1. Baseline performance for FR1

Table 1-1: PUSCH for eMBB for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | 0.7 | | 129.55 | | | 138.32 | | 107.59 | | 1 DMRS symbol for each hop | |
| Qualcomm | -13.5 | | 128 | | | 140.7 | | 110 | | 53 dBm power in downlink; LLS uses all 64 TXRUs | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -0.75 | | 131 | | | 139.77 | | 109.04 | | 1 DMRS symbol for each hop | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | 0.74 | | 129.51 | | | 138.28 | | 107.55 | | 1 DMRS symbol for each hop | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | 0.21 | 138.79 | | 142.79 | 123.13 | | NLOS | | O2I | | 1 DMRS symbol for each hop |
| 0.37 | 138.63 | | 142.63 | 127.02 | | NLOS | | O2O | | 1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -1.24 | 140.24 | | 144.24 | 124.58 | | NLOS | | O2I | | 1 DMRS symbol for each hop |
| -0.83 | 139.83 | | 143.83 | 128.22 | | NLOS | | O2O | | 1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | 0.1 | 138.9 | | 142.9 | 123.24 | | NLOS | | O2I | | DDDDDDDSUU,  1 DMRS symbol for each hop |
| 0.03 | 138.97 | | 142.97 | 127.36 | | NLOS | | O2O | | DDDDDDDSUU,  1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -3.91 | 130.87 | | 146.91 | 129.28 | | NLOS | | O2I | | 1 DMRS symbol for each hop |
| -3.51 | 130.47 | | 146.51 | 130.9 | | NLOS | | O2O | | 1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -7.49 | 134.45 | | 144.47 | 126.84 | | NLOS | | O2I | | 1 DMRS symbol for each hop |
| -7.37 | 134.33 | | 144.35 | 128.74 | | NLOS | | O2O | | 1 DMRS symbol for each hop |
| Qualcomm | -11 | 136.5 | | 149.5 | 131.9 | | NLOS | | O2O | | 3kmph |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -8.22 | 135.18 | | 145.2 | 127.68 | | LOS | | O2I | | 1 DMRS symbol for each hop |
| -8.32 | 135.28 | | 145.3 | 131.51 | | LOS | | O2O | | 1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -4.04 | 143.04 | | 147.04 | 127.49 | | LOS | | O2I | | 1 DMRS symbol for each hop |
| -3.06 | 142.06 | | 146.06 | 132.27 | | LOS | | O2O | | 1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -5.33 | 144.33 | | 148.33 | 128.78 | | LOS | | O2I | | 1 DMRS symbol for each hop |
| -4.48 | 143.48 | | 147.48 | 133.69 | | LOS | | O2O | | 1 DMRS symbol for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-2: PUSCH for VoIP for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -6 | | 144.5 | | | 153.27 | | 122.54 | | 20ms period,2 repetitions, 4 HARQ transmission times | |
| Qualcomm | -18 | | 141.5 | | | 154.2 | | 123.5 | | See Tdoc for details | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -7.71 | | 146.21 | | | 154.98 | | 124.25 | | 20ms period,2 repetitions, 6 HARQ transmission times | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -7.61 | | 146.11 | | | 154.88 | | 124.15 | | 20ms period,2 repetitions, 4 HARQ transmission times | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -6 | 144.5 | | 148.5 | 128.84 | | NLOS | | O2I | | 20ms period,2 repetitions, 4 HARQ transmission times |
| -7.45 | 145.95 | | 149.95 | 134.34 | | NLOS | | O2O | | 20ms period,2 repetitions, 4 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -7.72 | 146.22 | | 150.22 | 130.56 | | NLOS | | O2I | | 20ms period,2 repetitions, 6 HARQ transmission times |
| -8.99 | 147.49 | | 151.49 | 135.88 | | NLOS | | O2O | | 20ms period,2 repetitions, 6 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -7.61 | 146.11 | | 150.11 | 130.45 | | NLOS | | O2I | | DDDDDDDSUU, 20ms period,2 repetitions, 4 HARQ transmission times |
| -7.61 | 146.11 | | 150.11 | 134.5 | | NLOS | | O2O | | DDDDDDDSUU, 20ms period,2 repetitions, 4 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -10.42 | 136.88 | | 152.92 | 135.29 | | NLOS | | O2I | | 20ms period,4 repetitions, 4 HARQ transmission times |
| -11.6 | 138.06 | | 154.1 | 138.49 | | NLOS | | O2O | | 20ms period,4 repetitions, 4 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -12.44 | 138.9 | | 148.92 | 131.29 | | NLOS | | O2I | | 20ms period,4 repetitions, 4 HARQ transmission times |
| -14.44 | 140.9 | | 150.92 | 135.31 | | NLOS | | O2O | | 20ms period,4 repetitions, 4 HARQ transmission times |
| Qualcomm | -9 | 135.5 | | 148.5 | 130.9 | | NLOS | | O2O | | See Tdoc for details |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -13.38 | 139.84 | | 149.86 | 132.34 | | LOS | | O2I | | 20ms period,4 repetitions, 4 HARQ transmission times |
| -15.12 | 141.58 | | 151.6 | 137.81 | | LOS | | O2O | | 20ms period,4 repetitions, 4 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -13.11 | 151.61 | | 155.61 | 136.06 | | LOS | | O2I | | 20ms period,2 repetitions, 4 HARQ transmission times |
