**3GPP TSG-RAN WG4 Meeting #112Draft\_** **R4-2414284**

**Maastricht, Netherlands, 19th – 23rd August 2024**

**Agenda item:** 8.2.6

**Source:** Moderator (Qualcomm)

**Title:** WF for 15GHz UE parameters

**Document for:** Approval

# Sub-topic 1-1: UE Type

At last meeting the following agreement was captured in the WF (R4-2410741):

|  |
| --- |
| **Agreement:** * For simulations, consider both options.
	+ FR1 like
		- RX diversity gain: [0 or 5] dB assuming 4RX
		- TX: 0dBi omnidirectional
		- Max Power: 23 dBm, 26dBm
	+ FR2 like
		- Two panels (one in each direction) 2x2 antenna
			* 5dBi element gain. Array gain comes on top
		- Power: 23 dBm as max TRP
 |

**Issue 3-1: UE Type assumption for comparison of FR1 Vs FR2 like UE performance**

* FFS the below options for UE types:
	+ Revisit RAN4#111 UE type assumption with the following options
	+ Companies are encouraged to clarify their assumption when they provide simulation results.
	+ FR1-like UE:
		- Option 1: 1TX assumption with omnidirectional antenna
		- Option 2: Two discrete elements following Table 1-1 below with maximum-gain across elements selection criterion.
		- Option 3: For 4Tx/4Rx, [5dB] gain for link of interest regardless the AoA, and 0dB for signals from all non-serving co-channel and adjacent-channel links regardless the AoA.
	+ FR2-like UE:
		- FR2-likUE: Two panels with 1x2 array at each panel following Table 1-2 below with maximum gain across panels critertion.

Table 1-1: FR1-like UE discrete antenna model

|  |  |
| --- | --- |
| Parameter | Values |
| Antenna element vertical radiation pattern (dB) |  |
| Antenna element horizontal radiation pattern (dB) |  |
| Combining method for 3D antenna element pattern (dB) |  |
| Maximum directional gain of an antenna element *GE,max* | 5 dBi |

Table 1-2: FR2-like UE antenna model

|  |  |
| --- | --- |
| Parameter | Values |
| Antenna element vertical radiation pattern (dB) |  |
| Antenna element horizontal radiation pattern (dB) |  |
| Combining method for 3D antenna element pattern (dB) |  |
| Maximum directional gain of an antenna element *GE,max* | 5 dBi |
| (Mg, Ng, M, N, P)  |  (1, 1, 1, 2, 2) |
| (dv, dh) | (0.5λ, 0.5λ) |
| UE orientation | Random orientation in the azimuth domain: uniformly distributed between -90 and 90 degrees\*Fixed elevation: 90 degrees |
| NOTE: This is done to emulate two panels: the configuration is equivalent to 2 panels with 180 shift in horizontal orientation and UE orientation uniformly distributed in the azimuth domain between -180 and 180 degrees. |

## Sub-topic 1-3 UE noise factor in the LS reply

At last meeting the following agreement was captured in the WF (R4-2410741):

|  |
| --- |
| **Agreement:** * 11dB for simulations. Actual noise factor for reply will be decided based on feasibility.

Note that RAN4 agreed on 13 dB for UE in 7.125 – 8400 MHz frequency range.  |

**Issue 3-3: UE noise factor for both simulation and LS reply**

* FFS the below options:
	+ Option 1: 11 dB i.e. follow simulation assumption (Nokia)
	+ Option 2: 8 dB (Ericsson)
	+ Option 3: More than 11 dB (MediaTek)

## Sub-topic 1-4: UE RF and Antenna parameter update to TR 38.922

Since the discussion on the UE beamforming feasibility is still ongoing, it is recommended to note R4-2411143 for this meeting and continue the discussion in the next two meetings.