

Source: Motorola
Title: Deployment Scenarios for MBMS
Document for: Discussion
Agenda Item: 6.2

1. Introduction

Reference system deployments, Case1 to Case4, have been defined in [1] in order to characterise EUTRA performance. During recent discussions on MBMS, alternate deployments have been mentioned with emphasis put on parameters such as cell size, carrier frequency, eNB antenna height, eNB radiated power level and UE ACIR. This contribution proposes a clarification of MBMS deployment scenarios to better focus work on the MBMS feature.

2. Discussion

The current parameters for unicast reference deployments Case 1 to Case 4 [1] are listed below in Table 1.

Simulation Cases	CF (GHz)	ISD (meters)	BW (MHz)	PLoss (dB)	Speed (km/h)
1	2.0	500	10	20	3
2	2.0	500	10	10	30
3	2.0	1732	10	20	3
4	0.9	1000	1.25	10	3

Table 1 - LTE deployment reference cases.

Although unicast services were at the forefront of consideration when constructing these reference cases, each by default is also applicable to unicast/MBMS-mixed mode. Accordingly, Motorola proposes that for unicast/MBMS-mixed mode, the existing unicast LTE simulation conditions should apply [2].

Concerning MBMS-dedicated mode, [2] investigates E-MBMS performance for various cell sizes at the currently specified eNB radiated power levels (i.e. 46dBm for 10MHz etc.) for Case 3. It is shown that spectral efficiency achievable for the Case 3 deployment scenario (1.0km radius, 1.7km ISD) can be maintained when the eNB radiated power level is kept constant for cell sizes up to 2.9km radius (5km ISD) if the carrier frequency is reduced to 900MHz and path loss reduced to 10dB.

Accordingly, in order to include an example MBMS-dedicated scenario reflecting benign propagation conditions at low carrier frequencies, and using the same radiated power levels as the current unicast assumptions, this deployment scenario could be a candidate for dedicated E-MBMS mode.

3. Conclusions

In summary, it is proposed that a Case 5 is added to the unicast LTE deployment reference cases as shown in Table 2 with existing simulation Case 1 to Case 4 relevant for both unicast mode and unicast/MBMS-mixed mode, and a new simulation Case 5 specified for MBMS-dedicated mode. Existing Table A.2.1.1-1 from TS 25.814 [1] would be modified from Table 1 above to Table 2 shown below.

Simulation	CF	ISD	BW	PLoss	Speed	Deployment
Cases	(GHz)	(meters)	(MHz)	(dB)	(km/h)	Mode
1	2.0	500	10	20	3	Unicast and Unicast/MBMS-mixed
2	2.0	500	10	10	30	
3	2.0	1732	10	20	3	
4	0.9	1000	1.25	10	3	
5	0.9	5000	10	10	3	MBMS-dedicated

Table 2 - Proposed LTE deployment reference cases.

4. References

- [1] 3GPP TR 25.814, v.7.1.0, "Physical Layer Aspects for Evolved UTRA", 3GPP TSG RAN, Sept 2006
- [2] R1-070050, Motorola, Nokia, "CP Length for Unicast/MBMS-Mixed Mode", WG1#47bis, Sorrento, Italy, Jan.15-19, 2007