| -14.24 | 152.74 | | 156.74 | 142.95 | | LOS | | O2O | | 20ms period,2 repetitions, 4 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -13.11 | 151.61 | | 155.61 | 136.06 | | LOS | | O2I | | 20ms period,2 repetitions, 4 HARQ transmission times |
| -14.24 | 152.74 | | 156.74 | 142.95 | | LOS | | O2O | | 20ms period,2 repetitions, 4 HARQ transmission times |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

[Table 1-2a: PUSCH for CSI for FR1]

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-3: PUCCH for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -6.08 | | 147.52 | | | 156.29 | | 122.48 | | Format 1 No repetition | |
| -3.55 | | 144.99 | | | 153.76 | | 119.95 | | Format 3 11bits No repetition 2 DMRS symbols | |
| Qualcomm | -20.5 | | 146.9 | | | 159.7 | | 125.9 | | PF1 2 bits | |
| Qualcomm | -18 | | 144.4 | | | 157.2 | | 123.4 | | PF3 11 bits | |
| Qualcomm | -16.5 | | 142.9 | | | 155.7 | | 121.9 | | PF3 22 bits | |
| DDDSUDDSUU | vivo | -6.08 | | 147.52 | | | 156.29 | | 122.48 | | Format 1 No repetition | |
| -3.55 | | 144.99 | | | 153.76 | | 119.95 | | Format 3 11bits No repetition 2 DMRS symbols | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -6 | | 147.45 | | | 156.22 | | 122.41 | | Format 1 No repetition | |
| -3.41 | | 144.86 | | | 153.63 | | 119.82 | | Format 3 11bits No repetition 2 DMRS symbols | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -6.08 | 147.52 | | 151.52 | 128.54 | | NLOS | | O2I | | Format 1 No repetition |
| -3.55 | 144.99 | | 148.99 | 126.01 | | NLOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -6.09 | 147.54 | | 151.54 | 132.09 | | NLOS | | O2O | | Format 1 No repetition |
| -3.55 | 144.99 | | 148.99 | 129.54 | | NLOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| DDDSUDDSUU | vivo | -6.08 | 147.52 | | 151.52 | 128.54 | | NLOS | | O2I | | Format 1 No repetition |
| -3.55 | 144.99 | | 148.99 | 126.01 | | NLOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -6.09 | 147.54 | | 151.54 | 132.09 | | NLOS | | O2O | | Format 1 No repetition |
| -3.55 | 144.99 | | 148.99 | 129.54 | | NLOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -6 | 147.45 | | 151.45 | 128.47 | | NLOS | | O2I | | DDDDDDDSUU  Format 1 No repetition |
| -3.4 | 144.85 | | 148.85 | 125.87 | | NLOS | | O2I | | DDDDDDDSUU  Format 3 11bits No repetition 2 DMRS symbols |
| -5.66 | 147.11 | | 151.11 | 131.66 | | NLOS | | O2O | | DDDDDDDSUU  Format 1 No repetition |
| -3.52 | 144.97 | | 148.97 | 129.52 | | NLOS | | O2O | | DDDDDDDSUU  Format 3 11bits No repetition 2 DMRS symbols |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -6.96 | 136.37 | | 152.41 | 131.46 | | NLOS | | O2I | | Format 1 No repetition |
| -4.14 | 133.55 | | 149.59 | 128.64 | | NLOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -6.74 | 136.14 | | 152.18 | 132.73 | | NLOS | | O2O | | Format 1 No repetition |
| -3.92 | 133.33 | | 149.37 | 129.92 | | NLOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -10.86 | 140.27 | | 150.29 | 129.34 | | NLOS | | O2I | | Format 1 No repetition |
| -8.02 | 137.43 | | 147.45 | 126.5 | | NLOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -10.77 | 140.18 | | 150.2 | 130.75 | | NLOS | | O2O | | Format 1 No repetition |
| -7.98 | 137.39 | | 147.41 | 127.96 | | NLOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| Qualcomm | -10.5 | 140 | | 153 | 132 | | NLOS | | O2O | | PF1 2 bits |
| -7 | 136.5 | | 149.5 | 128.5 | | NLOS | | O2O | | PF3 11 bits |
| -4 | 134 | | 147 | 126 | | NLOS | | O2O | | PF3 22 bits |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -11.56 | 140.97 | | 150.99 | 130.2 | | LOS | | O2I | | Format 1 No repetition |
| -9.58 | 138.98 | | 149 | 128.21 | | LOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -11.68 | 141.09 | | 151.11 | 134.05 | | LOS | | O2O | | Format 1 No repetition |
| -9.48 | 138.88 | | 148.9 | 131.84 | | LOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -7.65 | 149.09 | | 153.09 | 130.27 | | LOS | | O2I | | Format 1 No repetition |
| -6.55 | 148 | | 152 | 129.18 | | LOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -7.58 | 149.03 | | 153.03 | 135.97 | | LOS | | O2O | | Format 1 No repetition |
| -6.53 | 147.97 | | 151.97 | 134.91 | | LOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| DDDSUDDSUU | vivo | -7.65 | 149.09 | | 153.09 | 130.27 | | LOS | | O2I | | Format 1 No repetition |
| -6.55 | 148 | | 152 | 129.18 | | LOS | | O2I | | Format 3 11bits No repetition 2 DMRS symbols |
| -7.58 | 149.03 | | 153.03 | 135.97 | | LOS | | O2O | | Format 1 No repetition |
| -6.53 | 147.97 | | 151.97 | 134.91 | | LOS | | O2O | | Format 3 11bits No repetition 2 DMRS symbols |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-4: SSB for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -11.62 | | 154.66 | | | 160.78 | | 126.97 | | The correction factor for BF gain of broadcast channel is 8 dB | |
