Bruce Officer

From: York, Richard, VF-NZ [Richard.York@vodafone.com]
Sent: Monday, 22 September 2008 17:42
To: Bruce Officer
Subject: Elaboration on co-location link loss budget

Dear Bruce

I refer to your email of 2:56pm on Thursday 18 September. In that email, you ask Vodafone to clarify our understanding of what the maximum loss in the link budget should be under each of the following two calculations

1) [N + I(ext)] / N

and

2) [N + I(int) + I(ext)]/ [N + I(int)]

At the outset, we note it is our belief that calculation (2) above should be used by the Commission for quantifying the impact on the link budget. This is because the impact on the link budget will be determined by all of :

- the receiver noise floor (N);
- external interference (I(ext)); and
- interference from existing users (I(int)).

To explain, when external interference (i.e. I(ext)) is introduced into an existing cell, the cell will seek to adjust to this interference. In particular, the cell will try to increase the transmit power of mobiles served by that cell (compared to when I(ext) was not present). However, the transmit power of all mobiles served by that cell will not be increased. Some mobiles may lose service and others may get a service downgrade (such as a reduction in data rate) to ensure that the cell maintains the load that the cell is designed to operate at. The exact impact of this increase on the link budget depends on a number of factors, such as how the cell controls load, the distribution of mobiles, traffic mix, nature of adjacent cells etc. Accordingly, it is difficult to precisely work out the most likely scenario that will follow. Nonetheless, there will be a reaction within the existing system to the introduction of external interference, and this effect should be taken into account. This is done in calculation (2) via the inclusion of the impact of I(int). In our opinion, the value of I(int) used in the original link budget will be a good approximation of the end result of this reaction to the introduction of external interference.

In response to your specific question, the reports referred to by Kordia – which are relied upon by the Commission in its draft STD for the Mobile Co-location Service - apply to IMT-2000 systems or 3G. In this context, we believe the following estimates of impact on the link budget result under the two scenarios you outline in your email:

1) [N + I(ext)] / N is **0.97db or 1dB**

And

2) [N + I(int) + I(ext)]/ [N + I(int)] is **0.51dB**.

Should you have any further queries in relation to this matter – or would like to discuss further any assumptions we might rely upon in reaching these conclusions - please feel free to contact me via return email, or on 021 882

429.

Kind regards

Richard York
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