#### ***Offline consensus 2-2-1-r1:***

For UPT (user perceived throughput) related performance metrics for FTP model 3 in SLS, adopt the following option.

* Option 1: UPT is defined as the size of an FTP packet divided by the time which starts when the packet is received in the transmit buffer and ends when the last bit of the packet is correctly delivered to the receiver [Refer to TR36.814].
	+ Unfinished FTP packets should be incorporated in the UPT calculation. The number of served bits (possibly zero) of an unfinished FTP packet by the end of the simulation is divided by the served time (simulation end time – file arrival time) [Refer to TR36.889].
	+ Consider zero bit for dropped FTP packets.
	+ Average-UPT of a user: defined as the average from all UPTs for all FTP packets intended for this user [Refer to TR36.814].
	+ Tail-UPT of a user: defined as the worst 5% UPT among all FTP packets intended for this user [Refer to TR36.814].
	+ Median-UPT of a user: defined as the 50% UPT among all FTP packets intended for this user.
	+ Average-UPT CDF: The CDF of the Average-UPTs for all users.
	+ Tail-UPT CDF: The CDF of the Tail-UPTs for all users.
	+ Median-UPT CDF: The CDF of the Median-UPTs for all users.
	+ Mean/5%/50%/95% Average-UPT: The mean/5%/50%/95% value of Average-UPTs for all users.
	+ Mean/5%/50%/95% Tail-UPT: The mean/5%/50%/95% value of Tail-UPTs for all users.
	+ Mean/5%/50%/95% Median-UPT: The mean/5%/50%/95% value of Median-UPTs for all users.

#### ***Offline consensus 2-5-1-r2-Modified (Open):***

Adopt the following table for traffic model of FTP model 3 for scenarios in deployment case 1 for SBFD.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Indoor office (FR1&FR2) | Urban Macro (FR1) | Dense Urban Macro layer (FR1&FR2) | Dense Urban Micro layer (FR2) | Dense Urban with 2-layer (FR1) |
| General | UL and DL are simulated simultaneously. Companies to report which option is used.* Option 1: Each UE is either assigned UL traffic or DL traffic.
	+ assume the same number of UEs for UL and DL, FFS the total number of UEs
	+ FFS how to handle the UE clustering case
* Option 2: Each UE is assigned both UL traffic and DL traffic.
 |
| FTP packet size | Both symmetric and asymmetric packet size for UL and DL can be considered. Companies to report which option is used.* Option 1: Symmetric packet size:
	+ 0.1Mbytes for DL/UL, 1Kbyte for DL/UL, 0.5Mbytes or 2Mbytes
* Option 2: Asymmetric packet size:
	+ 4Kbytes for DL and 1Kbyte for UL, 0.5Mbyte for DL and 0.125 Mbytes for UL
	+
 |
| UL arrival rate for legacy TDD | * The UL arrival rate is selected to reach a target UL traffic load (RU).
* UL Traffic load: low UL RU ([<10%]), medium UL RU ([20%-30%]), and high UL RU ([~50%]).
* Note: Type-2 RU definition (calculated per link direction) is used
 | * The UL arrival rate#1 of Macro cell and UL arrival rate#2 of Micro cell are selected to reach target UL traffic load (RU)#1 of Macro cell and target UL traffic load (RU)#2 of Micro cell, respectively
* UL Traffic load: low UL RU ([<10%]), medium UL RU ([20%-30%]), and high UL RU ([~50%]).
* Note: Type-2 RU definition (calculated per link direction) is used
 |
| DL arrival rate for legacy TDD | * The DL arrival rate is selected to reach a target DL traffic load (RU).
* DL Traffic load: low DL RU ([<10%]), medium DL RU ([20%-30%]), and high DL RU ([~50%]).
* Note: Type-2 RU definition (calculated per link direction) is used
 | * The DL arrival rate#1 of Macro cell and DL arrival rate#2 of Micro cell are selected to reach target DL traffic load (RU)#1 of Macro cell and target DL traffic load (RU)#2 of Micro cell, respectively
* DL Traffic load: low DL RU ([<10%]), medium DL RU ([20%-30%]), and high DL RU ([~50%]).
* Note: Type-2 RU definition (calculated per link direction) is used
 |
| ~~DL arrival rate for legacy TDD~~ | * ~~The DL arrival rate is determined by the ratio of DL/UL traffic~~
* ~~Ratio of DL/UL traffic: {2:1}, {4:1} and {1:1}~~
 | * ~~The DL arrival rate#1 is determined by the UL arrival rate#1 and ratio of DL/UL traffic of Macro cell. DL arrival rate#2 is determined by the UL arrival rate#2 and ratio of DL/UL traffic of Micro cell~~
* ~~Ratio of DL/UL traffic: {2:1}, {4:1} and {1:1}~~
 |
| Arrival rate for SBFD | The UL and DL FTP packet arrival rate for SBFD are the same as legacy TDD. |