| Qualcomm | -15.4 | | 151.4 | | | 163.2 | | 129.4 | | 53 dBm downlink power. See Tdoc for addl. details | |
| Qualcomm | -15.4 | | 142.4 | | | 154.2 | | 120.4 | | 44 dBm downlink power. See Tdoc for addl. details | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -11.62 | | 154.66 | | | 160.78 | | 126.97 | | The correction factor for BF gain of broadcast channel is 8 dB | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -11.6 | | 154.64 | | | 160.76 | | 126.95 | | The correction factor for BF gain of broadcast channel is 8 dB | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -11.62 | 154.66 | | 156.01 | 133.03 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -11.48 | 154.52 | | 155.87 | 136.42 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -11.62 | 154.66 | | 156.01 | 133.03 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -11.48 | 154.52 | | 155.87 | 136.42 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -11.97 | 155.01 | | 156.36 | 133.38 | | NLOS | | O2I | | DDDDDDDSUU  The correction factor for BF gain of broadcast channel is 8 dB |
| -11.7 | 154.74 | | 156.09 | 136.64 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -12.7 | 151.69 | | 157.08 | 136.13 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| 13.2 | 152.19 | | 157.58 | 138.13 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -9.79 | 148.78 | | 159.16 | 138.21 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 0 dB |
| -10.54 | 149.53 | | 159.91 | 140.46 | | NLOS | | O2O | |
| Qualcomm | -12.8 | 151.8 | | 164.8 | 143.9 | | NLOS | | O2O | | Qualcomm |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -11.94 | 150.93 | | 161.31 | 140.52 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 0 dB |
| -12.28 | 151.27 | | 161.65 | 144.59 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -14.56 | 157.6 | | 158.95 | 136.13 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -14.24 | 152.74 | | 156.74 | 142.95 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -14.56 | 157.6 | | 158.95 | 136.13 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -14.24 | 152.74 | | 156.74 | 142.95 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-5: PRACH for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -10.19 | | 140.85 | | | 149.62 | | 115.81 | | Format B4 | |
| -8.19 | | 144.87 | | | 153.64 | | 119.83 | | Format 0 | |
| Qualcomm | -29 | | 144.8 | | | 157.5 | | 123.7 | | Format B4 | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -10.19 | | 140.85 | | | 149.62 | | 115.81 | | Format B4 | |
| -8.19 | | 144.87 | | | 153.64 | | 119.83 | | Format 0 | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -10.25 | | 140.91 | | | 149.68 | | 115.87 | | Format B4 | |
| -8.17 | | 144.85 | | | 153.62 | | 119.81 | | Format 0 | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -10.19 | 140.85 | | 144.85 | 121.87 | | NLOS | | O2I | | Format B4 |
| -8.19 | 144.87 | | 148.87 | 125.89 | | NLOS | | O2I | | Format 0 |
| -10.77 | 141.43 | | 145.43 | 125.98 | | NLOS | | O2O | | Format B4 |
| -7.53 | 144.21 | | 148.21 | 128.76 | | NLOS | | O2O | | Format 0 |
| DDDSUDDSUU | vivo | -10.19 | 140.85 | | 144.85 | 121.87 | | NLOS | | O2I | | Format B4 |
| -8.19 | 144.87 | | 148.87 | 125.89 | | NLOS | | O2I | | Format 0 |
| -10.77 | 141.43 | | 145.43 | 125.98 | | NLOS | | O2O | | Format B4 |
| -7.53 | 144.21 | | 148.21 | 128.76 | | NLOS | | O2O | | Format 0 |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -10.25 | 140.91 | | 144.91 | 121.93 | | NLOS | | O2I | | DDDDDDDSUU  Format B4 |
| -8.17 | 144.85 | | 148.85 | 125.87 | | NLOS | | O2I | | DDDDDDDSUU  Format 0 |
| -10.4 | 141.06 | | 145.06 | 125.61 | | NLOS | | O2O | | DDDDDDDSUU  Format B4 |
| -8.09 | 144.77 | | 148.77 | 129.32 | | NLOS | | O2O | | DDDDDDDSUU  Format 0 |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -9.7 | 128.31 | | 144.36 | 123.41 | | NLOS | | O2I | | Format B4 |
| -8.52 | 130.14 | | 146.19 | 125.24 | | NLOS | | O2I | | Format 0 |
| -10.11 | 128.72 | | 144.77 | 125.32 | | NLOS | | O2O | | Format B4 |
| -8.22 | 129.84 | | 145.88 | 126.43 | | NLOS | | O2O | | Format 0 |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -13.55 | 132.16 | | 142.18 | 121.23 | | NLOS | | O2I | | Format B4 |
| -13.88 | 135.5 | | 145.52 | 124.57 | | NLOS | | O2I | | Format 0 |
| -13.84 | 132.45 | | 142.47 | 123.02 | | NLOS | | O2O | | Format B4 |
| -13.92 | 135.54 | | 145.36 | 126.11 | | NLOS | | O2O | | Format 0 |
| Qualcomm | -17.6 | 139.4 | | 152.4 | 131.4 | | NLOS | | O2O | | Format 0 |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -18.64 | 137.52 | | 147.27 | 126.48 | | LOS | | O2I | | Format B4 |
| -18.47 | 140.09 | | 150.11 | 129.32 | | LOS | | O2I | | Format 0 |
| -18.58 | 137.19 | | 147.21 | 130.15 | | LOS | | O2O | | Format B4 |
