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**DECLARATION OF DR. KIM KYLLESBECH LARSEN
Senior Vice President, Deutsche Telekom AG**

I, Kim Larsen, hereby declare the following:

I. BIOGRAPHICAL INFORMATION

1. I am the Senior Vice President, Technology Service and International Network Economics of Deutsche Telekom AG (“DT”) and am responsible for International Network Economics, a department that I founded within T-Mobile International in 2003. My qualifications and biographical information are a matter of record in this docket. (Larsen Decl. ¶¶1-3).

II. INTRODUCTION AND SUMMARY

2. I have reviewed the Reply Declaration of William Hogg (“Hogg Reply Declaration”) and the Reply Declaration of Jeffrey H. Reed and Nishith D. Tripathi (“Reed/Tripathi Reply Declaration”). I concur with the technical findings of these declarations concerning the capacity and network efficiencies presented by the combination of AT&T and T-Mobile USA.

3. Additionally, I have reviewed the Declaration of Steven Stravitz (“Stravitz Declaration”) filed in support of Sprint Nextel’s Petition to Deny and disagree with its findings on: (a) tower siting, (b) cell site grid and utilization efficiencies and (c) LTE spectrum requirements. Tower siting issues are extremely complex and complicated and the Stravitz Declaration provides best-case scenarios for tower siting that are not based on the realities facing established wireless providers. The efficiencies gained from this transaction are well-documented by the Public Interest Statement and Declarations and are based on robust traffic engineering and modeling. Finally, the efficiency gains from

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LTE are incontrovertible and are well-established by network operators and engineering standards and documentation, as well as the industry at large.

4. I have reviewed the comments filed suggesting that T-Mobile USA had spectrum alternatives allowing implementation of LTE. As I detail below, T-Mobile USA explored options with parties such as **[Begin Confidential Information]**

[End Confidential Information] for spectrum in parallel with efforts to speed the availability of suitable spectrum at auction. However, T-Mobile USA found each of these alternatives to have significant timing, business case and integration risks.

5. Some of the petitioners also claim that T-Mobile is not facing spectrum constraints based on pre-merger public statements by company representatives. As described in my initial declaration, however, T-Mobile USA has seen explosive growth in data usage on its network – which has increased spectrum utilization and as a result the risk of capacity constraints in several key markets. Market demand for spectrum is growing at an accelerating rate and these trends show that T-Mobile USA now projects to reach capacity exhaustion in as much as **[Begin Confidential Information]**

[End Confidential Information]

6. Some commenters go further and claim that T-Mobile USA's prior statements suggest that HSPA+ equals or exceeds LTE capabilities. Nothing has changed about T-Mobile USA's perception of HSPA+. This technology will continue to be utilized internationally as well as domestically. However, LTE is a major advance for the mobile industry in terms of performance and efficiency. Unlike HSPA, which is approaching the end of its deployment cycle, LTE deployment is just starting to gain

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momentum with several U.S. carriers including Verizon, MetroPCS and US Cellular accelerating their deployment plans in 2011, and with broad deployment outside the U.S. LTE offers long-term spectrum efficiencies and other significant advantages over HSPA+.

7. In sum, this transaction is the most effective and certain method for ensuring that T-Mobile USA customers have a clear path to LTE. Specific technical arguments made by Sprint are inaccurate and without merit. Alternative approaches to obtaining the spectrum necessary for LTE rollout would not be competitive with other wireless providers' LTE offerings and are unachievable or highly uncertain in their timely and or effective availability. Absent the transaction, and lacking satisfactory alternatives, T-Mobile USA will be facing significant capacity constraints in many key markets in the next several years – subjecting customers to reduced service quality (increases in blocked and dropped calls, slower data throughput).

III. SPRINT MISSTATES OR MISUNDERSTANDS THE NETWORK AND ENGINEERING ARGUMENTS THAT FULLY SUPPORT THE TRANSACTION

8. Sprint relies upon several faulty arguments and analyses of the efficiencies gained by the combination of AT&T and T-Mobile USA. In particular, as detailed below, certain specific arguments made by Sprint require correction.