#### ***Updated proposal 2-7-1-r2 (Open):***

For LOS probability of gNB-gNB channel,

* For Macro-gNB-to-Macro-gNB case, option 1 is baseline, it is up to companies to use option 3
	+ Option 1: Reuse the gNB-to-UE LOS probability equation in TS38.901
	+ Option 2: Modify the gNB-to-UE LOS probability equation to provide higher LOS probability
		- Instead of d2D-out, smaller (e.g., half of d2D-out) is used
	+ Option 3: If the 2D distance between two Macro gNBs are less than or equal to the ISD (200m for Dense Urban, and 500m for Urban Macro), set the LOS probability to X; Otherwise, reuse gNB-to-UE LOS probability equation in TR 38.901.
		- FFS: X = [0.7~~, 0.8, 1~~]
* For other cases, reuse gNB-to-UE LOS probability equation in TR 38.901.

#### ***Working assumption (Open):***

Adopt the following table for gNB-gNB channel model and gNB-UE channel model.

gNB-UE channel model and gNB-gNB channel model

|  |  |  |
| --- | --- | --- |
|  | **Dense urban, Urban macro** | **Indoor office** |
| Large-scale channel parameters | FR1:* Macro-to-UE: UMa in TR 38.901
* Micro-to-UE: UMi-Street canyon in TR 38.901
* Macro-to-Macro: UMa in TR 38.901 (hUE =25m),
* Macro-to-Micro: UMa in TR 38.901 (hUE =10m)
* Micro-to-Micro: UMi-Street canyon in TR 38.901 (hUE =10m)

FR2-1:* Macro-to-UE: UMa in TR 38.901
* Micro-to-UE: UMi-Street canyon in TR 38.901
* Macro-to-Macro: UMa in TR 38.901 (hUE =25m)
* Macro-to-Micro: UMa in TR 38.901 (hUE =10m)
* Micro-to-Micro: UMi-Street canyon in TR 38.901 (hUE =10m)
 | FR1:* TRP-to-UE: InH-Office in TR 38.901
* TRP-to-TRP: InH-Office in TR 38.901 (hUE =3m)

FR2-1:* TRP-to-UE: InH-Office in TR 38.901
* TRP-to-TRP: InH-Office in TR 38.901 (hUE =3m)
 |
| Fast fading parameters | FR1:* Macro-to-UE: UMa in TR 38.901
* Micro-to-UE: UMi-Street canyon in TR 38.901
* Macro-to-Macro: UMa O2O in TR 38.901 (hUE =25m); ASA and ZSA statistics updated to be the same as ASD and ZSD; ZoD offset = 0
* Macro-to-Micro: UMa O2O in TR 38.901
* Micro-to-Micro: UMi-Street canyon O2O in TR 38.901 (hUE=10m); ASA and ZSA statistics updated to be the same as ASD and ZSD; ZoD offset = 0