| -18.22 | 139.84 | | 149.86 | 132.8 | | LOS | | O2O | | Format 0 |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -15.53 | 146.19 | | 150.19 | 127.37 | | LOS | | O2I | | Format B4 |
| -14.59 | 151.27 | | 155.27 | 132.45 | | LOS | | O2I | | Format 0 |
| -15.53 | 146.19 | | 150.19 | 133.13 | | LOS | | O2O | | Format B4 |
| -12.49 | 149.17 | | 153.17 | 136.11 | | LOS | | O2O | | Format 0 |
| DDDSUDDSUU | vivo | -15.53 | 146.19 | | 150.19 | 127.37 | | LOS | | O2I | | Format B4 |
| -14.59 | 151.27 | | 155.27 | 132.45 | | LOS | | O2I | | Format 0 |
| -15.53 | 146.19 | | 150.19 | 133.13 | | LOS | | O2O | | Format B4 |
| -12.49 | 149.17 | | 153.17 | 136.11 | | LOS | | O2O | | Format 0 |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-6: PDCCH of Msg.2 for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -8.49 | | 151.53 | | | 157.65 | | 123.84 | | The correction factor for BF gain of broadcast channel is 8 dB | |
| Qualcomm | -11.5 | | 147.5 | | | 159.3 | | 125.5 | | 53 dBm DL Tx power. See Tdoc for addl. Details. | |
| Qualcomm | -11.5 | | 138.5 | | | 150.3 | | 116.5 | | 44 dBm DL Tx power. See Tdoc for addl. Details. | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -8.49 | | 151.53 | | | 157.65 | | 123.84 | | The correction factor for BF gain of broadcast channel is 8 dB | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -8.46 | | 151.5 | | | 157.62 | | 123.81 | | The correction factor for BF gain of broadcast channel is 8 dB | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -8.49 | 151.53 | | 157.65 | 123.84 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -8.51 | 151.55 | | 152.9 | 133.45 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -8.49 | 151.53 | | 157.65 | 123.84 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -8.51 | 151.55 | | 152.9 | 133.45 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -8.46 | 151.5 | | 152.85 | 129.87 | | NLOS | | O2I | | DDDDDDDSUU  The correction factor for BF gain of broadcast channel is 8 dB |
| -8.48 | 151.52 | | 152.87 | 133.42 | | NLOS | | O2O | |
|  |  | |  |  | |  | |  | |  |
|  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -9.27 | 148.26 | | 153.65 | 132.7 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -9.44 | 148.43 | | 153.82 | 134.37 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -5.62 | 144.61 | | 154.99 | 134.04 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 0 dB |
| -5.93 | 144.92 | | 155.3 | 135.85 | | NLOS | | O2O | |
| Qualcomm | -9 | 148 | | 161 | 140 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -9.12 | 148.11 | | 158.49 | 137.7 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 0 dB |
| -9.09 | 148.08 | | 158.46 | 141.4 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -11.63 | 154.67 | | 156.02 | 133.2 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -11.59 | 162.63 | | 163.98 | 146.92 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -11.63 | 154.67 | | 156.02 | 133.2 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -11.59 | 162.63 | | 163.98 | 146.92 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-6a: PDSCH for Msg.2 for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -7.92 | | 150.96 | | | 157.08 | | 126.35 | | The correction factor for BF gain of broadcast channel is 8 dB | |
| Qualcomm | -13 | | 149 | | | 160.8 | | 130 | | 53 dBm DL Tx Power. See Tdoc for addl details. | |
| Qualcomm | -13 | | 140 | | | 151.8 | | 121 | | 44 dBm DL Tx Power. See Tdoc for addl details. | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -7.92 | | 150.96 | | | 157.08 | | 126.35 | | The correction factor for BF gain of broadcast channel is 8 dB | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -7.98 | | 151.02 | | | 157.14 | | 126.41 | | The correction factor for BF gain of broadcast channel is 8 dB | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -7.92 | 150.96 | | 152.31 | 132.65 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -7.68 | 150.72 | | 152.07 | 136.46 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -7.92 | 150.96 | | 152.31 | 132.65 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -7.68 | 150.72 | | 152.07 | 136.46 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -7.98 | 151.02 | | 152.37 | 132.71 | | NLOS | | O2I | | DDDDDDDSUU  The correction factor for BF gain of broadcast channel is 8 dB |
| -7.78 | 150.82 | | 152.17 | 136.56 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -8.18 | 147.17 | | 152.56 | 134.93 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -7.85 | 146.84 | | 152.23 | 136.62 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -3.46 | 142.45 | | 149.82 | 132.19 | | NLOS | | O2I | | The correction factor for BF gain of broadcast channel is 0 dB |
| -3.47 | 142.46 | | 149.83 | 134.22 | | NLOS | | O2O | |
