**Rel.17 FeMIMO EVM Offline Discussion**

**Phase 1 - High Level**

Please share your view on the questions below in the provided tables.

1. Q1: If the respective item (cf. WID) requires some discussion on evaluation methodology **in addition** to what we already agreed in Rel.16 eMIMO
2. Q2: If the answer to Q1 is yes, potential aspects of evaluation methodology (initial and high-level assessment, i.e. tentative)

**Table 1 Item 1 – Multi-beam**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | Yes | Item 1a specific: * SLS is the primary tool for evaluation at least for intra-cell mobility (typical BM).
* Inter-cell mobility may consider other (simpler) metrics such as dropped-call rate
* SLS layout to evaluate high-mobility scenarios @FR2 (e.g. highway, intra/inter-cell, HST cf. 2d): Reuse 38.913 and 38.802 as much as possible.
	+ Note: For HST, use the same model as item 2d

Item 1b specific:* SLS is the primary tool for evaluation for evaluating MPE issue
* MPE-specific assumptions need to be discussed: 1) panel blocking model, 2) EIRP

Common (1a and 1b):* UE multi-panel assumptions:
	+ 3-panel UE as a baseline should be evaluated (left, right, top), each panel is 1x4x2
	+ Beam direction per panel needs to be aligned or at least elaborated
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**Table 2 Item 2a – mTRP PDCCH/PUSCH/PUCCH**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | Yes | PDCCH: LLS as primary tool for evaluation* Scenario and channel model: reuse 38.913 as much as possible. (@FR2, focus on IIoT scenarios with a certain blockage probability)
* PDCCH configurations: AL, interleaving, DCI format/size, # of symbols
* Repetition method, e.g., TDM as a starting point
* Decoding assumptions, e.g., whether to allow soft combining
* Reliability target for PDCCH

PUCCH and PUSCH: LLS as primary tool for evaluation* Scenario and channel model: reuse 38.913 as much as possible. (@FR2, focus on IIoT scenarios with a certain blockage probability)
* Resource configuration, e.g., targeted PUCCH format, # of RBs/symbols
* Repetition method, e.g., TDM only (intra/inter-slot, same/different resource configuration)
* Decoding assumptions, e.g., whether to allow soft combining for PUCCH
* Tx power control, e.g., per TRP
* Reliability target for PUCCH, PUSCH
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**Table 3 Item 2b – inter-cell mTRP**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | No | -- |
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**Table 4 Item 2c – mTRP beam management**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | Yes | LLS as primary tool for evaluationWe think the following assumptions, which had been agreed in Rel-16 can be reused:* Channel model (CDL-A)
* BS antenna configuration, i.e., (M, N, P, Mg, Ng) = {(4,8,2,1,1), (4,8,2,2,2)}

The followings should be further discussed in Rel-17* UE antenna configuration

e.g., for UE with 2-panels (M, N, P, Mg, Ng) = (2,4,2,1,2) and Ω0,1=Ω0,0+180°FFS, other practical UE implementation with >2 panels (e.g. from item 3)* Pre-determined SNR offset across each TRP-UE channel
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**Table 5 Item 2d – HST**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | Yes | LLS as primary tool for evaluation* Deployment scenarios: for both FR1 and FR2, reuse 38.913 as much as possible
* HST-SFN channel models: reuse the HST-SFN channel model agreed in RAN4 as much as possible
* Time-varying Doppler frequency modeling, e.g., as defined in RAN4
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**Table 6 Item 3 – SRS**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | Yes | LLS as primary tool for evaluation* UL channel estimation and error modeling + UL Tx power
* SRS configuration (UL carrier frequency or UL-DL duplex distance, SRS BW, #symbols, comb, time-bundling and antenna switching)
* Practical UE implementation on antenna switching
	+ Omni-directional UE antennas for FR1
	+ Directional UE antennas for FR2, FFS angle between panels for UEs with >2 panels
* Performance metric: BLER of PDSCH and/or PUSCH, MSE of channel
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**Table 7 Item 4 – CSI**

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| **Company** | **Q1 (Y/N)** | **Q2** |
| Samsung | Yes | Item 4a: SLS as primary tool for evaluation* Deployment scenarios
	+ Rel-16 MTRP assumption as baseline
	+ Large # of TP antennas for both UMa and InH, e.g., Up to 256 antenna elements assumed in 38.913
	+ Focus on ideal backhaul assumption
* CSI report configuration and overhead: # of reports, periodicity, feedback delay
* IMR assumptions for NC-JT and inter-cell interference calculation, e.g., IMR for inter-cell interference only

Item 4b: modeling realistic system aspects such as (at least some of) the followings  * UL channel estimation and error modeling + UL Tx power (e.g. based on UL PC)
* SRS configuration (UL carrier frequency or UL-DL duplex distance, SRS BW, #symbols, comb, time-bundling and antenna switching)
* Frequency offset modeling (e.g. according to the FDD reciprocity model in 36.897
* PAPR issue modeling for >=8 CSI-RS ports
* UL/DL reciprocity errors (due to different Tx-Rx RF circuitry different UL-DL interference profile)
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