FR2-1:* Macro-to-UE: UMa in TR 38.901
* Micro-to-UE: UMi-Street canyon in TR 38.901
* Macro-to-Macro: UMa O2O in TR 38.901 (hUE=25m); ASA and ZSA statistics updated to be the same as ASD and ZSD; ZoD offset = 0
* Macro-to-Micro: UMa O2O in TR 38.901
* Micro-to-Micro: UMi-Street canyon O2O in TR 38.901 (hUE=10m); ASA and ZSA statistics updated to be the same as ASD and ZSD; ZoD offset = 0
 | FR1:* TRP-to-UE: InH-Office in TR 38.901
* TRP-to-TRP: InH-Office in TR 38.901 (hUE=3m), ASA and ZSA statistics updated to be the same as ASD and ZSD

FR2-1:* TRP-to-UE: InH-Office in TR 38.901
* TRP-to-TRP: InH-Office in TR 38.901 (hUE =3m), ASA and ZSA statistics updated to be the same as ASD and ZSD
 |

#### ***working assumption 2-7-3-r2 (Open):***

For UE-UE channel model, reuse the UE-UE channel model for flexible duplex evaluation in TR 38.802 for both FR1 and FR2, and adopt the following tables.

UE-UE channel model

|  |  |  |
| --- | --- | --- |
|  | **Dense urban, Urban macro** | **Indoor office** |
| Large-scale channel parameters | FR1:* UE-to-UE: A.2.1.2 in TR36.843(\*), penetration loss between UEs follows Table A.2.1-13 in TR38.802

FR2-1:* UE-to-UE: UMi-Street canyon in TR 38.901 (hBS =1.5m ~ 22.5m), penetration loss between UEs follows Table A.2.1-12 in TR38.802
 | FR1:* UE-to-UE: A.2.1.2 in TR36.843 (\*)

FR2-1:* UE-to-UE: InH-Office in TR 38.901 (hBS =1.5m)
 |
| Fast fading parameters | FR1:* UE-to-UE: A.2.1.2 in TR36.843 (ITU InH) for indoor to indoor, and 3D UMi for other cases. ASD and ZSD statistics updated to be the same as ASA and ZSA.

FR2-1:* UE-to-UE: UMi-Street canyon in TR 38.901; ASD and ZSD statistics updated to be the same as ASA and ZSA.
 | FR1:* UE-to-UE: A.2.1.2 in TR36.843 (ITU InH), ASD statistics updated to be the same as ASA.

FR2-1:* UE-to-UE: InH-Office in TR 38.901 (hBS =1.5m), ASD and ZSD statistics updated to be the same as ASA and ZSA
 |

#### ***offline consensus-r2(Open):***

For evaluation of SBFD and dynamic/flexible TDD, adopt the following evaluation assumptions.

|  |  |  |
| --- | --- | --- |
|  | **FR1** | **FR2-1** |
| System bandwidth | 100MHz | 100MHz |
| Numerology | 14 OFDM symbol slotSCS = 30kHz | 14 OFDM symbol slotSCS = 120kHz |
| UE Tx power | 23dBm | 23 dBm. EIRP should not exceed 43 dBm[refer to TR 38.802 Table A.2.1-1] |
| Open loop power control parameters | Companies to report power control parameters.For calibration:* P0= -60 dBm, alpha = 0.6 for InH [refer to TR 37.910, evaluation assumption in B.4.1\_eMBB\_SE.zip]
* P0= -86 dBm, alpha = 0.9 for Dense Urban [refer to TR 37.910, evaluation assumption in B.4.1\_eMBB\_SE.zip]
* P0= -80 dBm, alpha = 0.8 for Urban Macro
 |
| BS receiver noise figure | 5dB [refer to TR 38.802 Table A.2.1-1] | 7dB [refer to TR 38.802 Table A.2.1-1] |
| UE receiver noise figure | 9 dB [refer to TR 38.802 Table A.2.1-1] | 13 dB (baseline), 10 dB (optional) [refer to TR 38.802 Table A.2.1-1] |
| UE receiver | MMSE-IRC as the baseline receiver. Note: Advanced receiver is not precluded.[refer to TR 38.802 Table A.2.1-1] |
| Feedback assumption | Realistic [refer to TR 38.802 Table A.2.1-1] |
| Channel estimation | Companies to report the option used.Option 1: IdealOption 2: Realistic [refer to TR 38.802 Table A.2.1-1] |
| UE processing capability | UE processing capability 1 as baseline | UE processing capability 1 as baseline*
 |
| Handover margin | 3 dB [refer to TR 38.828 Table 5.2.1.4-1] |
| UE attachment | Based on RSRP from port 0 [refer to TR 37.910, evaluation assumption in B.4.1\_eMBB\_SE.zip] | Based on RSRP from port 0. The UE panel with the best receive SNR is chosen. i.e. no combining is done between panels. [refer to TR 37.910, evaluation assumption in B.4.1\_eMBB\_SE.zip] |
| Polarized antenna model | Model-1 in clause 7.3.2 in TR 38.901 |
| DL/UL Modulation | Up to 256QAM |
| Transmission scheme | Companies to report transmission schemes (e.g., SU-MIMO, MU-MIMO, maximum layers for SU-MIMO/MU-MIMO, etc) For calibration, consider SU-MIMO with single layer for both DL and UL  |
| Scheduling | PF |
| Overhead | Companies to report the overhead assumption |