| Qualcomm | -10 | 149 | | 162 | 144.4 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -8.35 | 147.34 | | 154.71 | 137.19 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 0 dB |
| -8.1 | 147.09 | | 154.46 | 140.67 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -10 | 153.04 | | 154.39 | 134.84 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -9.51 | 152.55 | | 153.9 | 140.11 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -10 | 153.04 | | 154.39 | 134.84 | | LOS | | O2I | | The correction factor for BF gain of broadcast channel is 8 dB |
| -9.51 | 152.55 | | 153.9 | 140.11 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-7: PUSCH of Msg.3 for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -2.03 | | 143.54 | | | 152.32 | | 121.59 | | 2 DMRS symbols for each hop | |
| Qualcomm | -16.5 | | 143 | | | 155.7 | | 125 | | See Tdoc for details | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -2.03 | | 143.54 | | | 152.32 | | 121.59 | | 2 DMRS symbols for each hop | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -2.22 | | 143.73 | | | 152.5 | | 121.77 | | 2 DMRS symbols for each hop | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -2.03 | 143.54 | | 147.54 | 127.88 | | NLOS | | O2I | | 2 DMRS symbols for each hop |
| -2.21 | 143.72 | | 147.72 | 132.11 | | NLOS | | O2O | | 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -2.03 | 143.54 | | 147.54 | 127.88 | | NLOS | | O2I | | 2 DMRS symbols for each hop |
| -2.22 | 143.73 | | 147.73 | 132.12 | | NLOS | | O2O | | 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -2.22 | 143.73 | | 147.73 | 128.07 | | NLOS | | O2I | | DDDDDDDSUU 2 DMRS symbols for each hop |
| -2.33 | 143.84 | | 147.84 | 132.23 | | NLOS | | O2O | | DDDDDDDSUU 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -3.47 | 132.94 | | 148.98 | 131.35 | | NLOS | | O2I | | 2 DMRS symbols for each hop |
| -3.11 | 132.58 | | 148.62 | 133.01 | | NLOS | | O2O | | 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -6.81 | 136.28 | | 146.3 | 128.67 | | NLOS | | O2I | | 2 DMRS symbols for each hop |
| -6.76 | 136.23 | | 146.25 | 130.64 | | NLOS | | O2O | | 2 DMRS symbols for each hop |
| Qualcomm | -6 | 135.5 | | 148.5 | 130.9 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -6.92 | 136.39 | | 146.41 | 128.89 | | LOS | | O2I | | 2 DMRS symbols for each hop |
| -7 | 136.47 | | 146.49 | 132.7 | | LOS | | O2O | | 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -5.46 | 146.97 | | 150.97 | 131.42 | | LOS | | O2I | | 2 DMRS symbols for each hop |
| -4.99 | 146.5 | | 150.5 | 136.71 | | LOS | | O2O | | 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -5.46 | 146.97 | | 150.97 | 131.42 | | LOS | | O2I | | 2 DMRS symbols for each hop |
| -4.99 | 146.5 | | 150.5 | 136.71 | | LOS | | O2O | | 2 DMRS symbols for each hop |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-8: PDSCH of Msg.4 for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -9.44 | | 152.48 | | | 158.6 | | 127.87 | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -9.44 | | 152.48 | | | 158.6 | | 127.87 | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -9.48 | | 152.52 | | | 158.64 | | 127.91 | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -9.44 | 152.48 | | 153.83 | 134.17 | | NLOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB |
| --9.25 | 152.29 | | 153.64 | 138.03 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -9.44 | 152.48 | | 153.83 | 134.17 | | NLOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB |
| --9.2 | 152.24 | | 153.59 | 137.98 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -9.48 | 152.52 | | 153.87 | 134.21 | | NLOS | | O2I | | DDDDDDDSUU MCS0  The correction factor for BF gain of broadcast channel is 8 dB |
| -9.24 | 152.28 | | 153.63 | 138.02 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -8.92 | 147.91 | | 153.3 | 135.67 | | NLOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB |
| -8.92 | 147.91 | | 153.3 | 137.69 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -4.89 | 143.88 | | 151.25 | 133.62 | | NLOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 0 dB |
| -4.65 | 143.64 | | 151.01 | 135.4 | | NLOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -8.71 | 147.7 | | 155.07 | 137.55 | | LOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 0 dB |
| -8.11 | 147.1 | | 154.47 | 140.68 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -10.44 | 153.48 | | 154.83 | 135.28 | | LOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB |
| -9.79 | 152.83 | | 154.18 | 140.39 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -10.44 | 153.48 | | 154.83 | 135.28 | | LOS | | O2I | | MCS0  The correction factor for BF gain of broadcast channel is 8 dB |
