

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)	
)	Docket No. 02-86
AIRCELL, INC.)	
)	
Petition for Extension of Waiver)	

To: The Commission

EX PARTE FURTHER COMMENTS OF LUCENT TECHNOLOGIES INC.

Lucent Technologies Inc. (“Lucent”) herein comments upon the Reply Comments of AirCell, Inc., WT Docket No. 02-86, filed June 9, 2003.

V-COMM, LLC, a telecommunications engineering consultant, was engaged by AT&T Wireless, Cingular, and Verizon Wireless to assess the interference potential of AirCell operations.¹ As these tests entailed the use of Lucent equipment, Lucent provided consultation to V-COMM and, in its Comments, Lucent commented on the V-COMM results.² AirCell, in its Reply Comments, disputes the results of V-COMM.

AirCell has asserted incorrectly that V-COMM did not follow Lucent documentation in processing PLM data (PLM is a cell site feature that logs received power over time), and that Lucent’s observation of a degraded blocked call rate was not meaningful.

Specifically, AirCell claims that V-COMM did not follow the rules related to the PLM tool and thereby suggests that Lucent’s audit of this process was less than thorough.³ AirCell’s claim and suggestion are wrong. V-COMM did, in fact, consult with Lucent regarding the method of processing PLM data. AirCell argues that some readings at the lower end of the measurement range should be discarded, evidently basing this objection upon a statement within an old AT&T Corp. manual that points out the lowest values obtained represent noise rather than interference.⁴ As V-COMM’s purpose was to obtain a baseline of total impairment (i.e., thermal noise plus other sources of cochannel interference), the retention of these values was appropriate. The statement from the AT&T manual is taken out of context, and does not apply to V-COMM’s intended use of the data.

¹ V-COMM, Inc., Engineering Report of the AirCell Compatibility Test, April 10, 2003.

² Lucent Comments, April 10, 2003.

³ AirCell Reply Comments at 33, 36.

⁴ AirCell Reply Comments at 38. The manual to which AirCell refers was produced by the AT&T business unit that developed and sold wireless infrastructure prior to the 1996 split of AT&T into three separate companies. In 1996, this AT&T unit became part of Lucent Technologies Inc.

Further, AirCell's statement regarding the observed degradation in blocked call rate reflects a misunderstanding of the analysis.⁵ As stated in its Comments, Lucent examined interference effects that met a certain level of statistical significance based solely on the sample size.⁶ A statistically significant difference in blocked call rate (BCR) was observed in the TDMA data in the sense that the BCR observed in the presence of interference falls outside the probable range of BCR values that can occur in the absence of interference. This statistically significant difference occurred for interference in the -117 to -114 dBm range. Similar statements cannot be made about the observed difference in TDMA BCR for lower interference levels, since these differences fall within the range of normal statistical variability.

Lucent's Comments also included an Appendix, "Impact of External Interference on CDMA." This appendix provided graphs that could be used to assess the capacity and coverage impact of AMPS interferers on a CDMA network. AirCell incorrectly interprets and inappropriately modifies these results. In summary, AirCell argues that Lucent overstates the coverage impact of a narrowband interferer because Lucent does not consider that the interferer's power would be spread over the bandwidth of the CDMA carrier.⁷ AirCell wrongly concludes that the actual impact in this scenario would be 16.1 dB more benign than that shown in the figure.⁸ AirCell is similarly mistaken in concluding that the capacity impact described by Lucent is overstated.⁹ In fact, the graphs in question already include the effect of spreading the narrowband interference power over the CDMA bandwidth. AirCell's suggested adjustment essentially applies a spreading gain twice, as opposed to once. By applying spreading gain twice, AirCell significantly underestimates the impact of narrowband interferers. This method of analysis is incorrect and could not be supported by valid measurements. Therefore, any assertion that field data supports this approach should be closely evaluated.

Finally, AirCell appears to place some meaning on the fact that the authors of the study Lucent included in its Comments were not listed, stating that "the unknown author of this testimonial seems to misunderstand the concepts of CDMA spreading and despreading ..."¹⁰

The correct analysis of narrowband interference has been key to Lucent's widespread successful deployment of cellular CDMA systems, which typically operate in close spectral and spatial proximity to AMPS systems. The Appendix on interference was authored by Dr. Shen-De Lin and Mr. Mark Newbury, who have played a key role in the design and implementation of Lucent wireless spread spectrum systems for over a decade. Dr. Lin is a Consulting Member of Technical Staff (CMTS), with specialty in the analysis of mutual interference between wireless systems. Mr. Newbury is a Senior

⁵ AirCell Reply Comments at 63, and Attachment, "AirCell Engineering Review of V-Comm Reports," at §3.2.

⁶ Lucent Comments, at 12.

⁷ AirCell Reply Comments of, at 63.

⁸ Id. at 3.2-4.

⁹ Id. at 3.2-5.

¹⁰ Id. at 3.2-6.

Manager in Radio Technology Applications, and a Fellow of Bell Laboratories. Either would be glad to provide any further clarification that the Commission would find useful.

Respectfully submitted,

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October 9, 2003