9. Sprint argues that realistic industry averages for new site construction are from six to twelve months for tower collocations and from nine to eighteen months for rooftop installations or new tower sites. Stravitz Decl. ¶ 26. I disagree with this assessment. As discussed in detail in the Hogg Reply Declaration, the tower siting

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process, especially in urban and suburban areas where new sites are most needed, is long and arduous. Hogg Reply Decl. ¶ 59. T-Mobile USA’s experiences in the U.S. market largely match the examples provided in the Hogg Reply Declaration and I believe that nine to eighteen months (rather than an average as expressed by Sprint) is a very best case scenario for new tower siting.

10. Nor do I believe that Clearwire’s experience in procuring new sites in expeditious fashion is relevant or applicable here. Stravitz Decl. ¶ 45. Given the limited antenna size needed to propagate in the 2.5 GHz band used by Clearwire and the fact that their sites only support a single technology (as contrasted to two or more in the case of T-Mobile USA and AT&T), the equipment requirement on the sites themselves is smaller and hence easier to permit and zone. Moreover, Clearwire was and is conducting a “greenfield” build, meaning that in building their network from scratch they were able to readily avail themselves of significant collocation opportunities that exist in the US market. These opportunities do not generally exist for the site locations that T-Mobile USA and AT&T are looking to secure as they look to fill-out an existing network footprint and to place sites precisely within an existing cell site grid.

11. Additionally, Sprint asserts that extensive engineering analysis must be performed to ensure the complementary nature of the AT&T and T-Mobile USA cell site grid and that even then the combination of the two grids will not be an optimal solution. Stravitz Declaration ¶ 28. I do not agree. There can be no doubt that maximizing the combined site grid of two macro-cellular networks to build a single, consolidated one is better than having one cell grid and adding sites on an ad-hoc basis to try to solve

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structural capacity issues. Indeed, such cell site grid combinations have occurred around the world with demonstrable, clear benefits. For example, Deutsche Telekom had relevant experiences that rendered such efficiencies and benefits during the mergers of T-Mobile Austria/Tele-Ring and T-Mobile NL/Orange NL. Finally, the Hogg Reply Declaration expands upon the analysis performed by AT&T to estimate the complementary nature of the two cell site grids and I agree that this analysis is appropriate and conservative in application. Hogg Reply Decl. ¶ 32.

12. Next, Sprint contends that the multiband antennas required to support multiple spectrum bands are larger, weigh more and may not be supportable on T-Mobile USA cell sites. Stravitz Decl. ¶ 28. This pessimistic outlook is inconsistent with state-of-the-art deployment of modern radio infrastructure. Over the past several years, electronics and antenna infrastructure has scaled down substantially such that adding multiple frequency bands and air interface technologies to a radio site is no longer regarded as overly problematic.

13. Due to these misunderstandings of current wireless siting and infrastructure issues, Sprint reaches the faulty conclusion about the benefits associated with the transaction. Stravitz Decl. ¶ 30. While Sprint argues that access to T-Mobile USA and AT&T network map and base station location data is needed to analyze the benefits, I believe it is unmistakable that such synergies and benefits would occur due to proven engineering and infrastructure scaling principles. Additionally, this argument ignores the substantial benefits that would accrue to the T-Mobile USA customer base and instead focuses solely on AT&T customers. As I noted in my initial Declaration, I

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believe there will be significant benefits for T-Mobile USA subscribers, including higher quality and improved coverage reach and depth due to the lower frequency bands used by AT&T and higher cell site density that will be available to both T-Mobile USA and AT&T customers. Larsen Decl. ¶ 9.

