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Title	Some Requirements of As-Yet-Defined MBWA Air Interface	
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Re:	MBWA ECSG Call for Contributions and C802m-ecsg-02/02	
Abstract	This article presents some necessary requirements of MBWA Air Interface in the light of support of MBWA activity.	
Purpose		
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Some Requirements of As-Yet-Defined MBWA Air Interface

1. Background

In line with the currently identified MBWA activity and 802m-ecsg-02/06, Samsung would like to make some comments in order to advocate the establishment of work-scope of MBWA more reasonably, in particular, focused on the core air interface project. To this end, this article highlights the need for unique distinguished features of MBWA air interface. Also, partial requirements of MBWA air interface are addressed.

2. Proposed Requirements for MBWA Uniqueness

One of the ready-made specifications from 3G standards nick-named 1xEV-DO from 3GPP2 is capable of providing increased data rate for various types of data applications. The other 3G evolution example from 3GPP2 known as 1xEV-DV (3GPP2 Release C Air Interface Specification) also provides much improved performance compared to its previous versions. Key technical contributors to those two standards include more sophisticated Mobile-BaseStation interaction and hybrid ARQ. Some of key parameters of 1xEV-DO and 1xEV-DV can be summarized as follows:

	1xEV-DO	1xEV-DV
Bandwidth	1.25 MHz	
Peak Data Rate (FL)	2.5 Mbps	3.1 Mbps
Peak Data Rate (UL)	153.6 kbps	451.2 kbps
FL Slot Length	1.67 msec	1.25 msec
HARQ Supported	Yes	Yes
Modulation	QPSK, 8-PSK, 16-QAM	

Both 1xEV-DO and 1xEV-DV adopted 1.25 MHz to provide approximated spectral efficiency over Forward Link of 2 or higher (when applying 16-QAM).

Meanwhile, 3GPP also has its own evolution version from Release 99 WCDMA, which is designed for very high speed downlink packet access.

2.1 Bandwidth

If the group is to consider both 1.25 and 5 MHz as the bandwidth of the system, higher bandwidth (5 MHz) appears to be the item that require more effort/focus, in the sense that wider bandwidth can provide better performance in terms of data rate. This can also contribute to offer compelling performance compared to ready-made 3G and its evolution versions.

2.2 Some Requirements – Data Rate

As a whole, we would like to propose the following numbers as partial characterization of the MBWA air interface viewed from the alternative side.

Characteristics	BW = 1.25 MHz	BW = 5 MHz
Mobility	upto 250 kmh or higher	
Spectral Efficiency of FL	upto 3~4 b/s/Hz/cell or higher	
Peak Data Rate (FL)	5 Mbps	15 Mbps
Peak Data Rate (RL)	1 Mbps	3 Mbps
Spectrum	< 3.5 GHz	

3. Conclusive Remarks

Consolidated quantitative comparison of requirements/features between 3G and MBWA is important to enable distinct and efficient packet-based air interface for IP applications. It should be addressed that the “distinct identity” of MBWA air interface covers compelling performance enhancement compared to all other ready-made 3G and its evolution version systems in order to appropriately quantify the requirements of the MBWA air interface. Also, it is very important for the member companies work together to consolidate the activity of this group.

References

- [1] IEEE 802m-ecsg-02/06, “Mobile Broadband Wireless Access Air Interface Desired Characteristics”, Flarion and Arraycomm, September 2002
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- [3] C.S0002-C V1.0, “Physical Layer Standard for cdma2000 Spread Spectrum Systems Release C”, May 2002

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