#### ***Offline consensus 2-3-1-r1 (Open):***

Update the previous agreement as below:

For UE distribution of Urban Macro and Dense Urban Macro layer,

* Baseline: (UE clustering at least for FR1)
	+ M users per macro TRP
		- Step 1: Randomly drop *X* UE cluster centers within one macro cell geographical area considering the minimum distance between macro TRP to UE cluster center as Dmacro-to-cluster and the minimum distance between two UE cluster centers as Dinter-cluster
		- Step 2: *Y%* UEs are randomly and uniformly dropped within the UE clusters with the radius of R, (1-*Y%*) users randomly and uniformly dropped outside the clusters and throughout the macro geographical area
		- Note: UEs dropped within the UE cluster(s) are indoor with 3km/h; UEs dropped outside the UE cluster(s) are outdoor in car with 30km/h
		- UE outdoor/indoor proportion: 20% outdoor in cars: 30km/h; 80% indoor in houses: 3km/h
			* Outdoor UEs: 1.5 m;
			* Indoor UEs: 1.5m
		- Y%=80%
		- FFS the values of M, X*,* Dmacro-to-cluster, Dinter-cluster*,* R
* Optional:
	+ 10 users per macro TRP, and all users are randomly and uniformly dropped within the macro cell
	+ At least for FR1: 20% outdoor in cars: 30km/h; 80% indoor in houses: 3km/h
		- Outdoor UEs: 1.5 m;
		- Indoor UEs: 3(nfl – 1) + 1.5; nfl ~ uniform(1, Nfl) where Nfl ~ uniform(4,8) [refer to TR 36.873 Table 6-1]
	+ FFS: FR2 details

#### ***Initial proposal 2-3-3 (Open):***

For Dense Urban Micro layer for FR2-1,

* Regarding the layout, only consider the Micro TRPs of Dense Urban 2-layer network. All users communicate with micro TRPs, i.e. macro cell is only used for determining position of micro TRP.
* Regarding UE distribution, 10 users per Micro TRP, and all users are randomly and uniformly dropped around Micro TRP center with the radius of R (R = [28.9m]).

#### ***Initial proposal 2-3-9 (Open):***

For UE distribution of Dense Urban with 2-layer, reuse the modeling in TR38.802 as much as possible.

* For FTP traffic model 3: 2/3 users randomly and uniformly dropped around micro TRP centers with radius of R (R = [28.9m]), 1/3 users randomly and uniformly dropped throughout the macro geographical area, and 60 users per macro geographical area.
* UE outdoor/indoor proportion: 20% outdoor in cars: 30km/h; 80% indoor in houses: 3km/h
	+ Outdoor UEs: 1.5 m;
	+ Indoor UEs: 3(nfl – 1) + 1.5; nfl ~ uniform(1, Nfl) where Nfl ~ uniform(4,8)