| -9.79 | 152.83 | | 154.18 | 140.39 | | LOS | | O2O | |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

[Table 1-8a: PDSCH with HARQ-ACK for Msg.4 for FR1]

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-9: PDCCH for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -8.5 | | 159.54 | | | 165.66 | | 131.85 | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -8.5 | | 159.54 | | | 165.66 | | 131.85 | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -8.42 | | 159.46 | | | 165.58 | | 131.77 | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -8.5 | 159.54 | | 160.89 | 137.91 | | NLOS | | O2I | |  |
| -8.46 | 159.5 | | 160.85 | 141.4 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -8.5 | 159.54 | | 160.89 | 137.91 | | NLOS | | O2I | |  |
| -8.47 | 159.51 | | 160.86 | 141.41 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -8.42 | 159.46 | | 160.81 | 137.83 | | NLOS | | O2I | | DDDDDDDSUU |
| -8.09 | 144.77 | | 148.77 | 129.32 | | NLOS | | O2O | | DDDDDDDSUU |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -9.33 | 148.32 | | 161.71 | 140.76 | | NLOS | | O2I | |  |
| -9.32 | 148.31 | | 161.7 | 142.25 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -5.73 | 144.72 | | 155.1 | 134.15 | | NLOS | | O2I | |  |
| -6.13 | 145.12 | | 155.5 | 136.05 | | NLOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -9.18 | 148.17 | | 158.55 | 137.76 | | LOS | | O2I | |  |
| -9.07 | 148.06 | | 158.44 | 141.38 | | LOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -11.69 | 162.73 | | 164.08 | 141.26 | | LOS | | O2I | |  |
| -11.59 | 162.63 | | 163.98 | 146.92 | | LOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -11.69 | 162.73 | | 164.08 | 141.26 | | LOS | | O2I | |  |
| -11.59 | 162.63 | | 163.98 | 146.92 | | LOS | | O2O | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

Table 1-10: PDSCH for eMBB for FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Urban 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDSU | vivo | -4.78 | | 156.32 | | | 162.44 | | 131.71 | | 90RB, MCS4 | |
| Qualcomm | -10 | | 146 | | | 157.8 | | 127 | | 53 dBm DL Tx Power | |
| Qualcomm | -10 | | 137 | | | 148.8 | | 118 | | 44 dBm DL Tx Power | |
|  |  | |  | | |  | |  | |  | |
| DDDSUDDSUU | vivo | -4.7 | | 156.24 | | | 162.36 | | 131.63 | | 106RB, MCS4 | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Urban 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | | MCL | | | MIL | | MPL | | Key assumptions | |
| DDDDDDDSUU | vivo | -4.79 | | 156.33 | | | 162.45 | | 131.72 | | 90RB,MCS4 | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Others | Company 1 |  | |  | | |  | |  | |  | |
| Company 2 |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
|  |  | |  | | |  | |  | |  | |
| Rural 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -3.71 | 155.25 | | 156.6 | 136.94 | | NLOS | | O2I | | 9RB, MCS4 |
|  | -3.46 | 155 | | 156.35 | 140.74 | | NLOS | | O2O | | 9RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -4.23 | 155.77 | | 157.12 | 137.46 | | NLOS | | O2I | | DDDDDDDSUU, 10RB, MCS4 |
| -3.94 | 155.48 | | 156.83 | 141.22 | | NLOS | | O2O | | DDDDDDDSUU, 10RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2.6 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | vivo | -3.76 | 155.3 | | 156.65 | 136.99 | | NLOS | | O2I | | DDDDDDDSUU, 9RB, MCS4 |
| -3.56 | 155.1 | | 156.45 | 140.84 | | NLOS | | O2O | | DDDDDDDSUU, 9RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 2 GHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -3.71 | 143.2 | | 156.59 | 138.96 | | NLOS | | O2I | | 12RB, MCS4 |
| -3.74 | 143.23 | | 156.62 | 141.01 | | NLOS | | O2O | | 12RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | 1.1 | 138.39 | | 145.76 | 128.13 | | NLOS | | O2I | | 12RB, MCS4 |
| 0.51 | 138.98 | | 146.35 | 130.74 | | NLOS | | O2O | | 12RB, MCS4 |
| Qualcomm | -11 | 150 | | 163 | 145.4 | | NLOS | | O2O | | See Tdoc for details. |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 700 MHz FDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| UUUUU | vivo | -2.95 | 142.44 | | 149.81 | 132.29 | | LOS | | O2I | | 12RB, MCS4 |
| -3 | 142.49 | | 149.86 | 136.07 | | LOS | | O2O | | 12RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Rural with long distance 4 GHz TDD | | | | | | | | | | | | |
| Frame structure | Company name | The required SNR | MCL | | MIL | MPL | | LOS/ NLOS | | O2I/ O2O | | Key assumptions |
| DDDSU | vivo | -5.03 | 156.57 | | 157.92 | 138.37 | | LOS | | O2I | | 9RB, MCS4 |
| -4.54 | 156.08 | | 157.43 | 143.64 | | LOS | | O2I | | 9RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| DDDSUDDSUU | vivo | -5.87 | 157.41 | | 158.76 | 139.21 | | LOS | | O2I | | 10RB, MCS4 |
| -5.44 | 156.98 | | 158.33 | 144.54 | | LOS | | O2O | | 10RB, MCS4 |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