14. Sprint next fails to understand the capacity and efficiency gains associated with the combination of the two companies and argues that more congestion and heavier use of GSM and UMTS/HSPA+ technologies will occur following the transaction. Stravitz Decl. ¶ 32. Initially, both customer bases will be served by *more*, not fewer cell sites. Hogg Reply Decl. ¶ 34. Further, my experience in the wireless industry has shown that network consolidation provides a better network due to increased spectral depth (as derived by removal of redundant control channels, channel pooling effects and utilization efficiencies here) and coverage improvements due to a denser cell site grid and, in this case, for T-Mobile USA customers, access to low band spectrum for coverage.

15. Similarly, Sprint completely mischaracterizes the network efficiencies. Stravitz Decl. ¶ 33. The network efficiencies to be derived by AT&T for the combined company are based on robust, industry-established traffic engineering practices, such as represented by Erlang B and C formulations. Indeed, if anything, these estimated efficiencies are extremely conservative for voice networks. For data networks, the fundamental statistical principles still apply except the statistical processes of queuing are more complicated than for basic voice calls. I believe that from a traffic engineering perspective, it is irrefutable that utilization efficiencies will occur in mobile data networks as well as voice networks. More fundamentally, Sprint misses the most critical

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point of the increased GSM utilization. Increased GSM utilization (which Sprint does not dispute would occur with a merged company) will enable spectrum currently dedicated to GSM to be repurposed and used for UMTS. In many markets, as was described in the Hogg Declaration, the effect of switching efficiency and control channel reduction allows for spectral efficiencies equivalent to an additional UMTS carrier (i.e., 2x5 MHz). Hogg Decl. ¶¶ 24-28. Finally, suggesting that 2G/GSM systems are archaic is barely credible – GSM is the dominant wireless technology today across the globe.

16. Finally, Sprint makes misleading arguments about the necessity of 20 MHz (2x10 MHz) of contiguous spectrum for LTE. Stravitz Decl. ¶ 39. For LTE, the peak speed is directly proportional to the amount of spectrum deployed (i.e., spectral efficiency is bits-per-second (speed) per Hertz-deployed (spectral configuration)). While it is correct that spectrum in dense urban/urban areas is shared by more users than in rural areas (which affects data speeds), sufficient bandwidth must be available in *all* cases and markets for a particular peak data speed to be available to customers regardless of whether in a rural or urban area.

IV. SPECTRUM ALTERNATIVES WERE UNACCEPTABLE AND/OR UNCERTAIN FOR A VARIETY OF REASONS

17. Deutsche Telekom did not enter into this transaction with AT&T without extensive investigation of other alternatives. **[Begin Confidential Information]**

[End Confidential Information] However, none of these possibilities met the near-term and/or mid-term requirements for T-Mobile USA. Initially, no other potential partner provides the same overall synergies to the T-Mobile USA network as AT&T. Finally, the timing of spectrum availability from these other options was uncertain making the business case for T-Mobile USA to enter into a transaction with these parties problematic.

V. EXPLOSIVE GROWTH IN DATA TRAFFIC HAS CAUSED T-MOBILE USA TO FACE SPECTRUM EXHAUSTION ISSUES

18. Some parties have raised issues with the statements made by T-Mobile USA that it has sufficient spectrum in the short to medium term and claim assertions in the merger application are inconsistent with these statements. Sprint Petition p. 117-118; RTG Petition 10-11. However, there has been nothing inconsistent in T-Mobile USA's messaging to the public or statements before the FCC. Statements about T-Mobile USA's spectrum constraints have consistently noted that T-Mobile USA was exploring longer term and technology independent options (such as access to additional spectrum) to meet the demands on its network. Furthermore, and most importantly, the incredible growth in demand for data services on the T-Mobile USA HSPA+ network has required a near constant adjustment to determine projected spectrum capacity constraints. Indeed, at this point, T-Mobile USA projections based on current trends would indicate that its estimates for spectrum exhaustion and capacity constraints have been conservative.

