# Annex B: Evaluations results

## B.1 Link level evaluation results

### B.1.1 Evaluation results for PDSCH/PUSCH

B.1.1.1 Evaluation results for PDSCH to study candidate numerologies

Table 1: SINR in dB achieving PDSCH BLER of 10% /1%

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Tdoc /  Source | MCS | Channel | 120KHz /400MHz | 240KHz /400MHz | 480KHz /400MHz | 960KHz /400MHz | 960KHz /2GHz |
| R1-2008873 / Samsung | 7 | TDL-A, 5ns | 4.53/6.89 | 4.66/7.24 | 5.75/8.32 | 6.24/8.47 | 2.65/4.08 |
| TDL-A, 10ns | 2.79/5.42 | 2.95/5.76 | 3.99/6.06 | 4.40/6.97 | 2.51/4.27 |
| TDL-A, 20ns | 2.83/4.91 | 3.27/5.49 | 4.01/5.95 | 4.47/6.67 | 3.00/3.88 |
| 16 | TDL-A, 5ns | 11.77/14.46 | 11.09/13.69 | 11.70/13.55 | 12.18/13.90 | 9.85/12.34 |
| TDL-A, 10ns | 11.41/13.08 | 10.18/12.74 | 10.38/12.27 | 10.67/12.55 | 10.13/11.61 |
| TDL-A, 20ns | 10.99/12.40 | 10.10/12.19 | 10.21/12.39 | 11.16/13.19 | 10.24/10.96 |
| 22 | TDL-A, 5ns | 23.44/NaN | 19.39/NaN | 17.81/20.81 | 17.15/21.12 | 15.73/19.37 |
| TDL-A, 10ns | 23.72/NaN | 18.27/NaN | 16.74/19.62 | 16.11/17.74 | 15.87/18.84 |
| TDL-A, 20ns | 24.28/NaN | 18.83/NaN | 16.62/19.39 | 16.41/18.28 | 16.65/19.02 |
| Additional report/notes:   1. Normal CP 2. CPE compensation only 3. PTRS configuration: symbol 3-13, K=4, L=1 4. DMRS configuration: symbol 2 5. NaN in the table refers to a large SINR value exceeding the range of interest (i.e., >25 dB) | | | | | | |

B.1.1.2 Evaluation results for PDSCH to study PT-RS pattern

Table 2: SINR in dB achieving PDSCH BLER of 10% /1%

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Tdoc /  Source | MCS | Channel | 120KHz /400MHz  New pattern  No comp | 120KHz /400MHz  New pattern  CPE comp | 120KHz /400MHz  New pattern  ICI comp | 120KHz /400MHz  R15 pattern  CPE comp |
| R1-2008873 / Samsung | 22 | TDL-A, 5ns | NaN/NaN | 22.71/NaN | 18.79/22.05 | 23.45/NaN |
| TDL-A, 10ns | NaN/NaN | 22.68/NaN | 17.65/21.49 | 23.81/NaN |
| Additional report/notes:   1. Normal CP 2. PTRS configuration: Rel-15 pattern: K=4, L=1; new pattern: 1 RB in 50 RB chunk 3. DMRS configuration: symbol 2 4. NaN in the table refers to a large SINR value exceeding the range of interest (i.e., >25 dB) | | | | | |

Table 3: SINR in dB achieving PDSCH BLER of 10% /1%

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Tdoc /  Source | MCS | Channel | 240KHz /400MHz  New pattern  No comp | 240KHz /400MHz  New pattern  CPE comp | 240KHz /400MHz  New pattern  ICI comp | 240KHz /400MHz  R15 pattern  CPE comp |
| R1-2008873 / Samsung | 22 | TDL-A, 5ns | NaN/NaN | 19.25/NaN | 17.11/19.98 | 19.41/NaN |
| TDL-A, 10ns | NaN/NaN | 18.76/NaN | 16.20/19.16 | 18.29/NaN |
| Additional report/notes:   1. Normal CP 2. PTRS configuration: Rel-15 pattern: K=4, L=1; new pattern: 1 RB in 50 RB chunk 3. DMRS configuration: symbol 2 4. NaN in the table refers to a large SINR value exceeding the range of interest (i.e., >25 dB) | | | | | |

## B.2 System level evaluation results

Table 4: System level evaluation results for scenario Indoor-A

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tdoc /  Source | Cases | | Case 1: no LBT | | | Case 2: omni-directional LBT | | | Case 3: directional LBT | | |
| R1-2008873 / Samsung | Traffic  load  Metrics | | Low load  10%~25% BO | Medium load  35%~50% BO | High load  above 55% BO | Low load  10%~25% BO | Medium load  35%~50% BO | High load  above 55% BO | Low load  10%~25% BO | Medium load  35%~50% BO | High load  above 55% BO |
| DL UPT (Mbps) | 5%ile | 3693.6 | 2131.4 | 1387.1 | 3420.3 | 1903.6 | 1288.3 | 3606.2 | 2184.3 | 1639.7 |
| 50%ile | 7720.5 | 6641.6 | 4006.2 | 7462.8 | 6370.2 | 3822.1 | 7646.8 | 6801.9 | 4579.4 |
| 95%ile | 14264.1 | 14208.3 | 14031.9 | 13595.5 | 13472.0 | 13039.9 | 14196.5 | 14355.6 | 14156.4 |
| mean | 8002.7 | 7161.2 | 5248.9 | 7643.7 | 6897.7 | 4573.9 | 7894.3 | 7197.6 | 5431.5 |
| DL delay (s) | 5%ile | 0.015 | 0.017 | 0.019 | 0.015 | 0.017 | 0.020 | 0.015 | 0.017 | 0.018 |
| 50%ile | 0.030 | 0.038 | 0.050 | 0.033 | 0.042 | 0.053 | 0.030 | 0.037 | 0.046 |
| 95%ile | 0.063 | 0.078 | 0.095 | 0.064 | 0.080 | 0.097 | 0.064 | 0.076 | 0.090 |
| mean | 0.033 | 0.040 | 0.051 | 0.036 | 0.044 | 0.055 | 0.034 | 0.038 | 0.047 |
| UL UPT (Mbps) | 5%ile | 1189.4 | 465.8 | 277.2 | 1125.1 | 401.5 | 246.0 | 1135.4 | 485.4 | 295.3 |
| 50%ile | 2850.8 | 1748.4 | 927.7 | 2413.5 | 1687.9 | 882.6 | 2813.2 | 1791.0 | 977.9 |
| 95%ile | 5698.3 | 5466.0 | 5125.8 | 5537.3 | 5348.2 | 5011.1 | 5613.9 | 5495.2 | 5213.8 |
| mean | 2436.7 | 1734.0 | 1029.5 | 2297.6 | 1627.7 | 922.6 | 2404.5 | 1783.4 | 1174.2 |
| UL delay (s) | 5%ile | 0.032 | 0.041 | 0.054 | 0.032 | 0.042 | 0.055 | 0.032 | 0.041 | 0.051 |
| 50%ile | 0.068 | 0.102 | 0.143 | 0.070 | 0.107 | 0.146 | 0.069 | 0.100 | 0.141 |
| 95%ile | 0.150 | 0.205 | 0.296 | 0.152 | 0.209 | 0.301 | 0.150 | 0.202 | 0.291 |
| mean | 0.089 | 0.117 | 0.152 | 0.091 | 0.120 | 0.158 | 0.090 | 0.114 | 0.146 |
| Arrival rate (files/s) | | 0.4 | 0.8 | 1.2 | 0.4 | 0.8 | 1.2 | 0.4 | 0.8 | 1.2 |
| 𝜌DL | | 0.99 | 0.99 | 0.98 | 0.99 | 0.98 | 0.98 | 0.99 | 0.99 | 0.98 |
| 𝜌UL | | 0.98 | 0.97 | 0.97 | 0.98 | 0.96 | 0.96 | 0.99 | 0.98 | 0.98 |
| BO | | 0.15 | 0.44 | 0.74 | 0.17 | 0.48 | 0.80 | 0.15 | 0.43 | 0.71 |
| Additional report/notes:  1. LBT procedure and parameters are following ETSI 302 567 v2.1.20  2. Details of cases:   * Case 1: Indoor-A with two operators, no-LBT * Case 2: Indoor-A with two operators, omni-directional LBT * Case 3: Indoor-A with two operators, directional LBT   3. No COT sharing  4. Other parameters to report:   * Carrier frequency: 60 GHz * Carrier bandwidth: 2 GHz * Numerology: 960 kHz SCS with NCP | | | | | | | | | | |

Note: companies are encouraged to also submit RSRP distribution (e.g. serving BS to UE links, BS-to-BS links, UE-to-UE links) for the evaluated scenario in SLS.