| Others | Company 1 |  |  | |  |  | |  | |  | |  |
| Company 2 |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |
|  |  |  | |  |  | |  | |  | |  |

2）Baseline performance for FR2

Table 2-1: PUSCH for eMBB for FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | 1.69 | 98.8 | 128.88 | 123.68 | 1 DMRS symbol for each hop |
| Qcom  23dBm UE | -1.2 | 111.2 | 144.3 |  |  |
| Qcom  12dBm UE | -1.2 | 100.2 | 133.3 |  |  |
|  |  |  |  |  |  |
| DDSU | vivo | 0.98 | 99.51 | 129.59 | 124.39 | 1 DMRS symbol for each hop |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | 1.57 | 95.86 | 131.96 | 102.62 | 1 DMRS symbol for each hop, O2I |
| 1.66 | 95.78 | 131.87 | 118.02 | 1 DMRS symbol for each hop, O2O |
| Qcom  23dBm UE | -1.2 | 111.2 | 147.3 |  |  |
| Qcom  12dBm UE | -1.2 | 100.2 | 136.3 |  |  |
| DDSU | vivo | 0.64 | 96.8 | 132.89 | 103.55 | 1 DMRS symbol for each hop, O2I |
| 0.93 | 96.51 | 132.6 | 118.75 | 1 DMRS symbol for each hop, O2O |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-2: PUSCH for VoIP for FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | -11.42 | 120.16 | 150.25 | 145.05 | 20ms period,4 repetitions, 4 HARQ transmission times |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | vivo | -11.42 | 120.16 | 150.25 | 145.05 | 20ms period,4 repetitions, 4 HARQ transmission times |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | -9.41 | 115.1 | 151.19 | 121.85 | 20ms period,4 repetitions, 4 HARQ transmission times, O2I |
| -10.95 | 116.64 | 152.73 | 138.88 | 20ms period,4 repetitions, 4 HARQ transmission times, O2O |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | vivo | -9.41 | 115.1 | 151.19 | 121.85 | 20ms period,4 repetitions, 4 HARQ transmission times, O2I |
| -10.95 | 116.64 | 152.73 | 138.88 | 20ms period,4 repetitions, 4 HARQ transmission times, O2O |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

[Table 2-2a: PUSCH for CSI for FR2]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-3: PUCCH for FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Format type | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Format 1 | vivo | -6.1 | 120.86 | 150.94 | 142.44 | Format 1 No repetition |
| Qcom  23dBm UE | -10.5 | 138.9 | 172 |  |  |
| Qcom  12dBm UE | -10.5 | 127.9 | 161 |  |  |
|  |  |  |  |  |  |
| Format 3 | vivo | -4.41 | 119.18 | 149.26 | 140.76 | Format 3 11bits No repetition |
| -1.13 | 115.9 | 145.98 | 137.48 | Format 3 22bits |
| Qcom  23dBm UE | 0.5 | 127.9 | 161 |  | 11-bits |
| Qcom  12dBm UE | 0.5 | 116.9 | 150 |  | 11-bits |
| Urban 28 GHz TDD | | | | | | |
| Format type | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Format 1 No repetition | vivo | -5.84 | 114.84 | 150.93 | 117.89 | Format 1 No repetition, O2I |
| -6.15 | 115.14 | 151.23 | 134.16 | Format 1 No repetition, O2O |
| Qcom  23dBm UE | -9 | 137.4 | 173.5 |  |  |
| Qcom  12dBm UE | -9 | 126.4 | 162.5 |  |  |
| Format 3 | vivo | -4.09 | 113.08 | 149.17 | 116.13 | Format 3 11bits No repetition, O2I |
| -0.88 | 109.87 | 145.97 | 112.93 | Format 3 22bits, O2O |
| -4.25 | 113.25 | 149.34 | 132.27 | Format 3 11bits No repetition, O2O |
| -0.87 | 109.87 | 145.96 | 128.89 | Format 3 22bits, O2O |
| Qcom  23dBm UE | 2 | 126.4 | 162.5 |  | 11 bits |
| Qcom  12dBm UE | 2 | 115.4 | 151.5 |  | 11 bits |
| Suburban 28 GHz TDD | | | | | | |
| Format type | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Format 1 No repetition | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Format 3 | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-4: SSB for FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -10.6 | 115.19 | 136.79 | 128.29 | The correction factor for BF gain of broadcast channel is 5 dB |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -8.03 | 128.91 | 153.93 | 120.89 | O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -8.03 | 128.91 | 155.93 | 136.86 | O2O  The correction factor for BF gain of broadcast channel is 8 dB |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-5: PRACH for FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Format type | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Format B4 | vivo | -10.35 | 114.32 | 139.4 | 130.9 | The correction factor for BF gain of broadcast channel is 5 dB |
| Qcom  23dBm UE | -12 | 129.8 | 156.9 |  |  |
| Qcom  12dBm UE | -12 | 118.8 | 145.9 |  |  |
|  |  |  |  |  |  |
| Format C2 | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Format type | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Format B4 | vivo | -9.25 | 107.45 | 135.54 | 102.5 | O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -9.38 | 107.58 | 135.68 | 118.61 | O2O  The correction factor for BF gain of broadcast channel is 8 dB |
