate.

Table 49 Source specific data: FR1, UL-only, InH, AR UL 1 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 153 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 13 | 13 | 93.59% | - |
| Source 18 | 154 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 13 | 13 | 92.22% | 7.71% |
| Source 18 | 155 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 13 | 13 | 92.86% | 4.80% |
| Source 18 | 157 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 13 | 13 | 92.65% | 39.21% |
| Source 15 | 51 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 4 | 4 | 99.00% | 21.64% |
| Source 15 | 52 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 4 | 4 | 99.00% | 18.27% |
| Source 15 | 53 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 4 | 4 | 99.00% | 13.50% |
| Source 15 | 54 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 4 | 4 | 99.00% | 8.67% |
| Source 15 | 55 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 4 | 4 | 99.00% | 16.67% |
| Source 14 | 28 | R1-2109555 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 | 100.00% | 0.00% |
| Source 14 | 29 | R1-2109555 | Cross slot scheduling | 0 | 0 | 0 |  | H | 4 | 4 | 100.00% | 23.87% |
| Source 14 | 30 | R1-2109555 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 4 | 4 | 100.00% | 17.65% |
| Source 14 | 31 | R1-2109555 | Custom : R17 PDCCH  skipping + cross slot | 0 | 0 | 0 |  | H | 4 | 4 | 100.00% | 31.56% |

**Observations**

* In FR1, UL only evaluation, InH, AR UL 1 stream and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 6.60% in the range of 5.03 ~ 8.17% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, AR UL 1 stream and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 41.99% with *marginal* loss in UL UE satisfied rate.

Table 50 Source specific data: FR1, UL-only, InH, AR UL 1 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 148 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 7 | 13 | 100% | - |
| Source 18 | 149 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 7 | 13 | 100% | 8.17% |
| Source 18 | 150 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 7 | 13 | 100% | 5.03% |
| Source 18 | 152 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 7 | 13 | 100% | 41.99% |

AR with UL 2 streams

**Observations**

* In FR1, UL only evaluation, InH, AR UL 2 streams and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 3.16% in the range of 2.34 ~ 3.97% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, AR UL 2 streams and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 25.63% with *marginal* loss in UL UE satisfied rate.

Table 51 Source specific data: FR1, UL-only, InH, AR UL 2 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 205 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 12 | 12 | 93.29% | - |
| Source 18 | 206 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 12 | 12 | 92.13% | 3.97% |
| Source 18 | 207 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 12 | 12 | 92.59% | 2.34% |
| Source 18 | 209 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 12 | 12 | 92.36% | 25.63% |

**Observations**

* In FR1, UL only evaluation, InH, AR UL 2 streams and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 3.6% in the range of 2.38 ~ 4.82% with *marginal* loss in UL UE satisfied rate.
* In FR1, UL only evaluation, InH, AR UL 2 streams and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 28.15% with *marginal* loss in UL UE satisfied rate.

Table 52 Source specific data: FR1, UL-only, InH, AR UL 2 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 200 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 6 | 12 | 100.00% | - |
| Source 18 | 201 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 6 | 12 | 100.00% | 4.82% |
| Source 18 | 202 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 6 | 12 | 100.00% | 2.38% |
| Source 18 | 204 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 6 | 12 | 100.00% | 28.15% |

###### UMa

Table 53 Summary of FR1, UL-only power evaluation results for UMa

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | UL Bit rate (Mbps) | PS scheme | System Load | PSG(%), Note 1,2 | | source |
| Mean (%) | Range (%) |  |
| UMa | VR/CG UL Pose | 0.2 | R15/16 CDRX | High | 33.52 | 28.1 ~ 38.93 | Source 18 |
| Low |  |  |  |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |  |

VR/CG

**Observations**

* In FR1, UL only evaluation, UMa, VR/CG Pose only and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/2/1, 8/3/1) provides the mean power saving gain of 33.52% in the range of 28.10 ~ 38.93% with *marginal* loss in UL UE satisfied rate.

Table 54 Source specific data: FR1, UL-only, UMa, VR/CG Pose only(250Hz), 0.2Mbps, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 171 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 20 | 20 | 97.70% | - |
| Source 18 | 172 | R1-2111046 | R15/16CDRX | 4 | 2 | 1 |  | H | 20 | 20 | 94.37% | 28.10% |
| Source 18 | 173 | R1-2111046 | R15/16CDRX | 8 | 3 | 1 |  | H | 20 | 20 | 92.94% | 38.93% |

AR

No results were submitted.

#### FR2

##### DL+UL Evaluation

No results submitted.

##### DL-only Evaluation

###### DU

Table 55 Summary of FR2, DL-only power evaluation results for DU

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | source |
| Mean (%) | Range (%) |  |
| DU | VR/AR | 30 | R15/16 CDRX | High | 7.73 | 5.96 ~ 9.5 | Source 18, Source 16 |
| Low | 8.28 | 6.4 ~ 10.15 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 31.24 |  | Source 18 |
| Low | 31.74 |  | Source 18 |
| 45 | R15/16 CDRX | High | 6.64 | 4.98 ~ 8.29 | Source 18 |
| Low | 7.63 | 6.06 ~ 9.2 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 26.33 |  | Source 18 |
| Low | 28.25 |  | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/AR

**Observations**

* In FR2, DL only evaluation, DU, VR/AR30 and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 7.73% in the range of 5.96 ~ 9.5% with *marginal*[[5]](#footnote-5) loss in DL UE satisfied rate.
* In FR2, DL only evaluation, DU, VR/AR30 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 31.24% with *marginal* loss in DL UE satisfied rate.

Table 56 Source specific data: FR2, DL-only, DU, VR/AR30, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power  saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional  Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 127 | R1-2111046 | AlwaysOn  - baseline | 0 | 0 | 0 |  | H | 13 | 13 | 95.24% | - |
| Source 18 | 128 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 13 | 13 | 91.82% | 9.50% |
| Source 18 | 129 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 13 | 13 | 93.53% | 5.96% |
| Source 18 | 131 | R1-2111046 | R17 PDCCH  skipping | 0 | 0 | 0 |  | H | 13 | 13 | 95.00% | 31.24% |
| Source 16 | 71 | R1-2112720 | ALWAYS ON | None | None | None |  | H | 7 | 7 | 90.00% | 0.00% |
| Source 16 | 72 | R1-2112720 | CDRX | 16 | 4 | 4 |  | H | 7 | 7 | 0.00% | 26.77% |
| Source 16 | 73 | R1-2112720 | CDRX | 16 | 8 | 8 |  | H | 7 | 7 | 45.00% | 8.77% |
| Source 16 | 74 | R1-2112720 | CDRX | 16 | 8 | 16 |  | H | 7 | 7 | 60.00% | 3.34% |
| Source 16 | 75 | R1-2112720 | Genie (CDRX  with ideal  PDCCH Skipping) | 16 | None | none | Genie is the  same  for all CDRX | H | 7 | 7 | 90.00% | 69.00% |

**Observations**

* In FR2, DL only evaluation, DU, VR/AR30 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 8.28% in the range of 6.4 ~ 10.15% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, DU, VR/AR30 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 31.74% with *marginal* loss in DL UE satisfied rate.

Table 57 Source specific data: FR2, DL-only, DU, VR/AR30, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 121 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 7 | 13 | 99.55% | - |
| Source 18 | 122 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 7 | 13 | 98.64% | 10.15% |
| Source 18 | 123 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 7 | 13 | 99.32% | 6.40% |
| Source 18 | 125 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 7 | 13 | 99.32% | 31.74% |

**Observations**

* In FR2, DL only evaluation, DU, VR/AR45 and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4) provides the mean power saving gain of 6.64% in the range of 4.98 ~ 8.29% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, DU, VR/AR45 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 26.33% with *marginal* loss in DL UE satisfied rate.

Table 58 Source specific data: FR2, DL-only, DU, VR45, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 139 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 8 | 8 | 93.25% | - |
| Source 18 | 140 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 8 | 8 | 91.67% | 8.29% |
| Source 18 | 141 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 8 | 8 | 32.26% | 4.98% |
| Source 18 | 143 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 8 | 8 | 93.25% | 26.33% |

**Observations**

* In FR2, DL only evaluation, DU, VR/AR45 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 7.63% in the range of 6.06 ~ 9.2% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, DU, VR/AR45 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 28.25% with *marginal* loss in DL UE satisfied rate.

Table 59 Source specific data: FR2, DL-only, DU, VR45, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 133 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | - |
| Source 18 | 134 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 8 | 100.00% | 9.20% |
| Source 18 | 135 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 8 | 100.00% | 6.06% |
| Source 18 | 137 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | 28.25% |

CG

No results available

###### InH

Table 60 Summary of FR2, DL-only power evaluation results for InH

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG (%), Note 1,3 | | source |
| Mean (%) | Range (%) |
| InH | VR/AR | 30 | R15/16 CDRX | High | 10.78 | 5.81 ~ 19.58 | Source 18, Source 15, Source 16 |
| Low | 8.17 | 6.28 ~ 10.06 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 32.69 |  | Source 18 |
| Low | 33.80 |  | Source 18 |
| 45 | R15/16 CDRX | High | 7.46 | 5.73 ~ 18.00 | Source 18, Source 15 |
| Low | 7.75 | 5.98 ~ 9.52 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 28.58 | 27.36 ~ 29.8 | Source 18, Source 16 |
| Low | 28.87 |  | Source 18 |
| R16 cross slot scheduling | High | 12.20 |  | Source 16 |
| R17 PDCCH monitoring adaptation + cross slot scheduling | High | 30 |  | Source 16 |
| CG | 30 | R15/16 CDRX | High | 13.03 | 3.79 ~ 22.66 | Source 15, Source 16 |
| Low |  |  |  |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/AR

**Observations**

* In FR2, DL only evaluation, InH, VR/AR30 and high load, it is observed from Source 18, Source 15, Source 16 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 4/2/2, 10/8/2) provides the mean power saving gain of 10.78% in the range of 5.81 ~ 19.58% with *marginal* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.
* In FR2, DL only evaluation, DU, VR/AR30 and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 32.69% with *marginal* loss in DL UE satisfied rate.

Table 61 Source specific data: FR2, DL-only, InH, VR/AR30, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 103 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 8 | 8 | 92.01% | - |
| Source 18 | 104 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 8 | 8 | 90.63% | 9.53% |
| Source 18 | 105 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 8 | 8 | 91.37% | 5.81% |
| Source 18 | 107 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 8 | 8 | 92.01% | 32.69% |
| Source 15 | 21 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 10 | 10 | 85.58% | 19.58% |
| Source 15 | 22 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 10 | 10 | 20.66% | 16.41% |
| Source 15 | 23 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 10 | 10 | 0.00% | 13.16% |
| Source 15 | 24 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 10 | 10 | 92.41% | 8.21% |
| Source 15 | 25 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 10 | 10 | 7.16% | 14.92% |
| Source 16 | 66 | R1-2112720 | ALWAYS ON | None | None | None |  | H | 7 | 7 | 90.00% | 0.00% |
| Source 16 | 67 | R1-2112720 | CDRX | 16 | 4 | 4 |  | H | 7 | 7 | 0.00% | 28.44% |
| Source 16 | 68 | R1-2112720 | CDRX | 16 | 8 | 8 |  | H | 7 | 7 | 50.00% | 9.64% |
| Source 16 | 69 | R1-2112720 | CDRX | 16 | 8 | 16 |  | H | 7 | 7 | 65.00% | 4.10% |
| Source 16 | 70 | R1-2112720 | Genie (CDRX  with ideal  PDCCH  Skipping) | 16 | None | None | Genie is  the same  for all CDRX | H | 7 | 7 | 90.00% | 73.50% |
| Source 16 | 76 | R1-2112720 | ALWAYS ON | None | None | None |  | H | 7 | 7 | 90.00% | 0.00% |
| Source 16 | 80 | R1-2112720 | ALWAYS ON | None | None | None |  | H | 7 | 7 | 90.00% | 0.00% |

**Observations**

* In FR2, DL only evaluation, InH, VR/AR30 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 8.17% in the range of 6.28 ~ 10.06% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, DU, VR/AR30 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 33.80% with *marginal* loss in DL UE satisfied rate.

Table 62 Source specific data: FR2, DL-only, InH, VR/AR30, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 97 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | - |
| Source 18 | 98 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 8 | 99.31% | 10.06% |
| Source 18 | 99 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 8 | 99.31% | 6.28% |
| Source 18 | 101 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | 33.80% |

**Observations**

* In FR2, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 18, Source 15 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4, 10/8/2) provides the mean power saving gain of 7.46% in the range of 5.73 ~ 9.15% with *marginal* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.

**Observations**

* In FR2, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 18, Source 16 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 28.58% in the range of 27.36 ~ 29.8% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 16 that the R16 cross slot scheduling scheme provides the mean power saving gain of 12.20% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, InH, VR/AR45 and high load, it is observed from Source 16 that the R17 PDCCH monitoring adaptation + cross slot scheduling scheme provides the mean power saving gain of 30.0% with *marginal* loss in DL UE satisfied rate.

Table 63 Source specific data: FR2, DL-only, InH, VR/AR45, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 115 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 4 | 4 | 94.44% | - |
| Source 18 | 116 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 4 | 4 | 91.67% | 9.15% |
| Source 18 | 117 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 4 | 4 | 93.75% | 5.73% |
| Source 18 | 119 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 4 | 4 | 93.75% | 27.36% |
| Source 15 | 26 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 6 | 6 | 75.56% | 18.00% |
| Source 15 | 27 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 6 | 6 | 9.40% | 15.00% |
| Source 15 | 28 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 6 | 6 | 0.00% | 11.60% |
| Source 15 | 29 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 6 | 6 | 90.00% | 7.50% |
| Source 15 | 30 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 6 | 6 | 3.33% | 13.50% |
| Source 16 | 1 | R1-2112720 | ALWAYS ON | Null | 0 | 0 |  | H | 3 | 3 | 90.00% | 0.00% |
| Source 16 | 2 | R1-2112720 | Cross-slot scheduling | Null | 0 | 0 |  | H | 3 | 3 | 90.00% | 12.20% |
| Source 16 | 3 | R1-2112720 | PDCCH Skipping | Null | 0 | 0 |  | H | 3 | 3 | 90.00% | 29.80% |
| Source 16 | 4 | R1-2112720 | PDCCH Skipping  + Cross-slot skipping | Null | 0 | 0 |  | H | 3 | 3 | 90.00% | 30.00% |

**Observations**

* In FR2, DL only evaluation, InH, VR/AR45 and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 7.75% in the range of 5.98 ~ 9.52% with *marginal* loss in DL UE satisfied rate.
* In FR2, DL only evaluation, InH, VR/AR45 and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 28.87% with *marginal* loss in DL UE satisfied rate.

Table 64 Source specific data: FR2, DL-only, InH, VR45, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 109 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 2 | 4 | 100.00% | - |
| Source 18 | 110 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 2 | 4 | 98.61% | 9.52% |
| Source 18 | 111 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 2 | 4 | 98.61% | 5.98% |
| Source 18 | 113 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 2 | 4 | 98.61% | 28.87% |

CG

**Observations**

* In FR2, DL only evaluation, InH, CG30 and high load, it is observed from Source 15, Source 16 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/2/2, 8/4/4, 10/8/2, 10/5/5, 16/4/4, 16/8/8, 16/8/16) provides the mean power saving gain of 13.03% in the range of 3.79 ~ 22.66% with *marginal* loss in DL UE satisfied rate.
* The choice of a particular R15/16 CDRX configuration (cycle, on duration, and inactivity timer) greatly affects the PS gain.

Table 65 Source specific data: FR2, DL-only, InH, CG30, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 15 | 16 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 11 | 11 | 98.33% | 18.50% |
| Source 15 | 17 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 11 | 11 | 98.00% | 15.40% |
| Source 15 | 18 | R1-2112572 | R15/16CDRX | 16 | 8 | 8 |  | H | 11 | 11 | 78.10% | 11.60% |
| Source 15 | 19 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 11 | 11 | 98.20% | 7.60% |
| Source 15 | 20 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 11 | 11 | 96.00% | 13.70% |
| Source 16 | 66 | R1-2112720 | ALWAYS ON | None | None | None |  | H | 7 | 7 | 90.00% | 0.00% |
| Source 16 | 67 | R1-2112720 | CDRX | 16 | 4 | 4 |  | H | 7 | 7 | 80.00% | 22.66% |
| Source 16 | 68 | R1-2112720 | CDRX | 16 | 8 | 8 |  | H | 7 | 7 | 90.00% | 9.56% |
| Source 16 | 69 | R1-2112720 | CDRX | 16 | 8 | 16 |  | H | 7 | 7 | 90.00% | 3.79% |

##### UL-only Evaluation

###### DU

Table 66 Summary of FR2, UL-only, power evaluation results for DU

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | UL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | source |
| Mean (%) | Range (%) |
| DU | VR/CG UL Pose | 0.2 | R15/16 CDRX | High | 38.90 | 35.29 ~ 42.51 | Source 18 |
| AR UL 1 stream (scene) | 10 | R15/16 CDRX | High | 7.68 | 6.18 ~ 9.18 | Source 18 |
| Low | 7.89 | 6.41 ~ 9.36 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 46.21 | 46.21 ~ 51.42 | Source 18 |
| Low | 51.43 |  |  |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/CG

**Observation**

* In FR2, UL only evaluation, DU, VR/CG pose only and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/2/1,8/3/1) provides the mean power saving gain of 38.90% in the range of 35.29 ~ 42.51% with *marginal*[[6]](#footnote-6) loss in UL UE satisfied rate.

Table 67 Source specific data: FR2, UL-only, DU, VR/CG Pose only, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 187 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 20 | 20 | 96.51% | - |
| Source 18 | 188 | R1-2111046 | R15/16CDRX | 4 | 2 | 1 |  | H | 20 | 20 | 94.13% | 35.29% |
| Source 18 | 189 | R1-2111046 | R15/16CDRX | 8 | 3 | 1 |  | H | 20 | 20 | 92.30% | 42.51% |

No results available for FR2, UL-only, DU, VR/CG Pose only, low load

AR with UL 1 stream

**Observations**

* In FR2, UL only evaluation, DU, AR UL 1 stream, and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 7.68% in the range of 6.18 ~ 9.18% with *marginal* loss in UL UE satisfied rate.
* In FR2, UL only evaluation, DU, AR UL 1 stream and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 46.21% with *marginal* loss in UL UE satisfied rate.

Table 68 Source specific data: FR2, UL-only, DU, AR UL 1 stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 195 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 8 | 8 | 92.66% | - |
| Source 18 | 196 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 8 | 8 | 91.07% | 9.18% |
| Source 18 | 197 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 8 | 8 | 91.67% | 6.18% |
| Source 18 | 199 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 8 | 8 | 91.27% | 46.21% |

**Observations**

* In FR2, UL only evaluation, DU, AR UL 1 stream, and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/1) provides the mean power saving gain of 7.89% in the range of 6.41 ~ 9.36% with *marginal* loss in UL UE satisfied rate.
* In FR2, UL only evaluation, DU, AR UL 1 stream, and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 51.43% with marginal loss in DL UE satisfied rate.

Table 69 Source specific data: FR2, UL-only, DU, AR UL 1 stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 190 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | - |
| Source 18 | 191 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 8 | 99.60% | 9.36% |
| Source 18 | 192 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 8 | 100.00% | 6.41% |
| Source 18 | 194 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | 51.43% |

No results available for FR2, UL-only, DU, AR 2 streams.

###### InH

Table 70 Summary of FR2, UL-only power evaluation results for InH

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | UL Bit rate (Mbps) | PS scheme, Note 2 | System Load | PSG(%), Note 1,3 | | source |
| Mean (%) | Range (%) |
| InH | VR/CG UL Pose | 0.2 | R15/16 CDRX | High | 40.53 | 35.99 ~ 45.07 | Source 18 |
| AR UL 1 stream (scene) | 10 | R15/16 CDRX | High | 8.16 | 6.58 ~ 9.74 | Source 18 |
| Low | 8.60 | 6.96 ~10.24 | Source 18 |
| R17 PDCCH monitoring adaptation | High | 51.32 |  | Source 18 |
| Low | 52.35 |  | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. Note 3: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

VR/CG

**Observation**

* In FR2, UL only evaluation, InH, VR/CG pose only, and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (4/2/1, 8/3/1) provides the mean power saving gain of 40.53% in the range of 35.99 ~ 45.07% with *marginal* loss in UL UE satisfied rate.

Table 71 Source specific data: FR2, UL-only, InH, VR/CG Pose only, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 174 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 20 | 20 | 97.69% | - |
| Source 18 | 175 | R1-2111046 | R15/16CDRX | 4 | 2 | 1 |  | H | 20 | 20 | 95.90% | 35.99% |
| Source 18 | 176 | R1-2111046 | R15/16CDRX | 8 | 3 | 1 |  | H | 20 | 20 | 92.82% | 45.07% |

No results available for FR2, UL-only, DU, VR/CG Pose only, low load case

AR with UL 1 stream

**Observations**

* In FR2, UL only evaluation, InH, AR UL 1 stream, and high load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 8.16% in the range of 6.58 ~ 9.74% with *marginal* loss in UL UE satisfied rate.
* In FR2, UL only evaluation, InH, AR UL 1 stream, and high load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 46.21% with *marginal* loss in UL UE satisfied rate.

Table 72 Source specific data: FR2, UL-only, InH, AR 1 Stream, high load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 182 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | H | 8 | 8 | 95.14% | - |
| Source 18 | 183 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 8 | 8 | 92.71% | 9.74% |
| Source 18 | 184 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 8 | 8 | 94.10% | 6.58% |
| Source 18 | 186 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | H | 8 | 8 | 93.06% | 51.32% |

**Observations**

* In FR2, UL only evaluation, InH, AR UL 1 stream, and low load, it is observed from Source 18 that the R15/16CDRX scheme with configurations of (cycle/ODT/IAT) = (10/8/4, 16/14/4) provides the mean power saving gain of 8.60% in the range of 6.96 ~ 10.24% with *marginal* loss in UL UE satisfied rate.
* In FR2, UL only evaluation, InH, AR UL 1 stream, and low load, it is observed from Source 18 that the R17 PDCCH monitoring adaptation scheme provides the mean power saving gain of 52.35% with *marginal* loss in UL UE satisfied rate.

Table 73 Source specific data: FR2, UL-only, InH, AR 1 Stream, low load

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 177 | R1-2111046 | AlwaysOn - baseline | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | - |
| Source 18 | 178 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | L | 4 | 8 | 100.00% | 10.24% |
| Source 18 | 179 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | L | 4 | 8 | 100.00% | 6.96% |
| Source 18 | 181 | R1-2111046 | R17 PDCCH monitoring adaptation | 0 | 0 | 0 |  | L | 4 | 8 | 100.00% | 52.35% |

### Performance Comparison for Parameters/Modelling

#### Trade-off between Capacity and Power

This section captures the CDRX performance evaluation results showing the trade-off between capacity (% of satisfied UE) and power consumption.

**Observations**

* It is observed from the Source 10, Source 15, Source 18, Source 9, Source 7, Source 11 that there is trade-off relation between % of satisfied UE (or capacity) and power saving gain, that is, in general, high power saving gain can be achieved with the lower % of satisfied UE for CDRX schemes.

Table 74 Source specific data, FR1, DL, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | Mean PSG of all Ues (%) | % of DL satisfied UE |
| Source 10 | 3 | R1-2111521 | R15/16CDRX | 8 | 6 | 6 |  | H | 4 | 5 | 10.80% | 94.00% |
| Source 15 | 39 | R1-2112572 | R15/16CDRX | 10 | 8 | 2 |  | H | 6 | 6 | 9.20% | 93.00% |
| Source 18 | 43 | R1-2111046 | R15/16CDRX | 16 | 14 | 4 |  | H | 13 | 13 | 3.03% | 91.58% |
| Source 9 | 5 | R1-2110811 | R15/16CDRX | 16 | 14 | 4 |  | H | 5 | 5 | 3.46% | 90.67% |
| Source 18 | 42 | R1-2111046 | R15/16CDRX | 10 | 8 | 4 |  | H | 13 | 13 | 4.70% | 90.11% |
| Source 11 | 25 | R1-2111830 | R15/16CDRX | 10 | 8 | 2 |  | H | 3 | 3 | 7.22% | 88.33% |
| Source 9 | 3 | R1-2110811 | R15/16CDRX | 10 | 8 | 4 |  | H | 5 | 5 | 5.53% | 88.29% |
| Source 7 | 16 | R1-2112160 | R15/16CDRX | 10 | 8 | 3 |  | H | 4 | 4 | 4.00% | 84.00% |
| Source 15 | 36 | R1-2112572 | R15/16CDRX | 4 | 2 | 2 |  | H | 6 | 6 | 21.00% | 83.00% |
| Source 10 | 4 | R1-2111521 | R15/16CDRX | 8 | 4 | 6 |  | H | 4 | 5 | 15.70% | 82.75% |
| Source 11 | 23 | R1-2111830 | R15/16CDRX | 4 | 2 | 2 |  | H | 3 | 3 | 16.76% | 76.00% |
| Source 11 | 22 | R1-2111830 | R15/16CDRX | 16 | 12 | 4 |  | H | 3 | 3 | 6.93% | 75.00% |
| Source 9 | 2 | R1-2110811 | R15/16CDRX | 10 | 5 | 4 |  | H | 5 | 5 | 14.68% | 61.05% |
| Source 15 | 37 | R1-2112572 | R15/16CDRX | 8 | 4 | 4 |  | H | 6 | 6 | 18.00% | 61.00% |
| Source 15 | 40 | R1-2112572 | R15/16CDRX | 10 | 5 | 5 |  | H | 6 | 6 | 17.00% | 52.00% |

#### Performance Comparison for Different DL Frame Generation Rates

In this section, we capture the data points showing the relation between DL frame generation rates and UE power consumption.

**Observations**

* It was observed from Source 16 that increasing application frame generation rate increases UE power consumption.
* In FR1, DL+UL evaluation, DU, AlwaysOn, it was observed from Source 16 that VR 30Mbps with 120fps increases power consumption by 6.45% w.r.t. 60fps case.

Table 75 Source specific data: FR1, DL+UL eval, DU, VR 30Mbps for different DL frame generation rates

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data point index | Tdoc source | Power saving scheme | Fps | Load H/L | N1 | C1 | % of DL+UL satisfied UE | Mean PSG of all UEs (%) |
| Source 16 | 5 | R1-2112720 | AlwaysOn - baseline | 60 | H | 11 | 11 | 95.33% | 0.00% |
| Source 16 | 130 | R1-2112720 | AlwaysOn - baseline | 120 | H | 11 | 11 | 98.87% | -6.45% |

#### Performance Comparison for Different Data Rates

In this section, we capture the evaluation results showing the relation between data rates and UE power consumption.

**Observations**

* It was observed from Source 16 that icreasing application data(bit) rate increases UE power consumption.
* In FR1, DL+UL evaluation, DU, AlwaysOn, it was observed from Source 16 that VR DL bit rate of 45Mbps and 60 Mbps increases power consumption by 2.14 and 4.21% compared to VR DL 30Mbps case.

Table 76 Source specific data: FR1, DL+UL, DU, VR 30Mbps for different data rates

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | DL bit rates | Additional Assumptions | Load H/L | N1 | C1 | % of DL+UL satisfied UE | PSG (%) |
| Source 16 | 131 | R1-2112720 | AlwaysOn | 30Mbps |  | L | 1 | 11 | 100% | 0.00% |
| Source 16 | 132 | R1-2112720 | AlwaysOn | 45Mbps |  | L | 1 | 11 | 98.09% | -2.14% |
| Source 16 | 133 | R1-2112720 | AlwaysOn | 60Mbps |  | L | 1 | 11 | 95.71% | -4.21% |

#### Performance Comparison for Different Pose Periodicity

In this section, the impact of different pose periodicities on power consumption is evaluated.

Table 77 Summary of power performance for different periodicity.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | UL Bit rate (Mbps) | UL pose periodicity | PS scheme, Note 2 | PS gain (%), Note 1 | | Source |
| Mean (%) | Range (%) |
| DU | VR/CG UL Pose | 0.2 | 4ms | AlwaysOn | 0 |  | Source 16 |
| 0.1 | 8ms | AlwaysOn | 2.27 |  | Source 16 |
| 0.048 | 16.67ms | AlwaysOn | 10.83 |  | Source 16 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered R15/16 CDRX configurations in this table are listed in the following tables. | | | | | | | |

**Observations**

* It was observed from Source 16 that reducing pose periodicity could decrease power consumption.
* In FR1, DL+UL evaluation, DU, Pose only, AlwaysOn, it was observed from Source 16 the pose tx with periodicity of 8ms (or 125Hz) has power saving gain of 2.27% w.r.t AlwaysOn with periodicity of 4ms.
* In FR1, DL+UL evaluation, DU, Pose only, AlwaysOn, it was observed from Source 16 the pose tx with periodicity of 16.67ms (or 60Hz) has power saving gain of 10.83% w.r.t AlwaysOn with periodicity of 4ms.

Table 78 Source specific data: FR1, DU, DL+UL, VR30, UL pose

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | Pose Periodicity | Load H/L | N1 | C1 | % of DL+UL satisfied UE | Mean PSG of all UEs (%) |
| Source 16 | 5 | R1-2112720 | AlwaysOn | 4ms | H | 11 | 11 | 95.49% | 0.00% |
| Source 16 | 134 | R1-2112720 | AlwaysOn | 8ms | H | 11 | 11 | 95.15% | 2.27% |
| Source 16 | 135 | R1-2112720 | AlwaysOn | 16.67ms | H | 11 | 11 | 95.75% | 10.83% |

### Potential Enhancements

There have been no RAN1 discussion on aligning the implementation details of the proposed enhancement schemes presented in this section, or aligning the evaluation methodologies to comprehensively model them. The simulation results presented in this section are primarily results from individual sources that may have certain discrepancies in the details of the proposed enhancement scheme and/or additional assumptions made for evaluation purposes.

#### Enhanced CDRX

In this section, we provide performance evaluation results of eCDRX where eCDRX is a set of enhanced CDRX mechanisms which allow adjusting DRX On duration start time offset to be aligned with each XR DL traffic arrival time, or configure a CDRX cycle pattern with different cycle values instead of only one CDRX cycle, etc.

##### FR1

###### DL+UL joint evaluation

Table 79 Summary of FR1, DL+UL power evaluation results for eCDRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | PSG (%), Note 1,4 | | Source |
| Mean (%) | Range (%) |
| DU | VR | 30 | eCDRX | 11.64 | 4.51 ~ 23.49 | Source 18, Source 7, Source 16 |
| CG | 30 | eCDRX | 6 |  | Source 7 |
| AR (UL 1/2 streams) | 30 | eCDRX | 11.06 | 4.6 ~ 20.77 | Source 18 |
| InH | VR | 30 | eCDRX | 17.63 | 7.23 ~ 25.12 | Source 20, Source 18 |
| 45 | eCDRX | 25.64 | 25.63 ~ 25.65 | Source 20 |
| CG | 30 | eCDRX | 18.25 | 18.23 ~ 18.26 | Source 20 |
| AR (UL 1/2 streams) | 30 | eCDRX | 12.23 | 4.82 ~ 23.61% | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL+UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered eCDRX configurations in this table are listed in the following tables. Note 3: For comparison with R15/16 CDRX results, see sections 9.3.1 including baseline performance evaluation results. Note 4: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |

DU

**Observation**

* In FR1, DL+UL evaluation, DU, VR30, it was observed from Source 18, Source 7, Source 16 that the enhanced CDRX scheme provides the mean power saving gain of 11.64% in the range of 4.51 ~ 23.49% with *marginal* loss in DL+UL UE satisfied rate.

Table 80 Source specific data: eCDRX, FR1, DL+UL, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 239 | R1-2111046 | Note 1 | 16 | 10 | 4 |  | L | 7 | 13 |  |  | 100.00% | 9.09% |
| Source 18 | 240 | R1-2111046 | Note 2 | 16 | 6 | 4 |  | L | 7 | 13 |  |  | 100.00% | 23.49% |
| Source 18 | 247 | R1-2111046 | Note 1 | 16 | 10 | 4 |  | H | 13 | 13 |  |  | 92.06% | 7.05% |
| Source 18 | 248 | R1-2111046 | Noe 2 | 16 | 6 | 4 |  | H | 13 | 13 |  |  | 91.21% | 21.93% |
| Source 7 | 13 | R1-2112160 | eCDRX | 16.6666 | 13 | 0 |  | H | 4 | 4 |  |  | 85.00% | 6.00% |
| Source 16 | 56 | R1-2112720 | eCDRX | 16/17/17 | 10 | 10 |  | H | 11 | 11 | 97.66% | 84.85% | 82.86% | 9.43% |
| Source 16 | 57 | R1-2112720 | eCDRX | 16/17/17 | 12 | 12 |  | H | 11 | 11 | 97.58% | 96.62% | 94.20% | 4.51% |
| Note 1. e-CDRX adapting to the lower boundary of jitter  Note 2. e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL evaluation, DU, CG30, it was observed from Source 7 that the enhanced CDRX scheme provides the mean power saving gain of 6.0% with *marginal* loss in DL+UL UE satisfied rate.

Table 81 Source specific data: eCDRX, FR1, DL+UL, DU, CG30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT  (ms) | Additional Assumptions | Load: H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL+UL satisfied UE | Mean PSG of all UEs (%) |
| Source 7 | 4 | R1-2112160 | eCDRX | 16.6666 | 13 | 0 |  | H | 4 | 4 |  |  | 87.00% | 6.00% |

**Observation**

* In FR1, DL+UL evaluation, DU, AR30, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 11.06% in the rage of 4.60 ~ 20.77% with *marginal* loss in DL+UL UE satisfied rate.

Table 82 Source specific data: eCDRX, FR1, DL+UL, DU, AR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 271 | R1-2111046 | Note 3 | 16 | 10 | 4 | Note 1 | L | 5 | 9 |  |  | 96.19% | 9.60% |
| Source 18 | 272 | R1-2111046 | Note 4 | 16 | 6 | 4 | Note 1 | L | 5 | 9 |  |  | 95.87% | 20.77% |
| Source 18 | 279 | R1-2111046 | Note 3 | 16 | 10 | 4 | Note 1 | H | 9 | 9 |  |  | 92.06% | 6.66% |
| Source 18 | 280 | R1-2111046 | Note 4 | 16 | 6 | 4 | Note 1 | H | 9 | 9 |  |  | 90.83% | 14.04% |
| Source 18 | 303 | R1-2111046 | Note 3 | 16 | 10 | 4 | Note 2 | L | 4 | 7 |  |  | 100.00% | 5.28% |
| Source 18 | 304 | R1-2111046 | Note 4 | 16 | 6 | 4 | Note 2 | L | 4 | 7 |  |  | 100.00% | 14.34% |
| Source 18 | 311 | R1-2111046 | Note 3 | 16 | 10 | 4 | Note 2 | H | 7 | 7 |  |  | 91.38% | 4.60% |
| Source 18 | 312 | R1-2111046 | Note 4 | 16 | 6 | 4 | Note 2 | H | 7 | 7 |  |  | 90.48% | 13.19% |
| Note 1 AR with single UL stream.  Note 2 AR with two UL streams.  Note 3 e-CDRX adapting to the lower boundary of jitter  Note 4 e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | | | |

InH

**Observation**

* In FR1, DL+UL evaluation, InH, VR30, it was observed from Source 20, Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 17.63% in the range of 7.23 ~ 25.12% with *marginal* loss in DL+UL UE satisfied rate.

Table 83 Source specific data: eCDRX, FR1, DL+UL, InH, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 223 | R1-2111046 | Note 5 | 16 | 10 | 4 |  | L | 5 | 10 |  |  | 100.00% | 9.38% |
| Source 18 | 224 | R1-2111046 | Note 6 | 16 | 6 | 4 |  | L | 5 | 10 |  |  | 100.00% | 25.12% |
| Source 18 | 231 | R1-2111046 | Note 5 | 16 | 10 | 4 |  | H | 10 | 10 |  |  | 92.06% | 7.23% |
| Source 18 | 232 | R1-2111046 | Note 6 | 16 | 6 | 4 |  | H | 10 | 10 |  |  | 90.70% | 23.56% |
| Source 20 | 7 | R1-2111351 | Note 4 | 16 | 8 | 4 | Note 1,2 | H | 11 | 11 | 86.36% | 100.00% | 86.36% | 20.24% |
| Source 20 | 8 | R1-2111351 | Note 4 | 16 | 8 | 4 | Note 1,3 | H | 11 | 11 | 86.36% | 100.00% | 86.36% | 20.22% |
| Note 1. DL and UL were simulated separately and collected traces are combined as a single timeline for DL+UL joint power evaluation.  Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Qauntization) for UL power model  Note 4. eCDRX(change drx-startoffset per 100ms)  Note 5. e-CDRX adapting to the lower boundary of jitter  Note 6. e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL evaluation, InH, VR45, it was observed that Source 20 that the enhanced CDRX scheme provides the mean power saving gain of 25.64% in the range of 25.63 ~ 25.65% with *marginal* loss in DL+UL UE satisfied rate.

Table 84 Source specific data: eCDRX, FR1, DL+UL, InH, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 15 | R1-2111351 | Note 4 | 16 | 8 | 4 | Note 1,2 | H | 7 | 7 | 80.00% | 100.00% | 80.00% | 25.65% |
| Source 20 | 16 | R1-2111351 | Note 4 | 16 | 8 | 4 | Note 1,3 | H | 7 | 7 | 80.00% | 100.00% | 80.00% | 25.63% |
| Note 1. DL and UL were simulated separately and collected traces are combined as a single timeline for DL+UL joint power evaluation.  Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Qauntization) for UL power model  Note 4. eCDRX(change drx-startoffset per 100ms) | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL evaluation, InH, CG30, it was observed from Source 20 that the enhanced CDRX scheme provides the mean power saving gain of 18.25% in the range of 18.23 ~ 18.26% with *marginal* loss in DL+UL UE satisfied rate.

Table 85 Source specific data: eCDRX, FR1, DL+UL, InH, CG30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 23 | R1-2111351 | Note 4 | 16 | 8 | 4 | Note 1,2 | H | 12 | 12 | 85.40% | 100.00% | 85.40% | 18.26% |
| Source 20 | 24 | R1-2111351 | Note 4 | 16 | 8 | 4 | Note 1,3 | H | 12 | 12 | 85.40% | 100.00% | 85.40% | 18.23% |
| Note 1. DL and UL were simulated separately and merged for DL+UL joint power evaluation.  Note 2. Option 2(Linear interpolation in linear domain) for UL power model  Note 3. Option 1(two-step Qauntization) for UL power model  Note 4. eCDRX(change drx-startoffset per 100ms) | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL evaluation, InH, AR30, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 12.23% in the range of 4.82 ~ 23.61% with *marginal* loss in DL+UL UE satisfied rate.

Table 86 Source specific data: eCDRX, FR1, DL+UL, InH, AR30 (1 & 2 streams)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 255 | R1-2111046 | Note 1 | 16 | 10 | 4 | Note 3 | L | 5 | 10 |  |  | 100.00% | 10.76% |
| Source 18 | 256 | R1-2111046 | Note 2 | 16 | 6 | 4 | Note 3 | L | 5 | 10 |  |  | 100.00% | 23.61% |
| Source 18 | 263 | R1-2111046 | Note 1 | 16 | 10 | 4 | Note 3 | H | 10 | 10 |  |  | 91.90% | 6.95% |
| Source 18 | 264 | R1-2111046 | Note 2 | 16 | 6 | 4 | Note 3 | H | 10 | 10 |  |  | 90.83% | 14.77% |
| Source 18 | 287 | R1-2111046 | Note 1 | 16 | 10 | 4 | Note 4 | L | 5 | 10 |  |  | 100.00% | 6.29% |
| Source 18 | 288 | R1-2111046 | Note 2 | 16 | 6 | 4 | Note 4 | L | 5 | 10 |  |  | 100.00% | 16.65% |
| Source 18 | 295 | R1-2111046 | Note 1 | 16 | 10 | 4 | Note 4 | H | 10 | 10 |  |  | 91.59% | 4.82% |
| Source 18 | 296 | R1-2111046 | Note 2 | 16 | 6 | 4 | Note 4 | H | 10 | 10 |  |  | 90.56% | 13.96% |
| Note 1. e-CDRX adapting to the lower boundary of jitter  Note 2. e-CDRX adapting to quasi (ideal)-period position  Note 3. AR UL 1 stream  Note 4. AR UL 2 streams | | | | | | | | | | | | | | |

UMa

No results available for UMa

###### DL-only Evaluation

Table 87 Summary of FR1, DL-only power evaluation results for eCDRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | PSG(%), Note 1,4 | | Source |
| Mean (%) | Range (%) |
| DU | VR | 30 | eCDRX | 15.70 | 5.76 ~ 34.95 | Source 9, Source 18, Source 7, Source 16 |
| 45 | eCDRX | 18.14 | 9.72 ~ 27.26 | Source 18 |
| InH | VR | 30 | eCDRX | 20.812 | 9.36 ~ 29.43 | Source 20, Source 18 |
| 45 | eCDRX | 19.96 | 9.42 ~ 29.1 | Source 20, Source 18 |
| CG | 30 | eCDRX | 26.38 | 26.38 | Source 20 |
| UMa | VR | 30 | eCDRX | 18.88 | 10.05 ~ 29.06 | Source 18 |
| 45 | eCDRX | 18.22 | 9.86 ~ 27.33 | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered eCDRX configurations in this table are listed in the following tables. Note 3: For comparison with R15/16 CDRX results, see section 9.3.1 including baseline performance evaluation results. Note 4: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |

DU

**Observation**

* In FR1, DL only evaluation, DU, VR30, it was observed from Source 9, Source 18, Source 7, Source 16 that the enhanced CDRX scheme provides the mean power saving gain of 15.70% in the range of 5.76 ~ 34.95% with *marginal* loss in DL UE satisfied rate.

Table 88 Source specific data: eCDRX, FR1, DL-only, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | 6 | R1-2110811 | eCDRX | 17/17/16 | 8 | 4 | OnDurationStartOffset=-3ms | H | 5 | 5 | 80.29% | 17.84% |
| Source 9 | 7 | R1-2110811 | eCDRX | 17/17/16 | 8 | 4 | OnDurationStartOffset=-2ms | H | 5 | 5 | 86.10% | 19.29% |
| Source 9 | 8 | R1-2110811 | eCDRX | 17/17/16 | 10 | 4 | OnDurationStartOffset=-4ms | H | 5 | 5 | 86.86% | 13.00% |
| Source 9 | 9 | R1-2110811 | eCDRX | 17/17/16 | 8 | 8 | OnDurationStartOffset=-3ms | H | 5 | 5 | 85.43% | 7.93% |
| Source 9 | 10 | R1-2110811 | eCDRX | 17/17/16 | 8 | 8 | OnDurationStartOffset=-2ms | H | 5 | 5 | 90.95% | 9.77% |
| Source 9 | 11 | R1-2110811 | eCDRX | 17/17/16 | 10 | 8 | OnDurationStartOffset=-4ms | H | 5 | 5 | 91.62% | 5.76% |
| Source 9 | 21 | R1-2110811 | eCDRX | 17/17/16 | 8 | 4 | OnDurationStartOffset=-3ms | L | 3 | 5 | 93.65% | 18.65% |
| Source 9 | 22 | R1-2110811 | eCDRX | 17/17/16 | 8 | 4 | OnDurationStartOffset=-2ms | L | 3 | 5 | 96.51% | 20.17% |
| Source 9 | 23 | R1-2110811 | eCDRX | 17/17/16 | 10 | 4 | OnDurationStartOffset=-4ms | L | 3 | 5 | 97.62% | 13.63% |
| Source 9 | 24 | R1-2110811 | eCDRX | 17/17/16 | 8 | 8 | OnDurationStartOffset=-3ms | L | 3 | 5 | 95.40% | 8.46% |
| Source 9 | 25 | R1-2110811 | eCDRX | 17/17/16 | 8 | 8 | OnDurationStartOffset=-2ms | L | 3 | 5 | 98.10% | 10.52% |
| Source 9 | 26 | R1-2110811 | eCDRX | 17/17/16 | 10 | 8 | OnDurationStartOffset=-4ms | L | 3 | 5 | 98.41% | 6.26% |
| Source 18 | 36 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | L | 7 | 13 | 100.00% | 12.49% |
| Source 18 | 37 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | L | 7 | 13 | 100.00% | 27.49% |
| Source 18 | 44 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | H | 13 | 13 | 91.70% | 8.67% |
| Source 18 | 45 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | H | 13 | 13 | 91.21% | 21.72% |
| Source 7 | 18 | R1-2112160 | eCDRX | 16.6666 | 8 | 3 | 0 | H | 4 | 4 | 84.00% | 22.00% |
| Source 16 | 61 | R1-2112720 | eCDRX | 16/17/17 | 4 | 6 | 0 | H | 11 | 11 | 95.76% | 34.95% |
| Source 16 | 62 | R1-2112720 | eCDRX | 16/17/17 | 6 | 6 | 0 | H | 11 | 11 | 96.45% | 28.01% |
| Source 16 | 63 | R1-2112720 | eCDRX | 16/17/17 | 8 | 8 | 0 | H | 11 | 11 | 96.79% | 19.98% |
| Source 16 | 64 | R1-2112720 | eCDRX | 16/17/17 | 10 | 10 | 0 | H | 11 | 11 | 96.19% | 12.19% |
| Source 16 | 65 | R1-2112720 | eCDRX | 16/17/17 | 12 | 12 | 0 | H | 11 | 11 | 96.80% | 6.66% |
| Note 1. e-CDRX adapting to the lower boundary of jitter  Note 2. e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | |

**Observation**

* In FR1, DL only evaluation, DU, VR45, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 18.14% in the range of 9.72 ~ 27.26% with *marginal* loss in DL UE satisfied rate.

Table 89 Source specific data: eCDRX, FR1, DL-only, DU, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 52 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | L | 3 | 6 | 98.94% | 12.61% |
| Source 18 | 53 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | L | 3 | 6 | 99.47% | 27.26% |
| Source 18 | 60 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | H | 6 | 6 | 95.63% | 9.72% |
| Source 18 | 61 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | H | 6 | 6 | 94.18% | 22.95% |
| Note 1. e-CDRX adapting to the lower boundary of jitter  Note 2. e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | |

InH

**Observation**

* In FR1, DL only evaluation, InH, VR30, it was observed from Source 18, Source 20 that the enhanced CDRX scheme provides the mean power saving gain of 20.81% in the range of 9.36 ~ 29.43% with *marginal* loss in DL UE satisfied rate.

Table 90 Source specific data: eCDRX, FR1, DL-only, InH, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 4 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | L | 5 | 10 | 100.00% | 13.05% |
| Source 18 | 5 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | L | 5 | 10 | 100.00% | 28.38% |
| Source 18 | 12 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | H | 10 | 10 | 91.94% | 9.36% |
| Source 18 | 13 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | H | 10 | 10 | 91.25% | 23.84% |
| Source 20 | 30 | R1-2111351 | Note 3 | 16 | 8 | 4 |  | H | 11 | 11 | 86.36% | 29.43% |
| Note 1. e-CDRX adapting to the lower boundary of jitter  Note 2. e-CDRX adapting to quasi (ideal)-period position  Note 3. eCDRX(change drx-startoffset per 100ms) | | | | | | | | | | | | |

**Observation**

* In FR1, DL only evaluation, InH, VR45, it was observed from Source 18, Source 20 that the enhanced CDRX scheme provides the mean power saving gain of 19.96% in the range of 9.42 ~ 29.1% with *marginal* loss in DL UE satisfied rate.

Table 91 Source specific data: eCDRX, FR1, DL-only, InH, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 20 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | L | 3 | 5 | 100.00% | 11.96% |
| Source 18 | 21 | R1-2111046 | Note 2 | 16 | 6 | 4 | 0 | L | 3 | 5 | 100.00% | 26.74% |
| Source 18 | 28 | R1-2111046 | Note 1 | 16 | 10 | 4 | 0 | H | 5 | 5 | 96.67% | 9.42% |
| Source 18 | 29 | R1-2111046 | Note 3 | 16 | 6 | 4 | 0 | H | 5 | 5 | 93.89% | 22.61% |
| Source 20 | 34 | R1-2111351 | eCDRX(change drx-startoffset per 100ms) | 16 | 8 | 4 | 0 | H | 7 | 7 | 80% | 29.1% |
| Note 1. e-CDRX adapting to the lower boundary of jitter  Note 2. e-CDRX adapting to quasi (ideal) - period position  Note 3. e-CDRX adapting to quasi (ideal) - period position | | | | | | | | | | | | |

**Observations**

* In FR1, DL only evaluation, InH, CG30, it was observed from Source 20 that the enhanced CDRX scheme provides the mean power saving gain of 26.38% with *marginal* loss in DL UE satisfied rate.

Table 92 Source specific data: eCDRX, FR1, DL-only, InH, CG30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 38 | R1-2111351 | eCDRX(change  drx-startoffset  per 100ms) | 16 | 8 | 4 | 0 | H | 12 | 12 | 85.40% | 26.38% |

UMa

**Observations**

* In FR1, DL only evaluation, UMa, VR30, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 18.88% in the range of 10.05 ~ 29.06 % with *marginal* loss in DL UE satisfied rate.

Table 93 Source specific data: eCDRX, FR1, DL-only, UMa, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 68 | R1-2111046 | e-CDRX adapting to the lower boundary of jitter | 16 | 10 | 4 | 0 | L | 4 | 8 | 98.81% | 13.09% |
| Source 18 | 69 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 6 | 4 | 0 | L | 4 | 8 | 97.22% | 29.06% |
| Source 18 | 76 | R1-2111046 | e-CDRX adapting to the lower boundary of jitter | 16 | 10 | 4 | 0 | H | 8 | 8 | 93.35% | 10.05% |
| Source 18 | 77 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 6 | 4 | 0 | H | 8 | 8 | 91.87% | 23.33% |

**Observation**

* In FR1, DL only evaluation, UMa, VR45, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 18.22% in the range of 9.86 ~ 27.33% with *marginal* loss in DL UE satisfied rate.

Table 94 Source specific data: eCDRX, FR1, DL-only, UMa, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 84 | R1-2111046 | e-CDRX adapting to the lower boundary of jitter | 16 | 10 | 4 | 0 | L | 2 | 4 | 96.83% | 12.09% |
| Source 18 | 85 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 6 | 4 | 0 | L | 2 | 4 | 96.83% | 27.33% |
| Source 18 | 92 | R1-2111046 | e-CDRX adapting to the lower boundary of jitter | 16 | 10 | 4 | 0 | H | 4 | 4 | 94.05% | 9.86% |
| Source 18 | 93 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 6 | 4 | 0 | H | 4 | 4 | 91.67% | 23.59% |

###### UL-only Evaluation

Table 95 Summary of FR1, UL-only power evaluation results for eCDRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | PS Gain (%), Note 1,4 | | source |
| Mean (%) | Range (%) |
| DU | AR UL 1 / 2 streams | 10.2 | eCDRX | 25.56% | 19.89 ~ 32.02% | Source 18 |
| InH | AR UL 1 / 2 streams | 10.2 | eCDRX | 28.67% | 22.66 ~ 35.24% | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered eCDRX configurations in this table are listed in the following tables. Note 3: For comparison with R15/16 CDRX results, see section 9.3.1 including baseline performance evaluation results. Note 4: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |

DU

No results are available for FR1, UL-only, DU, VR/CG Pose only

**Observation**

* In FR1, UL only evaluation, DU, AR UL 1 & 2 streams, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 25.56% in the range of 19.89 ~ 32.02% with *marginal* loss in UL UE satisfied rate.

Table 96 Source specific data: eCDRX, FR1, UL-only, DU, AR UL 1 & 2 stream

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 164 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 1 stream | L | 5 | 9 | 95.56% | 32.02% |
| Source 18 | 169 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 1 stream | H | 9 | 9 | 91.60% | 28.99% |
| Source 18 | 213 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 2 streams | L | 4 | 7 | 100.00% | 21.35% |
| Source 18 | 218 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 2 streams | H | 7 | 7 | 90.48% | 19.89% |
| Note 1. e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | |

InH

Note results available for FR1, UL-only, InH, VR/CG Pose only.

**Observation**

* In FR1, UL only evaluation, DU, AR UL 1 & 2 streams, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 28.67% in the range of 23.66 ~ 35.24% with *marginal* loss in UL UE satisfied rate.

Table 97 Source specific data: eCDRX, FR1, UL-only, InH, AR UL 1 & 2 streams

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT  (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all UEs (%) |
| Source 18 | 151 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 1 stream | L | 7 | 13 | 100% | 35.24% |
| Source 18 | 156 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 1 stream | H | 13 | 13 | 92.38% | 33.64% |
| Source 18 | 203 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 2 stream | L | 6 | 12 | 100% | 23.66% |
| Source 18 | 208 | R1-2111046 | Note 1 | 16 | 6 | 4 | AR UL 2 stream | H | 12 | 12 | 91.90% | 22.17% |
| Note 1. e-CDRX adapting to quasi (ideal)-period position | | | | | | | | | | | | |

UMa

No results available for UMa

##### FR2

###### DL-only evaluation

Table 98 Summary of FR2, DL-only power evaluation results for eCDRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | PS Gain (%), Note 1,4 | | source |
| Mean (%) | Range (%) |
| DU | VR | 30 | eCDRX | 31.97% | 31.30 ~ 32.63% | Source 18 |
| 45 | eCDRX | 27.87% | 27.16 ~ 28.57% | Source 18 |
| InH | VR | 30 | eCDRX | 16.42% | 0.3 ~ 34.89% | Source 18, Source 16 |
| 45 | eCDRX | 28.81% | 28.37 ~ 29.25% | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered eCDRX configurations in this table are listed in the following tables. Note 3: For comparison with R15/16 CDRX results, see section 9.3.1 including baseline performance evaluation results. Note 4: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |

DU

**Observation**

* In FR2, DL only evaluation, DU, VR30, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 31.97% in the range of 31.30 ~ 32.63% with *marginal* loss in DL UE satisfied rate.

Table 99 Source specific data: eCDRX, FR2, DL-only, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT  (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all UEs (%) |
| Source 18 | 124 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 8 | 4 |  | L | 7 | 13 | 99.09% | 32.63% |
| Source 18 | 130 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 8 | 4 |  | H | 13 | 13 | 91.97% | 31.30% |

**Observation**

* In FR2, DL only evaluation, DU, VR45, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 27.87% in the range of 27.16 ~ 28.57% with *marginal* loss in DL UE satisfied rate.

Table 100 Source specific data: eCDRX, FR2, DL-only, DU, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT  (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all UEs (%) |
| Source 18 | 136 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 8 | 4 |  | L | 4 | 8 | 100.00% | 28.57% |
| Source 18 | 142 | R1-2111046 | e-CDRX adapting to quasi (ideal)-period position | 16 | 8 | 4 |  | H | 8 | 8 | 91.47% | 27.16% |

InH

**Observation**

* In FR2, DL only evaluation, InH, VR30, it was observed from Source 18, Source 16 that the enhanced CDRX scheme provides the mean power saving gain of 16.42% in the range of 0.3 ~ 34.89% with *marginal* loss in DL UE satisfied rate.

Table 101 Source specific data: eCDRX, FR2, DL-only, InH, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 100 | R1-2111046 | e-CDRX adapting to  quasi (ideal)- period position | 16 | 8 | 4 |  | L | 4 | 8 | 98.61% | 34.89% |
| Source 18 | 106 | R1-2111046 | e-CDRX adapting  to quasi (ideal)- period position | 16 | 8 | 4 |  | H | 8 | 8 | 90.97% | 33.68% |
| Source 16 | 77 | R1-2112720 | eCDRX | 16/16/15 | 4 | 4 |  | H | 7 | 7 | 90.00% | 18.93% |
| Source 16 | 78 | R1-2112720 | eCDRX | 16/16/15 | 8 | 8 |  | H | 7 | 7 | 90.00% | 7.71% |
| Source 16 | 79 | R1-2112720 | eCDRX | 16/16/15 | 8 | 16 |  | H | 7 | 7 | 90.00% | 0.30% |
| Source 16 | 81 | R1-2112720 | eCDRX | 16/16/15 | 4 | 4 |  | H | 7 | 7 | 27.00% | 25.10% |
| Source 16 | 82 | R1-2112720 | eCDRX | 16/16/15 | 8 | 8 |  | H | 7 | 7 | 84.00% | 8.28% |
| Source 16 | 83 | R1-2112720 | eCDRX | 16/16/15 | 8 | 16 |  | H | 7 | 7 | 88.00% | 2.43% |

**Observation**

* In FR2, DL only evaluation, InH, VR45, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 28.81% in the range of 28.37 ~ 29.25% with *marginal* loss in DL UE satisfied rate.

Table 102 Source specific data: eCDRX, FR2, DL-only, InH, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT  (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all UEs (%) |
| Source 18 | 112 | R1-2112720 | e-CDRX adapting to quasi (ideal)- period position | 16 | 8 | 4 |  | L | 2 | 4 | 100.00% | 29.25% |
| Source 18 | 118 | R1-2112720 | e-CDRX adapting to quasi (ideal)- period position | 16 | 8 | 4 |  | H | 4 | 4 | 91.67% | 28.37% |

###### UL-only evaluation

Table 103 Summary of FR2, UL-only power evaluation results for eCDRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme, Note 2 | PSG(%), Note 1,4 | | source |
| Mean (%) | Range (%) |
| DU | AR UL 1 stream | 10 | eCDRX | 32.35 | 31.72 ~ 32.97 | Source 18 |
| InH | AR UL 1 stream | 10 | eCDRX | 37.57% | 36.79 ~ 38.35 | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The CDRX configurations considered in each case could be different. The details of considered eCDRX configurations in this table are listed in the following tables. Note 3: For comparison with R15/16 CDRX results, see section 9.3.1 including baseline performance evaluation results. Note 4: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |

DU

**Observation**

* In FR2, UL only evaluation, DU, AR UL 1 stream, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 32.35% in the range of 31.72 ~ 32.97% with *marginal* loss in UL UE satisfied rate.

Table 104 Source specific data: eCDRX, FR2, UL-only, DU, AR UL 1 stream

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT  (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all UEs (%) |
| Source 18 | 193 | R1-2111046 | e-CDRX adapting to quasi (ideal)- period position | 16 | 8 | 4 |  | L | 4 | 8 | 99.60% | 32.97% |
| Source 18 | 198 | R1-2111046 | e-CDRX adapting to quasi (ideal)- period position | 16 | 8 | 4 |  | H | 8 | 8 | 90.67% | 31.72% |

InH

**Observation**

* In FR2, UL only evaluation, InH, AR UL 1 stream, it was observed from Source 18 that the enhanced CDRX scheme provides the mean power saving gain of 37.57% in the range of 36.79 ~ 38.35% with *marginal* loss in UL UE satisfied rate.

Table 105 Source specific data: eCDRX, FR2, UL-only, InH, AR UL 1 stream

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 180 | R1-2111046 | e-CDRX adapting  to quasi (ideal)- period position | 16 | 8 | 4 |  | L | 4 | 8 | 100.00% | 38.35% |
| Source 18 | 185 | R1-2111046 | e-CDRX adapting  to quasi (ideal)- period position | 16 | 8 | 4 |  | H | 8 | 8 | 92.36% | 36.79% |

#### Jitter Handling

This section provides the performance impact of potential jitter handling mechanisms.

XR DL traffic arrival has jitter which makes exact frame arrival timing random due to random delay contributed from frame encoders in Edge server, network transfer time in core network, etc. If traffic arrives too early, then packets should be delayed until UE wakes up from CDRX off state, which increases the latency for the packet transmission. This can potentially negatively affect the capacity given the tight PDB in DL. DL burst arrives later than the expected time of arrival (where DRX On duration start offset is configured), the UE should wait for DL burst arrival while performing unnecessary PDCCH monitoring. The unnecessary PDCCH monitoring increases UE power consumption. Jitter handling mechanisms address these issues. In this section, following potential jitter handling schemes have been captured.

* eCDRX with jitter handling
* Enhanced PDCCH monitoring adaption with jitter handling
* Enhanced CDRX with additional active time
* Fast/dense WUS for jitter handling with eCDRX

The general idea for jitter handling is to make DRX On duration start offset/PDCCH skipping end duration/new Active Time be aligned with actual DL traffic arrival time as much as possible by L1 indication or prediction based on traffic arrival statistics. This power saving gain captured in this section show the potential performance gain when jitter can be properly handled by such schemes.

##### DL+UL Evaluation

Table 106 Summary of PS schemes for jitter handlings, DL+UL evaluation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | PS scheme | PSG(%), Note 1, 2 | | Source |
| Mean (%) | Range (%) |
| DU | VR | 30 | eCDRX with jitter handling | 30.50 | 28.12 ~ 32.88 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 40.64 | 37.65 ~ 43.63 | Source 18 |
| AR | 30 | eCDRX with jitter handling | 23.36 | 20.65 ~ 27.46 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 34.11 | 30.63 ~ 40.21 | Source 18 |
| InH | VR | 30 | eCDRX with jitter handling | 32.14 | 29.92 ~ 34.36 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 40.74 | 39.86 ~ 41.62 | Source 18 |
| enhanced CDRX with additional active time | 20.50 | 20.50 | Source 20 |
| 45 | eCDRX with additional active time | 25.05 | 25.0 ~ 25.10 | Source 20 |
| AR | 30 | eCDRX with jitter handling | 24.30 | 21.43 ~ 30.41 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 34.04 | 30.45 ~ 39.29 | Source 18 |
| CG | 30 | eCDRX with additional active time | 21.35 | 21.3 ~ 21.4% | Source 20 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | |

**Observations**

* In FR1, DL+UL evaluation, DU, VR30, it was observed from Source 18 that the eCDRX with jitter handling scheme provides the mean power saving gain of 30.50% in the range of 28.12 ~ 32.88% with *marginal* loss in DL+UL UE satisfied rate.
* In FR1, DL+UL evaluation, DU, VR30, it was observed from Source 18 that the enhanced PDCCH monitoring adaptation with jitter handling scheme provides the mean power saving gain of 40.64% in the range of 37.65 ~ 43.63% with *marginal* loss in DL+UL UE satisfied rate.

Table 107 Source specific data: FR1, DL+UL, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 241 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | L | 7 | 13 |  |  | 100.00% | 32.88% |
| Source 18 | 243 | R1-2111046 | enhanced PDCCH monitoring adaptation with jitter handling | 0 | 0 | 0 |  | L | 7 | 13 |  |  | 100.00% | 43.63% |
| Source 18 | 249 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | H | 13 | 13 |  |  | 91.82% | 28.12% |
| Source 18 | 251 | R1-2111046 | enhanced PDCCH monitoring adaptation with jitter handling | 0 | 0 | 0 |  | H | 13 | 13 |  |  | 91.94% | 37.65% |

**Observations**

* In FR1, DL+UL evaluation, DU, AR30, it was observed from Source 18 that the eCDRX with jitter handling scheme provides the mean power saving gain of 23.36% in the range of 20.65 ~ 27.46% with *marginal* loss in DL+UL UE satisfied rate.
* In FR1, DL+UL evaluation, DU, AR30, it was observed from Source 18 that the enhanced PDCCH monitoring with jitter handling scheme provides the mean power saving gain of 34.11% in the range of 30.63 ~ 40.21% with *marginal* loss in DL+UL UE satisfied rate.

Table 108 Source specific data: FR1, DL+UL, DU, AR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 273 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 1 | L | 5 | 9 |  |  | 95.87% | 27.46% |
| Source 18 | 275 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 1 | L | 5 | 9 |  |  | 95.87% | 40.21% |
| Source 18 | 281 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 1 | H | 9 | 9 |  |  | 91.71% | 20.65% |
| Source 18 | 283 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 1 | H | 9 | 9 |  |  | 91.89% | 33.36% |
| Source 18 | 305 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 2 | L | 4 | 7 |  |  | 100.00% | 24.18% |
| Source 18 | 307 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 2 | L | 4 | 7 |  |  | 100.00% | 32.25% |
| Source 18 | 313 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 2 | H | 7 | 7 |  |  | 91.16% | 21.14% |
| Source 18 | 315 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 2 | H | 7 | 7 |  |  | 91.38% | 30.63% |
| Note 1 AR with single UL stream.  Note 2 AR with two UL streams.  Note 3. eCDRX with jitter handling  Note 4. enhanced PDCCH monitoring adaptation with jitter handling | | | | | | | | | | | | | | |

**Observations**

* In FR1, DL+UL evaluation, InH, VR30, it was observed from Source 18 that the eCDRX with jitter handling scheme provides the mean power saving gain of 32.14% in the range of 29.92 ~ 34.36% with *marginal* loss in DL+UL UE satisfied rate.
* In FR1, DL+UL evaluation, InH, VR30, it was observed from Source 18 that the enhanced PDCCH monitoring adaptation with jitter handling scheme provides the mean power saving gain of 40.64% in the range of 37.65 ~ 43.63% with *marginal* loss in DL+UL UE satisfied rate.
* In FR1, DL+UL evaluation, InH, VR30, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 20.50% with *marginal* loss in DL+UL UE satisfied rate.

Table 109 Source specific data: FR1, DL+UL, InH, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 225 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | L | 5 | 10 |  |  | 100.00% | 34.36% |
| Source 18 | 227 | R1-2111046 | Note 2 | 0 | 0 | 0 |  | L | 5 | 10 |  |  | 100.00% | 41.62% |
| Source 18 | 233 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | H | 10 | 10 |  |  | 91.27% | 29.92% |
| Source 18 | 235 | R1-2111046 | Note 2 | 0 | 0 | 0 |  | H | 10 | 10 |  |  | 91.11% | 39.86% |
| Source 20 | 9 | R1-2111351 | Note 3 | 16 | 6 | 4 |  | H | 11 | 11 | 91.67% | 100.00% | 91.67% | 20.50% |
| Source 20 | 10 | R1-2111351 | Note 3 | 16 | 6 | 4 |  | H | 11 | 11 | 91.67% | 100.00% | 91.67% | 20.50% |
| Note 1. eCDRX with jitter handling  Note 2. enhanced PDCCH monitoring adaptation with jitter handling  Note 3. eCDRX(change drx-startoffset per 100ms and additional active time) | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL evaluation, InH, VR45, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 25.05% in the range of 25.0 ~ 25.10% with *marginal* loss in DL+UL UE satisfied rate.

Table 110 Source specific data: FR1, DL+UL, InH, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Source | data row index | Tdoc source | Power saving  scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 17 | R1-2111351 | Note 1 | 16 | 6 | 4 |  | H | 7 | 7 | 86.30% | 100.00% | 86.30% | 25.10% |
| Source 20 | 18 | R1-2111351 | Note 1 | 16 | 6 | 4 |  | H | 7 | 7 | 86.30% | 100.00% | 86.30% | 25.00% |
| Note 1. eCDRX(change drx-startoffset per 100ms and additional active time) | | | | | | | | | | | | | | |

**Observations**

* In FR1, DL+UL evaluation, InH, AR30, it was observed from Source 18 that the eCDRX with jitter handling scheme provides the mean power saving gain of 24.30% in the range of 21.43 ~ 30.41% with *marginal* loss in DL+UL UE satisfied rate.
* In FR1, DL+UL evaluation, InH, AR30, it was observed from Source 18 that the enhanced PDCCH monitoring adaptation with jitter handling scheme provides the mean power saving gain of 34.04% in the range of 30.45 ~ 39.29% with *marginal* loss in DL+UL UE satisfied rate.

Table 111 Source specific data: FR1, DL+UL, InH, AR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 257 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 1 | L | 5 | 10 |  |  | 100.00% | 30.41% |
| Source 18 | 259 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 1 | L | 5 | 10 |  |  | 100.00% | 39.29% |
| Source 18 | 265 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 1 | H | 10 | 10 |  |  | 90.95% | 21.88% |
| Source 18 | 267 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 1 | H | 10 | 10 |  |  | 91.67% | 34.46% |
| Source 18 | 289 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 2 | L | 5 | 10 |  |  | 100.00% | 23.46% |
| Source 18 | 291 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 2 | L | 5 | 10 |  |  | 100.00% | 31.97% |
| Source 18 | 297 | R1-2111046 | Note 3 | 16 | 3 | 3 | Note 2 | H | 10 | 10 |  |  | 90.79% | 21.43% |
| Source 18 | 299 | R1-2111046 | Note 4 | 0 | 0 | 0 | Note 2 | H | 10 | 10 |  |  | 91.11% | 30.45% |
| Note 1. AR with single UL stream.  Note 2. AR with two UL streams.  Note 3. eCDRX with jitter handling  Note 4. enhanced PDCCH monitoring adaptation with jitter handling | | | | | | | | | | | | | | |

**Observation**

* In FR1, DL+UL evaluation, InH, CG30, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 21.35% in the range of 21.3 ~ 21.4% with *marginal* loss in DL+UL UE satisfied rate.

Table 112 Source specific data: FR1, DL+UL, InH, CG30

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | % of UL satisfied UE | % of DL + UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 25 | R1-2111351 | Note 1 | 16 | 6 | 4 |  | H | 12 | 12 | 88.19% | 100.00% | 88.19% | 21.40% |
| Source 20 | 26 | R1-2111351 | Note 1 | 16 | 6 | 4 |  | H | 12 | 12 | 88.19% | 100.00% | 88.19% | 21.30% |
| Note 1. eCDRX(change drx-startoffset per 100ms and additional active time) | | | | | | | | | | | | | | |

##### DL-only Evaluation

###### FR1

Table 113 Summary of PS schemes for jitter handlings, FR1, DL-only

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| FR | Scen-arios | App | DL Bit rate (Mbps) | PS scheme | PSG(%), Note 1,2 | | Source |
| Mean (%) | Range (%) |
| FR1 | DU | VR | 30 | fast/dense WUS for jitter handling with eCDRX | 31 |  | Source 16 |
| eCDRX with jitter handling | 29.60 | 25.11~34.08 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 42.61 | 37.83~47.38 | Source 18 |
| 45 | eCDRX with jitter handling | 32.27 | 29.30~35.23 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 41.23 | 37.26~45.19 | Source 18 |
| Enhanced CDRX with additional active time | 29.9 | 29.9 | Source 20 |
| InH | VR | 30 | enhanced CDRX with additional active time | 29.8 | 29.8 | Source 20 |
| eCDRX with jitter handling | 32.21 | 29.06~35.35 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 44.96 | 41.03~48.88 | Source 18 |
| 45 | eCDRX with jitter handling | 32.11 | 29.12 ~ 35.09 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 42.04 | 38.76 ~ 45.32 | Source 18 |
| enhanced CDRX with additional active time | 29.7 | 29.7 | Source 20 |
| CG | 30 | eCDRX with additional active time | 32.4 | 32.4 | Source 20 |
| UMa | VR | 30 | eCDRX with jitter handling | 32.40 | 29.29~35.51 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 43.86 | 40.59~47.13 | Source 18 |
| 45 | eCDRX with jitter handling | 30.97 | 29.51~32.43 | Source 18 |
| Enhanced PDCCH monitoring adaptation with jitter handling | 40.22 | 37.18~43.26 | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

DU

**Observations**

* In FR1, DL evaluation, DU, VR30, it was observed from Source 16 that the fast/dense WUS for jitter handling + eCDRX scheme provides the mean power saving gain of 31.00% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR30, it was observed from Source 18 that the eCDRX for jitter handling scheme provides the mean power saving gain of 29.60% in the range of 25.11~34.08% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR30, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 42.61% in the range of 37.83~47.38% with *marginal* loss in DL UE satisfied rate.

Table 114 Source specific data:FR1, DL, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 59 | R1-2112720 | Fast / dense WUS  for jitter handling + eCDRX | 16/17/17 | 6 | 6 | 0 | H | 11 | 11 | 99.30% | 31.00% |
| Source 18 | 38 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 | 0 | L | 7 | 13 | 100.00% | 34.08% |
| Source 18 | 40 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | 0 | 0 | 0 | 0 | L | 7 | 13 | 100.00% | 47.38% |
| Source 18 | 46 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 | 0 | H | 13 | 13 | 91.70% | 25.11% |
| Source 18 | 48 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | 0 | 0 | 0 | 0 | H | 13 | 13 | 92.43% | 37.83% |

**Observations**

* In FR1, DL evaluation, DU, VR45, it was observed from Source 18 that the eCDRX for jitter handling scheme provides the mean power saving gain of 32.27% in the range of 29.30~35.23% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR45, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 41.23% in the range of 37.26~45.19% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR45, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 29.9% with *marginal* loss in DL UE satisfied rate.

Table 115 Source specific data:FR1, DL, DU, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 54 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | L | 3 | 6 | 97.88% | 35.23% |
| Source 18 | 56 | R1-2111046 | Note 2 | - | - | - |  | L | 3 | 6 | 100.00% | 45.19% |
| Source 18 | 62 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | H | 6 | 6 | 95.24% | 29.30% |
| Source 18 | 64 | R1-2111046 | Note 2 | - | - | - |  | H | 6 | 6 | 95.63% | 37.26% |
| Source 20 | 41 | R1-2111351 | Note 3 | 16 | 6 | 4 |  | H | 7 | 7 | 90% | 29.9% |
| Note 1. eCDRX with jitter handling  Note 2. enhanced PDCCH monitoring adaptation with jitter handling  Note 3. enhanced eCDRX(change drx startoffset per 100ms and additional active time) | | | | | | | | | | | | |

InH

**Observations**

* In FR1, DL evaluation, InH, VR30, it was observed from Source 18 that the eCDRX for jitter handling scheme provides the mean power saving gain of 32.21% in the range of 29.06~35.35% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, InH, VR30, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 44.96% in the range of 41.03~48.88% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, InH, VR30, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 29.8% with *marginal* loss in DL UE satisfied rate.

Table 116 Source specific data:FR1, DL, InH, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 6 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | L | 5 | 10 | 100.00% | 35.35% |
| Source 18 | 8 | R1-2111046 | Note 2 | - | - | - |  | L | 5 | 10 | 100.00% | 48.88% |
| Source 18 | 14 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | H | 10 | 10 | 91.67% | 29.06% |
| Source 18 | 16 | R1-2111046 | Note 2 | - | - | - |  | H | 10 | 10 | 92.50% | 41.03% |
| Source 20 | 31 | R1-2111351 | Note 3 | 16 | 6 | 4 |  | H | 11 | 11 | 91.67% | 29.8% |
| Note 1. eCDRX with jitter handling  Note 2. enhanced PDCCH monitoring adaptation with jitter handling  Note 3. enhanced eCDRX(change drx startoffset per 100ms and additional active time) | | | | | | | | | | | | |

**Observations**

* In FR1, DL only evaluation, InH, VR45, it was observed from Source 18 that the eCDRX for jitter handling provides the mean power saving gain of 32.11% in the range of 29.12 ~ 35.09% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR45, it was observed from Source 18 that the enhanced PDCCH monitoring adaptation with jitter handling provides the mean power saving gain of 42.04% in the range of 38.76 ~ 45.32% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL only evaluation, InH, VR45, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 29.7% with *marginal* loss in DL UE satisfied rate.

Table 117 Source specific data: FR1, DL-only, InH, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 22 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | L | 3 | 5 | 100.00% | 35.09% |
| Source 18 | 24 | R1-2111046 | Note 2 | 0 | 0 | 0 |  | L | 3 | 5 | 100.00% | 45.32% |
| Source 18 | 30 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | H | 5 | 5 | 94.44% | 29.12% |
| Source 18 | 32 | R1-2111046 | Note 2 | 0 | 0 | 0 |  | H | 5 | 5 | 96.67% | 38.76% |
| Source 20 | 35 | R1-2111351 | Note 3 | 16 | 6 | 4 |  | H | 7 | 7 | 86.3% | 29.7% |
| Note 1. eCDRX with jitter handling  Note 2. enhanced PDCCH monitoring adaptation with jitter handling  Note 3. enhanced eCDRX(change drx startoffset per 100ms and additional active time) | | | | | | | | | | | | |

**Observation**

* In FR1, DL only evaluation, InH, CG30, it was observed from Source 20 that the enhanced CDRX with additional active time scheme provides the mean power saving gain of 32.4% with *marginal* loss in DL UE satisfied rate.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 39 | R1-2111351 | enhanced eCDRX(change drx startoffset per 100ms and additional active time) | 16 | 6 | 4 |  | H | 12 | 12 | 88.19% | 32.4% |

UMa

**Observations**

* In FR1, DL evaluation, UMa, VR30, it was observed from Source 18 that the eCDRX for jitter handling scheme provides the mean power saving gain of 32.40% in the range of 29.29~35.51% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, UMa, VR30, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 43.86% in the range of 40.59~47.13% with *marginal* loss in DL UE satisfied rate.

Table 118 Source specific data:FR1, DL, Uma, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 70 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | L | 4 | 8 | 98.02% | 35.51% |
| Source 18 | 72 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | - | - | - |  | L | 4 | 8 | 98.81% | 47.13% |
| Source 18 | 78 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | H | 8 | 8 | 93.25% | 29.29% |
| Source 18 | 80 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | - | - | - |  | H | 8 | 8 | 93.75% | 40.59% |

**Observations**

* In FR1, DL evaluation, UMa, VR45, it was observed from Source 18 that the eCDRX for jitter handling scheme provides the mean power saving gain of 30.97% in the range of 29.51~32.43% with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, UMa, VR45, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 40.22% in the range of 37.18~43.26% with *marginal* loss in DL UE satisfied rate.

Table 119 Source specific data:FR1, DL, UMa, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 86 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | L | 2 | 4 | 96.83% | 32.43% |
| Source 18 | 88 | R1-2111046 | Note 2 | - | - | - |  | L | 2 | 4 | 96.83% | 43.26% |
| Source 18 | 94 | R1-2111046 | Note 1 | 16 | 3 | 3 |  | H | 4 | 4 | 92.46% | 29.51% |
| Source 18 | 96 | R1-2111046 | Note 2 | - | - | - |  | H | 4 | 4 | 94.05% | 37.18% |
| Note 1. eCDRX with jitter handling  Note 2. enhanced PDCCH monitoring adaptation with jitter handling | | | | | | | | | | | | |

###### FR2

DU

Table 120 Summary of PS schemes for jitter handlings, FR2, DL-only

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| FR | Scen-arios | App | DL Bit rate (Mbps) | PS scheme | PS Gain (%), Note 1,2 | | Source |
| Mean (%) | Range (%) |
| FR2 | DU | VR | 30 | Enhanced PDCCH monitoring adaptation with jitter handling | 57.58 | 55.51~59.65 | Source 18 |
| 45 | Enhanced PDCCH monitoring adaptation with jitter handling | 52.03 | 50.46~53.59 | Source 18 |
| InH | VR | 30 | Enhanced PDCCH monitoring adaptation with jitter handling | 59.69 | 57.53~61.85 | Source 18 |
| 45 | Enhanced PDCCH monitoring adaptation with jitter handling | 53.32 | 52.14~54.50 | Source 18 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of UL satisfied UE. Note 2: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

**Observation**

* In FR2, DL evaluation, DU, VR30, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 57.58% in the range of 55.51~59.65% with *marginal* loss in DL UE satisfied rate.

Table 121 Source specific data:FR2, DL, DU, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 126 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | - | - | - |  | L | 7 | 13 | 99.55% | 59.65% |
| Source 18 | 132 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | H | 13 | 13 | 95.24% | 55.51% |

**Observation**

* In FR2, DL evaluation, DU, VR45, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 52.03% in the range of 50.46~53.59% with *marginal* loss in DL UE satisfied rate.

Table 122 Source specific data:FR2, DL, DU, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 138 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | - | - | - |  | L | 4 | 8 | 100.00% | 53.59% |
| Source 18 | 144 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | H | 8 | 8 | 93.25% | 50.46% |

InH

**Observation**

* In FR2, DL evaluation, InH, VR30, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 59.69% in the range of 57.53~61.85% with *marginal* loss in DL UE satisfied rate.

Table 123 Source specific data:FR2, DL, InH, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 102 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | - | - | - |  | L | 4 | 8 | 100.00% | 61.85% |
| Source 18 | 108 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | H | 8 | 8 | 92.01% | 57.53% |

**Observation**

* In FR2, DL evaluation, InH, VR45, it was observed from Source 18 that the enhanced PDCCH for jitter handling scheme provides the mean power saving gain of 53.32% in the range of 52.14~54.50% with *marginal* loss in DL UE satisfied rate.

Table 124 Source specific data:FR2, DL, InH, VR45

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 18 | 114 | R1-2111046 | enhanced PDCCH  monitoring adaptation  with jitter handling | - | - | - |  | L | 2 | 4 | 100.00% | 54.50% |
| Source 18 | 120 | R1-2111046 | eCDRX with jitter handling | 16 | 3 | 3 |  | H | 4 | 4 | 94.44% | 52.14% |

#### XR dedicated PDCCH Monitoring Window

In this section, we capture the evaluation results for dynamic scheduling of XR specific dedicated PDCCH monitoring window scheme with PDCCH skipping and go-to-sleep. In this scheme, XR dedicated PDCCH monitoring window/cycle is defined, which is disassociated with the DRX configuration, but aligned with XR traffic pattern. Dynamic scheduling with XR specific dedicated PDCCH monitoring window scheme would have UE monitor PDCCH in the given window in both within Active time and outside Active Time when DRX is configured.

Table 125 Summary of source specific data for XR dedicated PDCCH Monitoring Window, FR1, InH, VR

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | Direction | Assumptions | PSG(%), Note 1,2 | | Source |
| Mean (%) | Range (%) |
| InH | VR | 30 | DL | PDCCH monitoring window with PDCCH skipping and go-to-sleep | 26.73 | 24.01~29.44 | Source 3 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The PSG is computed with respect to power consumption of AlwaysOn scheme. | | | | | | | |

**Observation**

* In FR1, DL evaluation, DU, VR30, it was observed from Source 3 that the XR dedicated PDCCH monitoring window scheme provides the mean power saving gain of 26.73% in the range of 24.01~29.44% with *marginal* loss in DL UE satisfied rate.

Table 126 Source specific data: FR1, DL, InH, VR30, XR dedicated PDCCH monitoring window

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional  Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 3 | 4 | R1-2111234 | XR-dedicated PDCCH  monitoring window  with go-to-sleep | 0 | 0 | 0 | Monitoring cycle  =16.67ms;  Monitoring window=16.67ms; | H | 12 | 12 | 90.00% | 24.01% |
| Source 3 | 5 | R1-2111234 | XR-dedicated PDCCH  monitoring window  with PDCCH skipping  and go-to-sleep | 0 | 0 | 0 | Monitoring cycle =16.67ms;  Monitoring window=16.67ms; | H | 12 | 12 | 89.16% | 29.44% |

#### Additional Packet Delay Budget with Playout Buffer

This section captures the evaluation results of the impact of additional PDB (APDB) on UE power consumption. The XR application layer at UE would have the XR packet playout buffer to battle the delay jitter and out-of sequence XR packet arrival. The playout buffer at UE would ensure the in-sequence and time interval alignment of XR video frames when it plays out to the user. The proposed scheme is for UE to feedback not only the XR-application type (XR-application awareness) but also the implemented playout buffer at application layer to the gNB. If the size of playout buffer is fed back from UE and known at gNB, then, additional PDB could be used for packet scheduling, which could give gNB more time to schedule UE within the delay budget requirements of the XR service and more likely to successfully transmit packets with link adaptation gain. The addition of the power saving techniques, such as PDCCH skipping and go-to-sleep, could help UE in achieving power saving by reducing PDCCH monitoring during extended scheduling period by additional PDB.

**Observation**

* In FR1, DL evaluation, DU, VR30, it was observed from Source 3 that additional packet delay budget with play out buffer provides the mean power saving gain of 30.42% in the range of 26.43~34.56% with *marginal* loss in DL UE satisfied rate.

Table 127 Source specific data for additional packet delay budget with play out buffer: FR1, DU, DL, VR30

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Additional Assumptions | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%), Note 1 |
| Source 3 | 6 | R1-2111234 | CDRX(16,8,4)  with go-to-sleep  with UE playout buffer | 0 | 0 | 0 |  | H | 12 | 12 | 94.17% | 26.43% |
| Source 3 | 7 | R1-2111234 | C-DRX(16,8,4)  with PDCCH skipping  and go-to-sleep  with UE playout buffer | 0 | 0 | 0 |  | H | 12 | 12 | 93.30% | 34.56% |
| Source 3 | 8 | R1-2111234 | PDCCH skipping  with UE playout buffer | 0 | 0 | 0 |  | H | 12 | 12 | 91.67% | 30.26% |
| Note 1, PSG is computed w.r.t scheme is Always-on scheme and gNB does not have the additional PDB from UE feedback on the Playout buffer | | | | | | | | | | | | |

#### Traffic Arrival Offset Staggering

This section captures the evaluation results of the impact of different traffic arrival offsets across different UEs. The XR DL traffic arrival offsets potentially determines the time UE wakes up and how long the UE need to be awake. When the frame arrivals are aligned with each other, the XR traffic of the UEs contend for resources, decreasing the capacity and increasing power consumption due to the increased UE awake time. If the frame arrivals of UEs are staggered relative to each other, the cell can serve UEs minimizing the overlap of scheduling durations of each UE, which consequently reduce UEs’ awake time and make UEs stay longer in sleep state.

Table 128 Summary of source specific data for traffic arrival offset staggering, FR1, DU, VR, DL

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Scen-arios | App | DL Bit rate (Mbps) | Fps | Traffic arrival offset | PSG(%), Note 1,2 | | Source |
| Mean (%) | Range (%) |
| DU | VR | 30 | 60 | All Sync | 0% |  | Source 16 |
| Random | 5.96% | 2.64~9.27% | Source 16 |
| Evenly spaced | 6.37% | 2.80~9.94% | Source 16 |
| 30 | All Sync | 0% |  | Source 16 |
| Random | 8.48% | 2.74~14.21% | Source 16 |
| Evenly spaced | 9.18% | 3.03~15.33% | Source 16 |
| 45 | 60 | All Sync | 0% |  | Source 16 |
| Random | 5.41% | 2.69~8.12% | Source 16 |
| Evenly spaced | 5.7% | 2.85~8.55% | Source 16 |
| 30 | All Sync | 0% |  | Source 16 |
| Random | 6.49% | 2.37~10.61% | Source 16 |
| Evenly spaced | 8.46% | 3.09~13.82% | Source 16 |
| Note 1 : PSG was computed for the cases only with marginal loss in % of DL satisfied UE. Note 2: The PSG is computed with respect to power consumption of All Sync scheme (AlwaysOn scheme with all UEs have the same traffic arrival offset). | | | | | | | |

**Observations**

* In FR1, DL evaluation, DU, VR30Mbps-60Fps, it was identified from Source 16 that making random traffic arrival offset provide the mean power saving gain of 5.96% in the range of 2.64~9.27% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR30Mbps-60Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 6.37% in the range of 2.80~9.94% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.

Table 129 Source specific data: FR1, DU, DL, VR30Mbps-60Fps

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Traffic arrival offset | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 93 | R1-2112720 | Always ON | 0 | 0 | 0 | All Sync | H | 7 | 7 | 90.00% | 0.00% |
| Source 16 | 94 | R1-2112720 | Always ON | 0 | 0 | 0 | Random | H | 7 | 8 | 100.00% | 2.64% |
| Source 16 | 95 | R1-2112720 | Always ON | 0 | 0 | 0 | Evenly Spaced | L | 7 | 9 | 100.00% | 2.80% |
| Source 16 | 105 | R1-2112720 | Note 1 | 0 | 0 | 0 | All Sync | H | 7 | 7 | 90.00% | 0.00% |
| Source 16 | 106 | R1-2112720 | Note 1 | 0 | 0 | 0 | Random | H | 7 | 8 | 100.00% | 9.27% |
| Source 16 | 107 | R1-2112720 | Note 1 | 0 | 0 | 0 | Evenly Spaced | L | 7 | 9 | 100.00% | 9.94% |
| Note 1. Genie (CDRX with ideal PDCCH Skipping) | | | | | | | | | | | | |

**Observations**

* In FR1, DL evaluation, DU, VR30Mbps-30Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 8.48% in the range of 2.74~14.21% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR30Mbps-30Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 9.18% in the range of 3.03~15.33% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.

Table 130 Source specific data: FR1, DU, DL, VR30Mbps-30Fps

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Traffic arrival offset | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 99 | R1-2112720 | Always ON | 0 | 0 | 0 | All Sync | H | 3 | 3 | 92.00% | 0% |
| Source 16 | 100 | R1-2112720 | Always ON | 0 | 0 | 0 | Random | L | 3 | 6 | 98.00% | 2.74% |
| Source 16 | 101 | R1-2112720 | Always ON | 0 | 0 | 0 | Evenly Spaced | L | 3 | 8 | 98.00% | 3.03% |
| Source 16 | 111 | R1-2112720 | Note 1 | 0 | 0 | 0 | All Sync | H | 3 | 3 | 92.00% | 0% |
| Source 16 | 112 | R1-2112720 | Note 1 | 0 | 0 | 0 | Random | L | 3 | 6 | 98.00% | 14.21% |
| Source 16 | 113 | R1-2112720 | Note 1 | 0 | 0 | 0 | Evenly Spaced | L | 3 | 8 | 98.00% | 15.33% |
| Note 1. Genie (CDRX with ideal PDCCH Skipping) | | | | | | | | | | | | |

**Observations**

* In FR1, DL evaluation, DU, VR45Mbps-60Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 5.41% in the range of 2.69~8.12% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR45Mbps-60Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 5.7% in the range of 2.85~8.55% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.

Table 131 Source specific data: FR1, DL, VR45Mbps-60Fps

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Traffic arrival offset | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 90 | R1-2112720 | Always ON | 0 | 0 | 0 | All Sync | H | 4 | 4 | 98.00% | 0% |
| Source 16 | 91 | R1-2112720 | Always ON | 0 | 0 | 0 | Random | H | 4 | 5 | 99.00% | 2.69% |
| Source 16 | 92 | R1-2112720 | Always ON | 0 | 0 | 0 | Evenly Spaced | L | 4 | 6 | 100.00% | 2.85% |
| Source 16 | 102 | R1-2112720 | Note 1 | 0 | 0 | 0 | All Sync | H | 4 | 4 | 98.00% | 0% |
| Source 16 | 103 | R1-2112720 | Note 1 | 0 | 0 | 0 | Random | H | 4 | 5 | 99.00% | 8.12% |
| Source 16 | 104 | R1-2112720 | Note 1 | 0 | 0 | 0 | Evenly Spaced | L | 4 | 6 | 100.00% | 8.55% |
| Note 1. Genie (CDRX with ideal PDCCH Skipping) | | | | | | | | | | | | |

**Observations**

* In FR1, DL evaluation, DU, VR45Mbps-30Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 6.49% in the range of 2.37~10.61% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.
* In FR1, DL evaluation, DU, VR45Mbps-30Fps, it was identified from Source 16 that making evenly spaced traffic arrival offset provide the mean power saving gain of 8.46% in the range of 3.09~13.82% with respect to all synced traffic arrival offset with *marginal* loss in DL UE satisfied rate.

Table 132 Source specific data: FR1, DU, DL, VR45Mbps-30Fps

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | CDRX cycle (ms) | ODT (ms) | IAT (ms) | Traffic arrival offset | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 16 | 96 | R1-2112720 | Always ON | 0 | 0 | 0 | All Sync | H | 1 | 1 | 97.00% | 0% |
| Source 16 | 97 | R1-2112720 | Always ON | 0 | 0 | 0 | Random | L | 1 | 3 | 98.00% | 2.37% |
| Source 16 | 98 | R1-2112720 | Always ON | 0 | 0 | 0 | Evenly Spaced | L | 1 | 5 | 99.00% | 3.09% |
| Source 16 | 108 | R1-2112720 | Note 1 | 0 | 0 | 0 | All Sync | H | 1 | 1 | 97.00% | 0% |
| Source 16 | 109 | R1-2112720 | Note 1 | 0 | 0 | 0 | Random | L | 1 | 3 | 98.00% | 10.61% |
| Source 16 | 110 | R1-2112720 | Note 1 | 0 | 0 | 0 | Evenly Spaced | L | 1 | 5 | 99.00% | 13.82% |
| Note 1. Genie (CDRX with ideal PDCCH Skipping) | | | | | | | | | | | | |

#### SR group switching

This section captures the evaluation results of the SR group switching and baseline. The XR UL traffic arrives frequently, especially for pose/control. For dynamic scheduling, UE transmits a SR if UE has data to be transmitted. UE will monitor PDCCH for potential UL grant after the transmission of SR. Frequent SR transmission will increase both UL and DL power consumption. Switching between a dense SR periodicity and a sparse SR periodicity can achieve a tradeoff between latency of UL data transmission and UE power consumption.

**Observation**

* In FR1, UL evaluation, InH, ULPose with 250FPS, it was observed from Source 20 that SR group switching provide the mean power saving gain of 12.1% with respect to UL\_baseline (UE can perform UL transmission at every UL slot/symbol if needed) with *marginal* loss in UL UE satisfied rate.

Table 133 Source specific data: FR1, InH, UL, UL Pose 250FPS

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | SR switch cycle (ms) | SR group #1 periodicity (slots) | SR group #1 duration(ms) | SR group #2 periodicity (slot) | SR group #2 duration(ms) | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 42 | R1-2111351 | UL\_baseline,  Note 1 |  |  |  |  |  | L | 11 | >40 | 100% | 0% |
| Source 20 | 43 | R1-2111351 | SR group switching,  Note 1 | 16 | 1 | 6 | 15 | 10 | L | 11 | >40 | 100% | 12.1% |
| Note 1: If UE transmits SR, UE will monitor PDCCH for the subsequent 2.5ms, otherwise, UE does not monitor PDCCH. | | | | | | | | | | | | | |

**Observation**

* In FR1, UL evaluation, DU, UL Pose 250FPS it was observed from Source 20 that SR group switching provide the mean power saving gain of 11.37% with respect to UL baseline(UE can perform UL transmission at every UL slot/symbol if needed) with *marginal* loss in UL UE satisfied rate.

Table 134 Source specific data: FR1, DU, UL, UL Pose 250FPS

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | SR switch cycle (ms) | SR group #1 periodicity (slots) | SR group #1 duration(ms) | SR group #2 periodicity (slot) | SR group #2 duration(ms) | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 44 | R1-2111351 | UL\_baseline,  Note 1 |  |  |  |  |  | L | 11 | >40 | 100% | 0% |
| Source 20 | 45 | R1-2111351 | SR group switching,  Note 1 | 16 | 1 | 6 | 15 | 10 | L | 11 | >40 | 100% | 11.37% |
| Note 1: If UE transmits SR, UE will monitor PDCCH for the subsequent 2.5ms, otherwise, UE does not monitor PDCCH. | | | | | | | | | | | | | |

#### UL active time

This section captures the evaluation results of the UL active time and baseline. Various signals/data needs to be transmitted in UL. UE needs to wake up frequently to transmit signals/data which requires more power for warm-up and ramp-down. The independent transmission occasion of each signals/data shall also split sleep time of the UE. If the transmission of UL signals/data can be confined within an UL active time, UE is more likely to go to a deeper sleep. UL active time is defined by a periodic cycle and a duration, where UE only transmits UL signals/data during the duration time of the cycle, and UE doesn’t transmit UL signals/data outside the duration of the cycle. In this section, UL active time with configurations of (cycle, duration) = (8ms, 4ms), (8ms, 3ms) is evaluated.

**Observation**

* In FR1, UL evaluation, InH, UL Pose 250FPS, it was observed from Source 20 that UL active time provide the mean power saving gain of 16.335% in the range of 13.67 ~19% with respect to UL\_baseline(UE can perform UL transmission at every UL slot/symbol if needed) with *marginal* loss in UL UE satisfied rate.

Table 135 Source specific data: FR1, InH, UL, UL Pose250FPS

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | UL active time cycle (ms) | UL active time duration (slots) | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 46 | R1-2111351 | UL\_baseline, Note 1 |  |  | L | 11 |  | 100% | 0% |
| Source 20 | 47 | R1-2111351 | UL active time, Note 1 | 8 | 4 | L | 11 |  | 100% | 13.67% |
| Source 20 | 50 | R1-2111351 | UL\_baseline, Note 1 |  |  | L | 3 |  | 100% | 0% |
| Source 20 | 51 | R1-2111351 | UL active time, Note 1 | 8 | 3 | L | 3 |  | 100% | 19% |
| Note 1: configured grant(periodicity = 2.5ms), UE does not need to monitor PDCCH. | | | | | | | | | | |

**Observation**

* In FR1, UL evaluation, DU, UL Pose 250FPS, it was observed from Source 20 that UL active time provide the mean power saving gain of 14% with respect to UL baseline(UE can perform UL transmission at every UL slot/symbol if needed) with *marginal* loss in UL UE satisfied rate.

Table 136 Source specific data: FR1, DU, UL, UL Pose250FPS

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | data row index | Tdoc source | Power saving scheme | UL active time cycle (ms) | UL active time duration (slots) | Load H/L | N1 | C1 | % of UL satisfied UE | Mean PSG of all Ues (%) |
| Source 20 | 48 | R1-2111351 | UL\_baseline, Note 1 |  |  | L | 11 |  | 100% | 0% |
| Source 20 | 49 | R1-2111351 | UL active time, Note 1 | 8 | 4 | L | 11 |  | 100% | 14% |
| Note 1: configured grant (periodicity = 2.5ms), UE does not need to monitor PDCCH. | | | | | | | | | | |

#### Enhanced PDCCH monitoring

This section captures the evaluation results of enhanced PDCCH monitoring, where it configures a MonitoringSlotPeriodicity pattern with different MonitoringSlotPeriodicity values instead of a single MonitoringSlotPeriodicity value. For example, MonitoringSlotPeriodicity pattern is set as {17, 17, 16}ms.

**Observation**

* In FR1, for DL VR/AR@30Mbps and DL CG 30Mbps in DU, it was observed from Source 9 that enhanced PDCCH monitoring provides the power saving gain in the range of 5%~22%

Table 137 Source specific data: FR1, Dense Urban, DL, VR/AR30

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | Tdoc source | Power saving scheme | MonitoringSlotPeriodicity pattern | Duration (ms) | MonitoringSlotOffset (ms) | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 8 | -2 | L | 3 | 5 | 75.24% | 22.05% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 10 | -4 | L | 3 | 5 | 74.92% | 15.38% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 12 | -4 | L | 3 | 5 | 94.76% | 9.09% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 14 | -4 | L | 3 | 5 | 97.94% | 5.18% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 8 | -2 | H | 5 | 5 | 59.05% | 21.84% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 10 | -4 | H | 5 | 5 | 59.90% | 15.25% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 12 | -4 | H | 5 | 5 | 84.57% | 8.96% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 14 | -4 | H | 5 | 5 | 90.67% | 5.08% |

Table 138 Source specific data: FR1, Dense Urban, DL, CG30

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| source | Tdoc source | Power saving scheme | MonitoringSlotPeriodicity pattern | Duration (ms) | MonitoringSlotOffset (ms) | Load H/L | N1 | C1 | % of DL satisfied UE | Mean PSG of all Ues (%) |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 8 | -2 | L | 3 | 7 | 92.22% | 21.91% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 10 | -4 | L | 3 | 7 | 97.62% | 15.22% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 12 | -4 | L | 3 | 7 | 99.37% | 9.05% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 14 | -4 | L | 3 | 7 | 99.84% | 5.16% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 8 | -2 | H | 7 | 7 | 60.88% | 21.38% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 10 | -4 | H | 7 | 7 | 71.84% | 14.58% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 12 | -4 | H | 7 | 7 | 83.67% | 8.73% |
| Source 9 | R1-2110811 | e-PDCCH monitoring | 17/17/16 ms | 14 | -4 | H | 7 | 7 | 88.44% | 4.95% |

1. In details, the described operation may or may not be fully compliant to R17 PDCCH monitoring adaptation scheme which is currently still being discussed in R17 UE PS session as of 107-e. [↑](#footnote-ref-1)
2. The loss in UE satisfied rate is said *marginal* if the DL+UL UE satisfied rate is larger than equal to 80% for a considered power saving scheme when the number of UEs per cell is equal to capacity. This definition applies all other cases and sections. [↑](#footnote-ref-2)
3. The loss in UE satisfied rate is said *marginal* if the DL UE satisfied rate is larger than equal to 80% for a considered power saving scheme when the number of UEs per cell is equal to capacity. This definition applies all other sections. [↑](#footnote-ref-3)
4. The loss in UE satisfied rate is said *marginal* if the UL UE satisfied rate is larger than equal to 80% for a considered power saving scheme when the number of UEs per cell is equal to capacity. This definition applies all other sections. [↑](#footnote-ref-4)
5. The loss in UE satisfied rate is said *marginal* if the DL UE satisfied rate is larger than equal to 80% for a considered power saving scheme when the number of UEs per cell is equal to capacity. This definition applies all other sections. [↑](#footnote-ref-5)
6. The loss in UE satisfied rate is said *marginal* if the UL UE satisfied rate is larger than equal to 80% for a considered power saving scheme when the number of UEs per cell is equal to capacity. This definition applies all other sections [↑](#footnote-ref-6)