19. In its public presentations, T-Mobile USA has indicated that it would expect to have spectrum to meet its near to medium term requirements while noting a need for spectrum for moving to LTE. Additional spectrum options include: (a) re-

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farming existing spectrum for LTE; or (b) obtaining additional spectrum through an FCC auction or in the secondary market. As I noted in my prior declaration, re-farming of existing T-Mobile USA spectrum would only provide a limited amount of spectrum (Larsen Decl. ¶ 29) and **[Begin Confidential Information]**

[End Confidential Information] (Larsen Decl. ¶ 30). As is detailed above, spectrum alternatives in the secondary market are extremely impractical at this time. Further, as I noted previously none of the spectrum held by the Commission in its inventory (or being studied for reallocation) is likely to be available in a timely fashion to meet T-Mobile USA's business requirements for an LTE rollout (Larsen Decl. ¶¶ 32-35).

20. In addition, I would note that mobile broadband data demand has continued to grow at exponential rates. Consistent with AT&T's experience, this demand growth differs in T-Mobile USA operating markets across both geography and time. T-Mobile USA's network must be designed to handle peak data loads, especially during the busiest hour of day. Hogg Reply Decl. ¶ 5. Given the constant uptake by T-Mobile USA customers of smartphones, I would continue to believe that this growth rate will continue to surpass previous estimates of capacity constraints and spectrum exhaustion. As I noted previously, T-Mobile USA expects data traffic in 2015 on its network to be at least 20 times that of the 2010 level (Larsen Decl. ¶ 13). Much of this growth has been driven by smartphones, especially the data signaling events that are prevalent for these devices. Annual growth rates of approximately 400% in data signaling have occurred in the last couple of years, as I noted in my initial declaration (Larsen Decl. ¶ 16). No one predicted

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such signaling burdens and, like other operators, T-Mobile USA's capacity constraint models are only now beginning to take into account the effects of this growth on network congestion.

21. The enormous expansion in data usage by T-Mobile USA customers (again as detailed in my previous declaration, Larsen Decl. ¶¶ 15-17), will cause near-term capacity constraints in particular markets (Larsen Decl. ¶ 18). And there is no reason for T-Mobile USA to believe that these estimates are anything but conservative. Given T-Mobile USA's lack of access to additional spectrum and growing data demands, it is most likely that T-Mobile USA's anticipated capacity constraints will continue to increase.

VI. THE BENEFITS OF LTE MAKE IT CRITICAL THAT T-MOBILE USA HAS A CLEAR PATH TO IMPLEMENTATION

22. Other parties have argued that T-Mobile USA has made public statements that HSPA+ capabilities equal or exceed LTE. Sprint Petition p. 118. T-Mobile USA has made public statements that its HSPA+ platform provides a cost effective and technically flexible path to LTE, consistent with the standards for GSM/HSPA/LTE. However, T-Mobile USA is constrained by its current customer spectrum usage and lack of new spectrum alternatives, which are necessary for LTE deployment. Moreover, T-Mobile USA statements about the benefits of HSPA+ are also accurate, but do not undermine the value proposition offered by LTE. LTE's significant and quantifiable improvements over HSPA make it vitally important that T-Mobile USA deploy an LTE network.

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23. International wireless standards bodies, such as 3GPP, have developed a family of radio access standards designed to allow wireless providers to upgrade their networks strategically and efficiently. T-Mobile USA has selected a technology path that began with GSM and is migrating to HSPA/HSPA+. LTE is the latest iteration of these efforts and provides a host of benefits to wireless providers, and is itself a forerunner to what the industry calls LTE-Advanced, which is expected to be commercially available in the late 2014 time frame.¹

24. LTE has numerous benefits over HSPA+. Peak data rates for mobile broadband using LTE will be substantially higher (1.5 to 2 times faster than “HSPA+ 42”) and these benefits are not limited to mere speed. Spectral efficiency is greatly improved, by as much as 40 percent over HSPA+. Signaling load, which is an ever growing problem with the greater and greater adoption of smartphones on the T-Mobile USA network, is handled in more effective and efficient fashion by LTE. LTE is also supported across a very wide spectrum range (from 700 MHz up to 2.6 GHz), and bandwidth flexible, allowing up to 40 MHz allocations compared to the 10 MHz maximum for HSPA+. Each of these benefits in turn assures that LTE will dramatically reduce the cost per megabyte for a wireless provider. Finally, LTE was designed as an all IP architecture, which allows a simpler network architecture with a reduction in latency on the network, which then facilitates latency dependent services to be handled effectively.

¹ LTE Advanced targets download peak data speeds of 1 Gbps and uplink peak data speeds of 500 Mbps, and extending the spectrum bandwidth aggregation beyond 40 MHz (i.e., UL + DL).

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25. However, T-Mobile USA is inhibited from following the standards-expected path of migration to LTE due to a lack of spectrum. T-Mobile USA's current AWS-1 and PCS spectrum is deployed to serve its existing customers (Larsen Decl. ¶ 29). The practical effect of moving its customer base to make way for LTE **[Begin Confidential Information]**

[End Confidential Information]. Moreover, as discussed in detail above, obtaining any additional spectrum for an LTE rollout would not be timely or practical for T-Mobile USA. In short, while HSPA+ has a standards-based technology path to migrating users to LTE, T-Mobile USA itself has no economically or technically sustainable way to reach this goal absent the present transaction.

26. Moreover, nothing has changed about T-Mobile USA's perception of HSPA+. This technology will continue to be utilized internationally as well as domestically. However, LTE is a major advance for the mobile industry in terms of performance and efficiency. Unlike HSPA, which is approaching the end of its deployment cycle, LTE deployment is just starting to gain momentum. LTE offers long-term spectrum efficiencies over HSPA+.

27. T-Mobile USA's public statements about HSPA+ do not undermine these benefits of LTE. Indeed, given the extensive efforts put into evolving HSPA+, data rates for HSPA+ have moved up dramatically in the past year. However, none of these efforts have enabled HSPA+ to meet all the beneficial characteristics of LTE for data rates, signaling load, latency and spectral efficiency. Indeed, the recognition of these extensive

benefits (and the massive increase in data usage on wireless networks) has led U.S. wireless providers to pursue LTE rollouts aggressively. Further, Sprint has publicly stated it is contemplating deployment of LTE, so regardless of what 4G technology carriers are operating today (WiMAX or HSPA+), there is general recognition of the additional benefits of deploying LTE.² T-Mobile USA's lack of practical options to an LTE rollout leaves it behind its competition – and in a position very similar to the one it faced in rolling out its third generation network well behind its competitors. Lagging other wireless providers on its technology path not only will exacerbate T-Mobile USA's capacity constraints, **[Begin Confidential Information]**

[End Confidential Information]

(Larsen Decl. ¶ 25).

VII. CONCLUSION

28. Opposing parties have mischaracterized or misunderstood technical arguments that demonstrate the true benefits of the combination of AT&T and T-Mobile USA. Spectrum efficiencies and complementary cell site grids allow the combined company to provide improved service and coverage to subscribers. Arguments about alternatives or other methods to bolster T-Mobile USA's current capacity issues are incorrect. Without additional spectrum, T-Mobile USA's LTE options are not technically or commercially viable. T-Mobile USA, if it launched an LTE product, **[Begin Confidential Information]**

² See e.g., <http://www.totaltele.com/view.aspx?ID=464629>

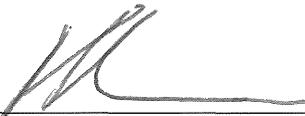
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[End Confidential Information]

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I declare under penalty of perjury under the laws of the United States of America
that the foregoing is true and correct.

DATED: June 9, 2011

By: 

Dr. Kim Kyllesbech Larsen
Senior Vice President
Deutsche Telekom AG