| Qcom  23dBm UE | -12 | 129.8 | 159.9 |  |  |
| Qcom  12dBm UE | -12 | 118.8 | 148.9 |  |  |
| Format C2 | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Format type | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Format B4 | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Format C2 | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-6: PDCCH of Msg.2 for FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -6.31 | 110.89 | 132.49 | 123.99 | The correction factor for BF gain of broadcast channel is 5 dB |
| Qcom | -7.5 | 117.5 | 132.6 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -5.49 | 126.36 | 151.39 | 118.35 | O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -5.38 | 126.26 | 151.28 | 134.21 | O2O  The correction factor for BF gain of broadcast channel is 8 dB |
| Qcom | -10 | 137 | 152.1 |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-6a: PDSCH of Msg.2 for FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | -4.49 | 109.08 | 130.68 | 125.48 | The correction factor for BF gain of broadcast channel is 5 dB |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | vivo | -4.49 | 109.08 | 130.68 | 125.48 | The correction factor for BF gain of broadcast channel is 5 dB |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | -4.49 | 125.36 | 150.39 | 121.05 | O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -4.03 | 124.91 | 149.93 | 136.08 | O2O  The correction factor for BF gain of broadcast channel is 8 dB |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | vivo | -4.49 | 125.36 | 150.39 | 121.05 | O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -4.03 | 124.91 | 149.93 | 136.08 | O2O  The correction factor for BF gain of broadcast channel is 8 dB |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-7: PUSCH of Msg.3 for FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -2.98 | 114.73 | 139.81 | 134.61 | 2 DMRS symbols for each hop  The correction factor for BF gain of broadcast channel is 5 dB |
| Qcom  23dBm UE | -4.6 | 127 | 154.1 |  |  |
| Qcom  12dBm UE | -4.6 | 116 | 143.1 |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -1.9 | 110.6 | 138.69 | 109.35 | 2 DMRS symbols for each hop, O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -1.93 | 110.63 | 138.72 | 124.87 | 2 DMRS symbols for each hop, O2O  The correction factor for BF gain of broadcast channel is 8 dB |
| Qcom  23dBm UE | -4.6 | 127 | 157.1 |  |  |
| Qcom  12dBm UE | -4.6 | 116 | 146.1 |  |  |
| Suburban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-8: PDSCH of Msg.4 for FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -5.84 | 110.43 | 132.03 | 126.83 | MCS0  The correction factor for BF gain of broadcast channel is 5 dB |
| Qcom | -4.7 | 114.7 | 129.8 |  | Open-loop precoder |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -5.83 | 126.71 | 151.73 | 122.39 | MCS0, O2I  The correction factor for BF gain of broadcast channel is 8 dB |
| -4.91 | 125.79 | 150.81 | 136.96 | MCS0, O2O  The correction factor for BF gain of broadcast channel is 8 dB |
| Qcom | -6.1 | 133.1 | 148.2 |  | Open-loop precoder |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

[Table 2-8a: PDSCH with HARQ-ACK for Msg.4 for FR2]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-9: PDCCH for FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -6.31 | 110.89 | 137.49 | 128.99 |  |
| Qcom | -7.5 | 117.5 | 138.6 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| vivo | -5.49 | 126.36 | 159.39 | 126.35 | O2I |
| -5.38 | 126.26 | 159.28 | 142.21 | O2O |
| Qcom | -10 | 137 | 158.1 |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | |
| Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 2-10: PDSCH for eMBB for FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | -1.79 | 106.87 | 133.47 | 128.27 | 66RB, MCS4 |
| Qcom | -3.5 | 113.5 | 134.6 |  | SVD precoder |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | vivo | -1.59 | 106.68 | 133.28 | 128.08 | 66RB, MCS4 |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Urban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | vivo | -2.09 | 123.47 | 156.49 | 127.15 | 66RB, MCS4, O2I |
| -1.66 | 123.03 | 156.06 | 142.21 | 66RB, MCS4, O2O |
| Qcom | -4.5 | 131.5 | 152.6 |  | SVD precoder |
|  |  |  |  |  |  |
| DDSU | vivo | -1.59 | 122.97 | 155.99 | 126.65 | 66RB, MCS4, O2I |
| -1.47 | 122.85 | 155.87 | 142.02 | 66RB, MCS4, O2O |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Suburban 28 GHz TDD | | | | | | |
| Frame structure | Company name | The required SNR | MCL | MIL | MPL | Key assumptions |
| DDDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| DDSU | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Others | Company 1 |  |  |  |  |  |
| Company 2 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |