

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

**Before The Honorable Cameron Elliot
Administrative Law Judge**

In the Matter of

**CERTAIN VIDEO CAPABLE
ELECTRONIC DEVICES, INCLUDING
COMPUTERS, STREAMING DEVICES,
TELEVISIONS, AND COMPONENTS
AND MODULES THEREOF**

Investigation No. 337-TA-1380

**RESPONDENTS JOINT DISCLOSURE OF INITIAL INVALIDITY CONTENTIONS IN
RESPONSE TO INDIVIDUAL INTERROGATORY NOS. 10-12**

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I. INTRODUCTION

Pursuant to the Procedural Schedule set in Order No. 13, Respondents HP, Inc. f/k/a Hewlett-Packard Company, Amazon.com, Inc., and Amazon Services LLC (collectively “Respondents”) hereby provide their initial invalidity contentions for U.S. Patent No. 7,724,818 (“the ’818 patent”), U.S. Patent No. 8,050,321 (“the ’321 patent”), U.S. Patent No. 8,077,991 (“the ’991 patent”), U.S. Patent No. 10,536,714 (“the ’714 patent”), and U.S. Patent No. 11,805,267 (“the ’267 patent”) (collectively, “the asserted patents”). Complainants Nokia Technologies Oy and Nokia Corporation (“Nokia” or “Complainants”) assert claims 6-9, 11, 15, 21, and 23 of the ’818 patent, claims 8-11 of the ’321 patent, claims 22, 26, 29-33, 35, and 38 of the ’991 patent, claims 9-14, 23-28, and 30 of the ’714 patent, and claims 19-36 of the ’267 patent (collectively, “the asserted claims”).

These contentions are Respondents’ initial responses to Nokia’s contention interrogatories, including at least Interrogatory Nos. 10-12. Each Respondent’s supplemental responses to Nokia’s burden contention interrogatories incorporate and attach these invalidity contentions in accordance with Order No. 11. *See* Respondent Amazon’s First Supplemental Responses to Interrogatory Nos. 10-12 and Respondent HP’s Second Supplemental Responses to Interrogatory Nos. 10-12.

II. GENERAL RESERVATIONS

These invalidity contentions are provisional. Respondents reserve the right to revise or supplement these contentions in light of party and third-party discovery, Nokia’s infringement contentions, any claim construction order issued by the ALJ, review and analysis by expert witnesses, and further investigation and discovery regarding the defenses asserted by Respondents. For example, Respondents expressly reserve the right to amend these contentions after review of Nokia’s infringement contentions, after review of Nokia’s validity contentions, after issuance of a claim construction order, should Nokia provide any information that it failed to provide in its

disclosures, or if Nokia amends its disclosures in any way. Because discovery is ongoing Respondents reserve the right to revise, amend, and/or supplement the information provided herein, including identifying, charting, and relying on additional references. Respondents additionally reserve their rights to revise, amend, or supplement when Nokia provides additional discovery. Further, Respondents reserve the right to revise their ultimate contentions concerning the invalidity of the asserted claims, which may change depending upon further and ongoing investigation, the construction of the asserted claims and/or positions that Nokia or expert witnesses may take concerning claim construction, infringement, and/or invalidity issues.

Prior art not included in this disclosure, whether known or not known to Respondents, may become relevant. In particular, Respondents are currently unaware of the extent, if any, to which Nokia will contend that limitations of the asserted claims are not disclosed in the prior art identified by Respondents. To the extent that such an issue arises, Respondents reserve the right to identify other references that would anticipate and/or render obvious the allegedly missing limitations of the claims. Further, Respondents reserve the right to rely on any reference or item sought or to be sought from third parties that are solely within those third parties' possession, custody, or control, and have not yet been produced during discovery. Respondents reserve the right to rely on any reference found in the prosecution histories of the applications leading to the asserted patents or otherwise identified in connection with this action, including in Respondents' Notice of Prior Art to be filed pursuant to Order No. 11.

To the extent that the following contentions reflect constructions of claim limitations consistent with or implicit in Nokia's infringement allegations as set forth in the Complaint, no inference is intended nor should any be drawn that Respondents agree with Nokia's infringement allegations or claim interpretations, and Respondents expressly reserve the right to contest such

allegations. Respondents offer such contentions in response to Nokia's infringement allegations as set forth in the Complaint and without prejudice to any position that Respondents may ultimately take as to any claim construction issues. Specifically, Respondents base these initial invalidity contentions at least in part upon the claim scope and certain claim constructions that are implicitly or explicitly asserted by Nokia, and nothing herein should be construed or represented as evidencing any express or implied agreement with any of Nokia's claim construction or infringement positions.

Respondents intend to rely on admissions concerning the scope of the prior art relevant to the asserted patents found in, *inter alia*: the asserted patents and related patents and/or patent applications; the patent prosecution histories for the asserted patents and related patents and/or patent applications (including all prior art cited therein); any deposition testimony of the named inventors on the asserted patents and related patents and/or patent applications in this matter or any other matter; evidence and testimony relating to the level of ordinary skill in the art; and the papers filed and any evidence submitted by Nokia in connection with this matter.

Respondents' claim charts cite to particular teachings and disclosures of the prior art as applied to features of the asserted claims. However, persons having ordinary skill in the art generally may view an item of prior art in the context of other publications, literature, products, and understanding. As such, the cited portions are only examples, and Respondents reserve the right to rely on uncited portions of the prior art references and on other publications, expert testimony, and other evidence as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation or any of the asserted claims as a whole. Respondents further reserve the right to rely on uncited portions of the prior art references, other publications, and testimony, including expert testimony,

to establish bases for combinations of certain cited references that render the asserted claims obvious.

The references discussed in the claim charts may disclose the elements of the asserted claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant timeframe. The suggested obviousness combinations are provided in addition to and/or in the alternative to Respondents' anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory. The combinations of prior art references referred to in these initial invalidity contentions are exemplary. Respondents reserve the right to rely on any combination of prior art references identified in these initial contentions and final contentions to be served in accordance with Order No. 11. The rationale or motivations to combine the prior art references identified in these initial invalidity contentions are also exemplary. As discovery is ongoing, Respondents further reserve the right to amend or supplement the rationale or motivation to combine the prior art references identified in these initial contentions.

The following discussion and exhibits provide exemplary prior art citations and obviousness positions. The citations and discussion in the charts are organized by claim (and claim limitation) for convenience, but each limitation or claim section applies to the larger context of each claim, to any related dependent or independent claims, as well as all claims containing similar limitations or elements. For example, citations as to any recited limitation, step, or component in the claims apply wherever each such limitation, step, or component is repeated elsewhere in the claim or asserted patents. Where Respondents cite to a particular drawing or figure in the attached claim charts, the citation encompasses the description of the drawing or figure, as well as any text associated with the drawing or figure. Similarly, where Respondents cite to particular text

concerning a drawing or figure, the citation encompasses that drawing or figure as well. Relatedly, certain portions of patent or other prior art disclosures build upon other disclosures, even if they are referred to as a separate or alternative embodiment. Thus, Respondents' citations to structures or functions incorporate by reference all disclosures to related structures or functions, including any additional detail provided as to the operation or design of those structures or functions.

Discovery of inventors is ongoing. Respondents reserve the right to assert that the asserted claims are invalid under 35 U.S.C. § 102(f) in the event Respondents obtain additional evidence that the inventors of the asserted patents did not invent the subject matter claimed therein. Should Respondents obtain such evidence, they will provide the name of the person(s) from whom and the circumstances under which the alleged invention or any part of it was derived.

Respondents also reserve the right to challenge any of the claim terms herein under 35 U.S.C. § 112 beyond the grounds outlined in their responses to interrogatories related to invalidity, including by arguing that they are indefinite, not supported by the written description, or not enabled. Nothing stated herein shall be construed as a waiver of any argument available under 35 U.S.C. §§ 101, 102, 103, and/or 112.

III. PERSON OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art ("POSITA") at the time of the alleged invention of the asserted patents would have had a (1) Bachelor's degree in electrical engineering, computer engineering, computer science, or a comparable field of study, and (2) approximately two to three years of practical experience with video and/or image processing or coding. Additional experience can substitute for the level of education, and vice-versa.

IV. U.S. PATENT NO. 7,724,818

A. Identification of Relevant Prior Art

Respondents identify the following prior art references that anticipate and/or render obvious the asserted claims of the asserted patent. The following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g). Whether a prior art reference anticipates or renders obvious the asserted claims of the '818 patent may depend upon claim construction. Respondents have identified each prior art patent by its inventor, title, number, country of origin, date of filing, date of issue, and, where applicable, the relevant priority date, or such information may be derived from the face of the patent. Each prior art publication is identified by its title, date of publication, and, where feasible, author and publisher. For prior art under 35 U.S.C. § 102(b), Respondents have identified the item offered for sale or publicly used or known, the date by which the offer or use took place or the information became known, and the identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known, to the full extent currently known.

Based on the information reasonably available to Respondents, the priority date for the '818 patent is April 30, 2003, the filing date of application No. 10/426,928 that led to the issuance of the '818 patent. Nokia bears the burden of showing on a claim-by-claim basis that it is entitled to a priority date earlier than April 30, 2003, including the filing date and description of the alleged inventions claimed in the '818 patent in any earlier provisional application. Nokia has not done so, including in any of its interrogatory responses served to date. If Nokia contends or demonstrates that any of the asserted claims of the '818 patent are entitled to a priority date before April 30, 2003, then Respondents reserve the right to identify additional prior art references which anticipate or make obvious the asserted claims of the '818 patent.

1. Prior Art Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following prior art patent publications. These patent publications constitute prior art under 35 U.S.C. § 102, and their patent numbers, countries of origin, and dates of publication and/or issue are included on the face of those documents. Respondents reserve the right to supplement this list as it learns in the course of discovery of other prior art patent publications that would anticipate and/or render the asserted claims obvious.

Patent	Inventor
U.S. Patent No. 5,473,376	Cheung
U.S. Patent No. 5,504,484	Wilson
U.S. Patent No. 5,515,107	Chiang et al.
U.S. Patent No. 5,767,799	Maertens
U.S. Patent No. 5,838,265	Adolph
U.S. Patent No. 6,157,745	Salembier
U.S. Patent No. 6,414,608	Nishida et al.
U.S. Patent No. 6,501,480	MacInnis et al.
U.S. Patent No. 6,539,059	Sriram et al.
U.S. Patent No. 6,646,578	Au
U.S. Patent No. 7,072,393	Boice et al.
U.S. Patent No. 7,277,901	Josh et al.
U.S. Patent No. 7,787,539	Chen
U.S. Patent Appl. Publication No. 2001/0001614	Boice et al.
U.S. Patent Appl. Publication No. 2001/0005398	Kono et al.
U.S. Patent Appl. Publication No. 2002/0114397	Todo et al.
U.S. Patent Appl. Publication No. 2003/0012275	Boice et al.
U.S. Patent Appl. Publication No. 2004/0008766	Wang et al.
U.S. Patent Appl. Publication No. 2004/0008786	Boyce
U.S. Patent Appl. Publication No. 2004/0010802	Visharam et al.
U.S. Patent Appl. Publication No. 2004/0013202	Lainema

Patent	Inventor
U.S. Patent Appl. Publication No. 2004/0199565	Visharam et al.
European Patent Appl. Publication No. EP 0322123	Macphail
European Patent Appl. Publication No. EP 0634868	Yagasaki et al.
European Patent Appl. Publication No. EP 1122955	Goto
Japanese Patent Appl. Publication No. 10-229558	Mikio et al.
International Patent Appl. Publication No. WO 92/05556	Timmermans et al.
International Patent Appl. Publication No. WO 99/33273	Yu et al.
International Patent Appl. Publication No. WO 02/15589	Hannuksela

2. Prior Art Non-Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following published works of prior art. These publications constitute additional prior art under 35 U.S.C. § 102, and their titles, authors, publishers, and dates of publication are included on the face of those documents. In addition to the references listed below, Respondents hereby disclose as prior art publications all references disclosed below in Section 3 (regarding on sale/public use), such as press releases, users manuals, and other related documentation about such prior art products. Respondents reserve the right to supplement this list as it learns in the course of discovery of other references, prior art public use, and/or sale that would anticipate and/or render the asserted claims obvious.

- Qiu, Guoping, Interresolution Look-Up Table for Improved Spatial Magnification of Image, School of Computer studies, University of Leeds, Journal of Visual Communication and Image Representation.
- Wang, Yao, et al., Error Resilient Video Coding Techniques: Real-Time Video Communications over Unreliable Networks, IEEE Signal Processing Magazine July 2000.

- Hannuksela, Miska, H.263 Picture Header Recovery in H.324 Videophone.
- Suzuki, Terihiko, The Overview of MPEG-4 AVC/ H.264 and its standardization, S&S Architecture Center, Sony Corp.
- Stockhammer, Thomas, et al., H.26L/JVT Coding Network Abstraction Layer and IP-Based Transport, IEEE ICIP 2002.
- Wiegand, Tomas, et al.; Editor's Proposed Draft Text modifications for Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC), Draft 7; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002; Document: JVT-E022d7.
- Nilsson, Mike, et al.; Proposed Draft Text Modifications to Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC), for decoded frame buffering; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002, Document JVT- E149d0.
- Wenger, Stephan, et al.; An Overview on the H.26L NAL Concept; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC11/SC19/WG11 and ITU-T SG16 Q.6); 2nd Meeting: Geneva, CH, Jan. 29- Feb.1, 2002; Document: JVT-B028.
- Suzuki, Teruhiko, et al.; Group of Pictures for JVT Codec; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC11/SC19/WG11 and ITU-T SG16 Q.6); 2nd Meeting: Geneva, CH, Jan. 29- Feb. 1, 2002; Document: JVT-B069.
- Weigand, Thomas, et al.; Working Draft Number 2, Revision 0 (WD-2); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Pattaya, Thailand, 3-7 December 2001; Document: JVT-B118.
- Weigand, Thomas, et al.; Working Draft Number 2, Revision 0 (WD-2); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Geneva, Switzerland, January 29-February 1, 2002; Document: JVT-B118r1.
- Weigand, Thomas, et al.; Working Draft Number 2, Revision 2 (WD-2); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Geneva, Switzerland, January 29-February 1, 2002; Document: JVT-B118r2.
- Weigand, Thomas, et al.; Working Draft Number 2, Revision 3 (WD-2r3) (DRAFT ISO/IEC 14496-10 : 2002 (E)); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Geneva, Switzerland, January 29-February 1, 2002; Document: JVT-B118r3.
- Sullivan, Gary, et al.; (Draft) Report of Fairfax Meeting; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document: JVT-C001d3.
- Hannuksela, Miska, et al.; Coding of Parameter Sets; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document: JVT-C078.
- Hannuksela, Miska, et al.; Coding of Parameter Sets Annex A – Slice Layer Changes Relative to JVT WD2r7; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG

(ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document: JVT-C078 Annex A.

- Hannuksela, Miska, et al.; Improved Coding of Slice Headers; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document: JVT-C079.
- Hannuksela, Miska, et al.; Improved Coding of Slice Headers Proposed Changes Relative to Working Draft Number 2, Revision 7; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Geneva, Switzerland, January 29-February 1, 2002; Document: JVT-C079 Annex A.
- Wiegand, Thomas; Joint Committee Draft (CD); Joint Video Team (JVT) of ISO/IEC Mpeg and ITU-T VCEG; 3rd Meeting: Fairfax, Virginia, USA, May 6-10, 2002; Document: JVT-C167.
- Sullivan, Gary, et al.; (Draft) Report of Klagenfurt Meeting; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting, Klagenfurt, Austria, July 22-26, 2002; Document: JVT-D001d0.
- Sullivan, Gary, et al.; (Draft) Report of Klagenfurt Meeting; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting, Klagenfurt, Austria, July 22-26, 2002; Document: JVT-D001d1.
- Sullivan, Gary, et al.; (Draft) Report of Klagenfurt Meeting; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting, Klagenfurt, Austria, July 22-26, 2002; Document: JVT-D001d2.
- Sullivan, Gary, et al.; (Draft) Report of Klagenfurt Meeting; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting, Klagenfurt, Austria, July 22-26, 2002; Document: JVT-D001d3.
- Sullivan, Gary, et al.; (Draft) Report of Fairfax Meeting; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6) 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document JVT-C001d3 (filename lists JVT-D002d3).
- Wenger, Stephan; Parameter Set Issues, Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting, Klagenfurt, Austria, July 22-26, 2002; Document: JVT-D065
- Wenger, Stephan; Removal of the Picture Layer; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting, Klagenfurt, Austria, July 22-26, 2002; Document: JVT-D066.
- Walker, Toby, et al.; Network Abstraction Layer and High-level Syntax; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting: Klagenfurt, Austria, 22-26 July, 2002; Document: JVT-D087.
- Hannuksela, Miska, et al.; Modifications to High-Level Syntax and Semantics; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting: Klagenfurt, Austria, 22-26 July, 2002; Document: JVT-D094.

- Wiegand, Thomas; Joint Final Committee Draft (JFCD) of Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 4th Meeting: Klagenfurt, Austria, 22-26 July, 2002; Document: JVT-D157.
- Wiegand, Thomas; Editor's Proposed Draft Text Modifications for Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 4th Meeting: Klagenfurt, Austria, 22-26 July, 2002; Document: JVT-E022d1.
- Wiegand, Thomas; Editor's Proposed Draft Text Modifications for Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Switzerland, 9-17 October, 2002; Document: JVT-E022d7.
- Hannuksela, Miska; Issues on High-Level Syntax and Semantics; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 5th Meeting: Geneva, Switzerland, 9-17 October, 2002; Document: JVT-E124.
- Issues on High-Level Syntax and Semantics Appendix: Changes relative to JVT-E022d7; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Switzerland, 9-17 October, 2002; Document: JVT-E124 Appendix.
- Nilsson, Mike, et al.; Proposed Draft Text Modifications to Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC), for decoded frame buffering; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002, Document JVT- E149.
- Nilsson, Mike, et al.; Proposed Draft Text Modifications to Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC), for decoded frame buffering; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002, Document JVT- E149d0.
- Nilsson, Mike, et al.; Proposed Draft Text Modifications to Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC), for decoded frame buffering; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002, Document JVT- E149r1.
- Nilsson, Mike, et al.; Proposed Draft Text Modifications to Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC), for decoded frame buffering; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002, Document JVT- E149r5.
- List of Documents for the Fourteenth Meeting ITU-T Q.6/SG16 Video Coding Experts Group (VCEG); ITU-T Q.6/16 Video Coding Experts Group (VCEG); 14th meeting, Santa Barbara, California, USA, September 24-27, 2001; Document VCEG-N00 rev. 3.
- Wenger, Stephan, et al.; H.26L over IP and H.324 Framework; ITU - Telecommunications Standardization Sector Study 16 Question 6 Video Coding Experts Group (VCEG); 14th Meeting: Santa Barbara, CA, USA, 21-24 September, 2001; Document VCEG-N52.
- Wenger, Stephan, et al.; H.26L over IP Framework: Proposed H.26L NAL normative text; ITU - Telecommunications Standardization Sector; Study Group 16, Question 6; Video

Coding Group (VCEG); 14th Meeting: Santa Barbara, CA, USA, Sept. 21-24, 2001; Document: VCEG-N72r1.

- ITU-T Recommendation H.263 Video Coding for Low Bit Rate Communication (Mar. 1996)
- Hannuksela, Miska; Proposal for Error Resilience Function in Supplemental Enhancement Information; ITU - Telecommunications Standardization Sector; Study Group 16, Question 15; Video Coding Group (VCEG); 8th Meeting: Berlin Aug. 3-6, 1999; Document: Q15-H-12.
- Meeting Report of the Twelfth Meeting (Meeting L) of the ITU-T Video Coding Experts Group (VCEG) [Q.6/16] – Eibsee, Germany, ITU - Telecommunications Standardization Sector; Study Group 16; Twelfth Meeting: Eibsee, Germany; 9-12 January, 2001; VCEG-L46.
- Meeting Report of the Twelfth Meeting (Meeting L) of the ITU-T Video Coding Experts Group (VCEG) [Q.6/16] – Eibsee, Germany, ITU - Telecommunications Standardization Sector; Study Group 16; Twelfth Meeting: Eibsee, Germany; 9-12 January, 2001; VCEG-L46d1.
- International Standard ISO/IEC 11172-2 - Information technology - Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video (“MPEG-1”)

3. Prior Art Items and/or Knowledge

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on prior art items embodying and alleged inventions or structures described in, and/or any knowledge disclosed by or referred to in, any of the prior art patents or prior art publications identified above in Sections IV.A.1 and IV.A.2. Because Respondents have not yet completed discovery in this case, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through third-party discovery or other further investigation.

4. Prior Art Under 35 U.S.C. §§ 102(f) and 102(g)

Because Respondents have not yet completed discovery in this case, including but not limited to taking depositions of the named inventors of the asserted patents, reviewing Nokia’s productions, and seeking discovery of prior inventions by third parties, Respondents reserve the

right to supplement this disclosure with facts, documents, or other information learned at a later point through discovery or other further investigation.

B. Anticipation and Obviousness

Respondents contend that the prior art references identified in Respondents' contentions anticipate or render obvious the asserted claims of the '818 patent. Respondents attach Exhibits A-1 to A-10, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '818 patent. The charts identify primary references.

Single items of prior art that anticipate the asserted claims of the '818 patent are cited and described in the claim charts attached hereto as Exhibits A-1 to A-10, each of which describes anticipation of one or more claims of the asserted patents by a primary reference. These claim charts provide citations to portions of the above references, illustrating how the prior art explicitly discloses every element of the asserted claims of the '818 patent. To the extent any element is not provided by an expressly enabling disclosure by the referenced prior art, all elements of the asserted claims of the '818 patent would still be the inherent result of putting into practice the systems and methods described by the prior art referenced herein, as set forth below.

Exhibit	Primary Reference
A-1	U.S. Patent No. 6,646,578 ("Au") (RESPNOKIA_00027341)
A-2	U.S. Patent No. 7,787,539 ("Chen") (RESPNOKIA_00024759)
A-3	Wiegand, Tomas, et al.; Editor's Proposed Draft Text modifications for Joint Video Specification (ITU-T Rec. H.264 ISO/IEC 14496-10 AVC), Draft 7; Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 5th Meeting: Geneva, Oct. 9-17, 2002; Document: JVT-E022d7. ("JVT-E022d7") (RESPNOKIA_00029385)
A-4	Wenger, Stephan, et al.; An Overview on the H.26L NAL Concept, Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 2nd Meeting: Geneva, CH, Jan. 29-Feb. 1, 2002; Document: JVT-B028. ("JVT-B028") (RESPNOKIA_00010932)

A-5	Weigand, Thomas, et al.; Working Draft Number 2, Revision 2 (WD-2); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Geneva, Switzerland, January 29-February 1, 2002; Document: JVT-B118r2. (“JVT-B118r2”) (RESPNOKIA_00011480)
A-6	Walker, Toby, et al.; Network Abstraction Layer and High-level Syntax; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 4th Meeting: Klagenfurt, Austria, 22-26 July, 2002; Document: JVT-D087. (“JVT-D087”) (RESPNOKIA_00029039)
A-7	Wenger, Stephan, et al.; H.26L over IP and H.324 Framework; ITU - Telecommunications Standardization Sector Study 16 Question 6 Video Coding Experts Group (VCEG); 14th Meeting: Santa Barbara, CA, USA, 21-24 September, 2001; Document VCEG-N52. (“VCEG-N52”) (RESPNOKIA_00027560)
A-8	Stockhammer, Thomas, et al. “H.26L/JVT Coding Network Abstraction Layer and IP-Based Transport” IEEE ICIP 2002 (“Stockhammer”) (RESPNOKIA_00032401)
A-9	Suzuki, Teruhiko, et al.; Group of Pictures for JVT Codec; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC11/SC19/WG11 and ITU-T SG16 Q.6); 2nd Meeting: Geneva, CH, Jan. 29- Feb. 1, 2002; Document: JVT-B069. (“JVT-B069”) (RESPNOKIA_00010939)
A-10	International Standard ISO/IEC 11172-2 - Information technology - Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video (“MPEG-1”) (RESPNOKIA_00000079)

In addition to the discussion above, and to the extent not anticipated, the asserted claims of the '818 patent are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. Items of prior art that render obvious the asserted claims of the '818 patent are cited and described in the claim charts attached hereto as Exhibits A-1 to A-10. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to Respondents' right to rely on additional specific combinations as well as to detail and explain such combinations.

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id.* at 1732, 1738, 1742-1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id.* at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 1740-41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 580-81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits A-1 to A-10, persons of ordinary skill in the art would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '818 patent. The references identified in Exhibits A-1 to A-10 are analogous prior art to the subject matter of the asserted claims of the '818 patent and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in

which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the asserted patents.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the asserted patents. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these initial invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '818 patent. Respondents' inclusion of exemplary combinations, in view of the factors and exemplary motivations to combine identified herein, does not preclude Respondents from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739-40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at

1742. Nevertheless, in addition to the information contained herein, Respondents hereby identify additional motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified above with others exists from the prior art references themselves, as well as from the interrelated teachings of other prior art references, common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the existence and nature of a known need or problem, and/or knowledge possessed by a person of ordinary skill. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success. Therefore, various reasons to combine the disclosed references exist. Respondents reserve the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include the allegedly missing limitation and to explain the motivation to combine the prior art elements.

In addition, it would have been obvious to combine any of the prior art in Exhibits A-1 to A-10 because all of these references relate to methods for encoding and decoding parameters in a bitstream.

For example, Au discloses: “the bitstream 15 is organiz[ed] into a hierarchy of syntax levels, with the 3 main levels being a sequence level 17, a picture (or frame) level 19, and slice level 21. A concept know as ‘parameter sets’ allows efficient transmission of infrequently

changing data at the sequence 17 and picture level 19 in the H.264 standard.” Au, 8:6-11. “A sequence parameter set 29 in the first level 17 includes values of parameters that will remain unchanged for an entire video sequence, or from one instantaneous decoder refresh (IDR) picture to the next. (IDR pictures are used to provide points of random access into the bitstream 15).” *Id.*, 8:11-15. “A picture parameter set 31 in the second level 21 includes values of parameters that will remain unchanged within a coded representation of a picture (frame or field) 22.” *Id.*, 8:20-22. “The macroblocks 24 in a slice 33 are ordered in raster scan order. The coded slice 33 includes the slice header 27 and the slice data 35 (coded macroblocks 24).” *Id.*, 8:38-40.

As another example, VCEG-N52 discloses: “The decoder maintains parameters sets in numbered storage locations.” VCEG-N52, 1. “Each slice contains in its header partition the information which storage space to use. Synchronization between updates of the parameter storage (when desired) and the media streams is handled externally.” *Id.*, 1. “The coding parameters of this main operation point are the initial parameter set. Parameter sets can be changed at any time, but only within the limits of the given version/profile/level combination. They perform many of the functions and contain most of the information of the traditional picture header.” *Id.*, 1. “The video decoder receives all correctly transmitted partitions in the correct order. It maintains a number of parameter set storages. The header partition of each slice contains information which parameter set to use.” *Id.*, 4. “Encoder and decoder maintain a synchronized set of parameter sets, which contain all information associated with a picture and/or higher syntax layers. Synchronization of the encoder’s and decoder’s parameter sets is normally established by the means of control protocols as a side effect of the opening of a logical channel. In more sophisticated systems, dynamic management of the parameter sets is also feasible.” *Id.*, 8. VCEG-N52 further discloses that “[a]t the receiver, the IP/UDP/RTP protocol stack generates the re-

ordered packet stream and feeds it into the decoder.” *Id.*, 4:1. The system architecture in FIG. 1 of VCEG-N52 discloses an H.26L codec that enables transmission of a bitstream with parameter sets selected within the bit stream. *Id.*, FIG. 1.

As another example, JVT-E022d7 discloses: “A sequence parameter set is called an active sequence parameter set when an IDR NAL unit refers to it. The parameters of an active sequence parameter set shall be replaced only when an IDR NAL unit refers to a different sequence parameter set.” JVT-E022d7, 34. “A picture parameter set includes the parameters that remain unchanged within a coded picture. Every picture parameter set shall refer to the active sequence parameter set.” *Id.*, 34. “[F]rame_num labels the frame. frame_num shall be incremented by 1 for each coded picture in decoding order, in modulo MAX_FN operation, relative to the frame_num of the previous stored frame in decoding order.” *Id.*, 39.

As another example, JVT-B028 discloses: “Each Slice contains in its header a ParameterSet codeword that functions as an index to address the Parameter Set relevant for the decoding of this slice. Hence, the encoder can asynchronously change parameter sets, while still allowing correct decoding of slices that do not address those parameter sets.” JVT-B028, 5. “(“Since there is no in-picture prediction between slices, all slice-global parameters have to be conveyed in the slice header. This is very similar to more traditional video coding standards. The following slice header elements were identified: ... Picture-ID: The identification of the picture the slice belongs to. This information is primarily used for accessing reference memory buffers and to associate slices to pictures in the NAL. It may carry, as a side effect, timing information similar to a TR. Since the PictureID is used by the reference picture selection algorithm of the VCL (and, hence, is coded potentially for each macroblock), the value range of this parameter is in most cases rather small.” *Id.*, 4.

As another example, Chen discloses: “The MPEG decoder 117 receives the bitstream 115, and demultiplexes the bitstream 115 into the constituent packetized video elementary stream 260 and packetized audio elementary streams 620 b.” Chen, 8:3-6. Further, Chen discloses “encoding a delay parameter in a sequence header of an MPEG-4 AVC multilayered bitstream, said multilayered bitstream comprising the sequence header and a sequence payload, said sequence payload comprising a Group of Pictures Header and a plurality of Groups of Pictures, wherein each Group of Pictures further comprise a plurality of pictures and picture headers.” Chen, Claim 1.

As another example, Stockhammer discloses: “the parameter set concept and the transport over packet-based and bit-stream oriented networks.” Stockhammer, 1:7-8. Further, Stockhammer discloses in FIGS. 1 and 2 the JVT/H.26L video codec and its transport using the parameter set concept.

As another example, JVT-B028 discloses that “traditional video coding standards are organized around the concept of a bit stream.” JVT-B028, 3:2. Further, JVT-B028 discloses that “video codecs such as the ones of MPEG or H.261/H.263 normally distinguish between a number of syntactic levels called Layers, that form a hierarchy.” JVT-B028, 3:37-39. According to JVT-B028, the layers may include “Slice Layer”, “Picture Layer”, “Sequence Layer.” JVT-B028, 3:40-47.

As another example, MPEG-1 discloses, “a number of the parameters defining the characteristics of coded bitstreams and decoders [that] are contained in the bitstream itself.” MPEG-1, § 0.1.1. In that context, MPEG-1 specifies a syntax for a coded bitstream including various “layers” of parameters – Sequence layer, Group of Pictures layer, Picture layer, Slice layer, Macroblock layer, and Block layer – where each layer supports a signal processing or a system

function. *Id.*, § 0.1. Per MPEG-1, a coded video sequence commences with a sequence header, which is repeated for each group of pictures within the sequence. Each sequence header includes data elements which are repeated and have the same value in every sequence header. *Id.*, § 2.4.1. Further, MPEG-1 discloses that Picture layer includes various parameters such as “picture start code,” and “picture_coding_type” (indicating whether the picture is an I-picture, P-picture, or a B-picture). *Id.*, §§ 2.4.3.5, 2.4.3.4. MPEG-1 also describes “slices consist of a header and one or more macroblocks” and the “slice header contains position and quantizer scale information.” *Id.*, §§ D.2.3, 2.4.2.6.

Respondents incorporate by reference prior art from the prosecution histories and background sections of the asserted patents. Respondents expect to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Respondents contend that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims of the '818 patent. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, “can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). “A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision.” *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness “simply

cannot overcome [a] strong prima facie showing of obviousness.” *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). Nokia has not established the existence of any objective indicia of non-obviousness or secondary considerations. Respondents reserve the right to supplement their contentions to respond to any such evidence should Nokia be permitted to raise them in the future. While discovery in this case is ongoing, and Respondents’ investigation continues (which will include expert discovery), to the extent Nokia contends that one or more asserted claims of the ’818 patent is not obvious based on secondary considerations recognized by relevant authority Respondents contend such allegations are without merit.

For example, Nokia has not identified any evidence of copying of the purported inventions of the asserted claims of the ’818 patent. *See* Nokia’s January 3, 2024, Objections and Responses to Respondents’ First Set of Interrogatories (Nos. 1-112), Interrogatory No. 16. Similarly, Nokia has provided no evidence of any failure of others to realize any purported inventions of the asserted claims of the ’818 patent, or any evidence of any long felt but unsolved need solved by the purported inventions of the asserted claims of the ’818 patent. *Id.* To the contrary, the widespread availability of video codecs is contrary evidence of any long-felt need for the purported inventions of the asserted claims of the ’818 patent.

Nokia also has not identified any evidence that the purported inventions of the asserted claims of the ’818 patent have enjoyed any commercial success. *Id.* To the extent that Nokia claims that sales of any accused products constitutes commercial success, Nokia has not identified any evidence of any nexus between the claimed invention and such alleged commercial success. Moreover, any commercial success of the accused products may be due to factors other than the merits of the claims, including non-patented features or functionalities, marketing efforts, or other financial or economic incentives related to the sale or distribution of the accused products. Nokia

also has not provided evidence of unexpected results or unexpected properties in the purported inventions of the asserted claims of the '818 patent. *Id.*

Nokia has not identified any evidence of industry respect for the purported inventions of the asserted claims of the '818 patent, and also no evidence of any awards or other industry praise for any purported inventions of the asserted claims of the '818 patent. *Id.* Nokia has not identified any evidence of any skepticism of skilled artisans prior to purported inventions of the asserted claims of the '818 patent; to the contrary, the prior art identified herein establishes not only a lack of skepticism but an appreciation that the purported inventions of the asserted claims of the '818 patent were known to those of skill in the art. Nokia has not identified any evidence of any failed attempts by others to resolve any of the alleged problems that were allegedly solved by any of the alleged inventions claimed in the asserted patents. *Id.* Nokia has not identified any evidence of any teaching away from any of the alleged inventions claimed in the asserted patents. *Id.* Rather, and as discussed above, there are multiple references anticipating and/or rendering obvious the alleged inventions. Nokia has not identified any evidence of any long-felt but unresolved need for the alleged inventions claimed in the asserted patents. As described above, the asserted claims of the '818 patent are anticipated and/or rendered obvious by multiple prior art references. To the extent there was ever a need for any of the alleged inventions, they were well known to those in the art.

If Nokia identifies any additional secondary considerations of non-obviousness, Respondents reserve the right to amend and/or supplement their contentions.

C. Other Invalidity Grounds

Respondents hereby identify grounds upon which the asserted claims are invalid for failure to meet the requirements of 35 U.S.C. §§ 112(a), 112(b), and 112(f). These contentions shall not be construed as an admission that any claim construction advanced by Respondents in this case is

in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Respondents from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to Nokia's purported construction of the claim language or of other positions advanced by Nokia during the course of this litigation. Respondents' Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as Nokia's alleged scope of the asserted claims. Consequently, Respondents identify only the issues under 35 U.S.C. § 112 of which they are presently aware.

1. 35 U.S.C. § 101 – Ineligible Subject Matter

Under 35 U.S.C. § 101, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35].” “This provision, however, contains longstanding judicial exceptions, which provide that laws of nature, natural phenomena, and abstract ideas are not eligible for patenting.” *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765 (Fed. Cir. 2019). To determine if claims are patent eligible, the first step is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 217 (2014). If so, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* at 217–18 (internal quotation marks omitted). Under this framework, numerous cases have invalidated patents directed to video coding, encryption, and/or data manipulation. *See, e.g., Realtime Data LLC v. Array Networks Inc.*, No. 2021-2251, 2023 WL 4924814 (Fed. Cir. Aug. 2, 2023), *cert. denied sub nom. Realtime Data LLC v. Fortinet, Inc.*, No. 23-498, 2024 WL 72018 (U.S. Jan. 8, 2024); *Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349 (Fed. Cir. 2023);

PersonalWeb Techs. LLC v. Google LLC, 8 F.4th 1310, 1315 (Fed. Cir. 2021); *Sensormatic Elecs., LLC v. Wyze Labs, Inc.*, No. 2020-2320, 2021 WL 2944838, at *3 (Fed. Cir. July 14, 2021); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322 (Fed. Cir. 2017); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *see also In re Gitlin*, 775 F. App'x 689 (Fed. Cir. 2019).

The asserted claims of the '818 patent are directed to an abstract idea under the first step of the two-step *Alice* analysis. Specifically, the claims are directed to the patent-ineligible abstract idea of organizing parameters associated with data into a hierarchical structure and encoding and decoding video data using those parameters. *See Nokia Technologies Oy v. Amazon.com, Inc.*, 1:23-cv-01236-GBW, Dkt. 18 at 17-18 (D. Del.).

The asserted claims of the '818 patent also fail the second step of the *Alice* analysis because they do not recite an “inventive concept” capable of rendering the abstract idea into patent-eligible subject matter. The claims merely recite conventional functions performed by generic computing equipment, used in conventional ways. For example, neither the claims nor specification discloses any new hardware or software for achieving the result of defining parameter values. To the contrary, the patent confirms that video coding was well known before the patent, and that video coding standards already used parameter sets, including parameters for picture- and sequence-level data. ('818 pat. at 1:19-21 (describing “conventional video coding standards”), 2:48-56 (use of “parameter set” in JVT coding standard).) The use of a standard video encoder or decoder to implement the abstract idea does not add anything significant to the abstract idea. “If a claim’s only ‘inventive concept’ is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an

abstract idea.” *BSG Tech. LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018) (patent directed to “system and method for indexing data” directed to patent-ineligible abstract idea and lacked inventive concept). See *Nokia Technologies Oy v. Amazon.com, Inc.*, 1:23-cv-01236-GBW, Dkt. 18 at 18-19 (D. Del.)

2. 35 U.S.C. § 112(a) – Enablement and Written Description

To comply with the enablement requirement of 35 U.S.C. § 112(a), the patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Courts consider multiple factors to determine whether experimentation is undue, including: “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

To comply with the written description requirement of 35 U.S.C. § 112(a), the patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). Further, to satisfy the written description requirement, the disclosure of the patent must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). “An applicant demonstrates that he was in possession of the invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). “[T]he written description inquiry looks to the four corners of the specification to discern the extent to

which the inventor(s) had possession of the invention as broadly claimed. The knowledge of ordinary artisans may be used to inform what is actually in the specification, but not to teach limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure in the specification.” *Rivera v. Int’l Trade Comm’n*, 857 F.3d 1315, 1322-23 (Fed. Cir. 2017) (citations omitted). In other words, even if something reflects an obvious variation of the invention disclosed in the specification, the claims are invalid for lack of written description.

The asserted claims are invalid for failure to enable and/or provide a written description of the alleged invention as required by 35 U.S.C. § 112(a). A person skilled in the art would not be able to make and use the claimed inventions by reading the specification. For example, the ’818 patent fails to sufficiently describe or enable at least the following limitations: “recognizing, in a decoder, a sequence parameter set and forming at least one sequence parameter pertaining to a sequence using the parameter set ”; “recognizing, in the decoder, a picture parameter set and forming at least one first picture parameter value pertaining to a picture using the parameter set”; “forming, in the decoder, at least one second picture parameter value using information of a slice header, the at least one second picture parameter value remaining unchanged at least in all slice headers of one picture”; “wherein the second picture parameter value is selected from a group of information of a picture order count and a frame number.”

Respondents’ contentions should not be seen as a suggestion that Respondents hereby limit their claims of indefiniteness, lack of enablement, or lack of written description to the terms identified herein. The contentions do not represent Respondents’ agreement or views as to the meaning of any claim term. The contentions also do not represent Respondents’ agreement or views as to the definiteness, written description support for, or enablement of any claim not

specifically identified herein. Respondents reserve the right to supplement or amend these disclosures and to identify additional and/or different claim terms for construction.

V. U.S. PATENT NO. 8,050,321

A. Identification of Relevant Prior Art

Respondents identify the following prior art references that anticipate and/or render obvious the asserted claims of the asserted patent. The following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g). Whether a prior art reference anticipates or renders obvious the asserted claims of the '321 patent may depend upon claim construction. Respondents have identified each prior art patent by its inventor, title, number, country of origin, date of filing, date of issue, and, where applicable, the relevant priority date, or such information may be derived from the face of the patent. Each prior art publication is identified by its title, date of publication, and, where feasible, author and publisher. For prior art under 35 U.S.C. § 102(b), Respondents have identified the item offered for sale or publicly used or known, the date by which the offer or use took place or the information became known, and the identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known, to the full extent currently known.

Based on the information reasonably available to Respondents, the priority date for the '321 patent is January 25, 2006, the filing date of application no. 11/338,934, the filing date of the application which became the '321 patent. The applicant added matter to the 11/338,934 that was not in any parent application. Nokia therefore bears the burden of showing on a claim-by-claim basis that it is entitled to a priority date earlier than January 25, 2006. Nokia has not done so, including in any of its interrogatory responses served to date. If Nokia contends or demonstrates that any of the asserted claims of the '321 patent are entitled to a priority date before January 25,

2006, then Respondents reserve the right to identify additional prior art references which anticipate or make obvious the asserted claims of the '321 patent.

1. Prior Art Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following prior art patent publications. These patent publications constitute prior art under 35 U.S.C. § 102, and their patent numbers, countries of origin, and dates of publication and/or issue are included on the face of those documents. Respondents reserve the right to supplement this list as it learns in the course of discovery of other prior art patent publications that would anticipate and/or render the asserted claims obvious.

Prior Art Reference	Inventor
U.S. Patent No. 4,390,966	Kawashima et al.
U.S. Patent No. 5,122,875	Raychaudhuri et al.
U.S. Patent No. 5,144,426	Tanaka et al.
U.S. Patent No. 5,148,272	Acampora et al.
U.S. Patent No. 5,461,420	Yonemitsu et al.
U.S. Patent No. 5,543,847	Kato
U.S. Patent No. 5,642,460	Shimoda
U.S. Patent No. 5,680,322	Shinoda
U.S. Patent No. 5,699,476	Van Der Meer
U.S. Patent No. 5,774,593	Zick et al.
U.S. Patent No. 5,786,858	Yagasaki et al.
U.S. Patent No. 5,838,265	Adolph
U.S. Patent No. 5,852,630	Langberg et al.
U.S. Patent No. 5,877,812	Krause et al.
U.S. Patent No. 5,949,953	Shirakawa et al.
U.S. Patent No. 5,956,741	Jones
U.S. Patent No. 6,058,240	McLaren
U.S. Patent No. 6,072,831	Chen
U.S. Patent No. 6,094,456	Ueda
U.S. Patent No. 6,108,382	Gringeri et al.
U.S. Patent No. 6,122,317	Hanami et al.
U.S. Patent No. 6,233,356	Haskell et al.

U.S. Patent No. 6,266,158	Hata et al.
U.S. Patent No. 6,307,886	Westermann
U.S. Patent No. 6,314,139	Koto et al.
U.S. Patent No. 6,337,881	Chaddha
U.S. Patent No. 6,359,911	Movshovich et al.
U.S. Patent No. 6,363,208	Nitta et al.
U.S. Patent No. 6,427,150	Oashi et al.
U.S. Patent No. 6,483,875	Hasebe et al.
U.S. Patent No. 6,496,980	Tillman et al.
U.S. Patent No. 6,510,553	Hazra
U.S. Patent No. 6,614,936	Wu et al.
U.S. Patent No. 6,639,943	Radha et al.
U.S. Patent No. 6,754,271	Gordon et al.
U.S. Patent No. 6,754,905	Gordon et al.
U.S. Patent No. 6,907,073	Sawhney et al.
U.S. Patent No. 6,909,743	Ward et al.
U.S. Patent No. 6,912,351	Kim
U.S. Patent No. 6,920,178	Curet et al.
U.S. Patent No. 6,940,904	Chen et al.
U.S. Patent No. 6,973,130	Wee et al.
U.S. Patent No. 7,103,669	Apostolopoulos
U.S. Patent Appl. Publication No. 2001/0024472	Sporer et al.
U.S. Patent Appl. Publication No. 2001/0040700	Hannuksela et al.
U.S. Patent Appl. Publication No. 2002/0051621	Cuccia
U.S. Patent Appl. Publication No. 2002/0071485	Caglar et al.
U.S. Patent Appl. Publication No. 2002/0097800	Ramanzin
U.S. Patent Appl. Publication No. 2003/0039308	Wu et al.
U.S. Patent Appl. Publication No. 2003/0063806	Kim et al.
Chinese Patent Appl. Publication No. CN 1173783	Naimpally et al.
European Patent Appl. Publication No. EP 0798932	Naimpally et al.
European Patent Appl. Publication No. EP 0898427	Sekiguchi et al.
European Patent Appl. Publication No. EP 0966161	Nagumo et al.

European Patent Appl. Publication No. EP 1005232	Wang et al.
Japanese Patent Appl. Publication No. 4-348690	Tanaka et al.
Japanese Patent Appl. Publication No. 8-265694	Matsuno et al.
Japanese Patent Appl. Publication No. 10-271511	Hata et al.
Japanese Patent Appl. Publication No. 11-177987	Yoneda et al.
Japanese Patent Appl. Publication No. 11-275576	Sen
Japanese Patent Appl. Publication No. 2000-59783	Tawara et al.
Japanese Patent Appl. Publication No. 10-70725 (JP3158064)	Katada et al.
Russian Patent Appl. Publication No. 2123769	Oda
Russian Patent Appl. Publication No. 2137197	Rakhovskij et al.
International Patent Appl. Publication No. WO 00/22820	Pejhan et al.
International Patent Appl. Publication No. WO 00/67469	Hannuksela
International Patent Appl. Publication No. WO 01/47283	Wan et al.
International Patent Appl. Publication No. WO 01/84850	Bruls et al.
International Patent Appl. Publication No. WO 02/054776	Karczewicz et al.

2. Prior Art Non-Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following published works of prior art. These publications constitute additional prior art under 35 U.S.C. § 102, and their titles, authors, publishers, and dates of publication are included on the face of those documents. In addition to the references listed below, Respondents hereby disclose as prior art publications all references disclosed below in Section 3 (regarding on sale/public use), such as press releases, users manuals, and other related documentation about such

prior art products. Respondents reserve the right to supplement this list as it learns in the course of discovery of other references, prior art public use, and/or sale that would anticipate and/or render the asserted claims obvious.

- Lee et al., H.263-Based SNR Scalable Video Codec, Multimedia Dept. Electronics and Telecomm. Research Institute.
- Fernando, et al., Scene Adaptive Video Encoding for MPEG and H.263+ Video, IEEE Transactions on Consumer Electronics
- Lee, et al., Motion-Compensated Layered Video Coding for Playback Scalability, IEEE Transactions on Circuits and Systems for Video Technology
- Apostolopoulos, John, Error-Resilient Video Compression Via Multiple State Streams, International Workshop on Very Low Bitrate Video Coding (VLBV'99), Kyoto, Japan, Oct. 1999.
- Le Gail, Didier, MPEG: A Video Copression Standard for Multimedia Applications
- Mitchell, Joan, et al., MPEG Video Compression Standard
- Elloumi et al., Issues in Multimedia Scaling: the MPEG Video Streams Case, Emerging Technologies and Applications in Communications, IEEE Computer Society (May 7, 1996).
- Hannuksela; Enhanced Concept of GOP; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6); 2nd Meeting: Geneva, CH, Jan. 29 - Feb. 1, 2002; Document HVT-B042r1.
- Soderquist et al., Memory Traffic and Data Cache Behavior of an MPEG-2 Software Decoder, IEEE Computer Society (Oct. 12, 1997).
- Joint Video Team of ISO/IEC MPEG and ITU-T VCEG, Editor's Proposed Draft Text Modification for Joint Video Specification (ITU-T Rec. 264 ISO/IEC 14496-10 AVC), Geneva modifications draft 37.ITU-Telecommunications Standardization Union, Draft Text of Recommendation H.263 Version 2 ("H.263+") for Decision (Jan. 15, 1998).
- ITU-Telecommunications Standardization Union, H.26L Test Model Long Term No. 8 (TML-8) Draft, Document VCEG-N10.
- ITU-Telecommunications Standardization Union, Draft for "H.263++" Annexes U, V, and W to Recommendation H.263 (Nov. 2000).
- David Singer and Toby Walker, Study Text of ISO/IEC 14496-15/FCD (Nov. 8, 2002).
- David Singer and Toby Walker, Study Text of ISO/IEC 14496-15/FCD (Revised).
- Hannuksela, M et al.; Sub-Picture: ROI Coding and Unequal Error Protection, IEEE 2002 Conference, Sep. 2002.
- Wenger, Temporal Scalability. Using P-pictures for Low-latency Applications, IEEE Workshop, Dec. 1998.

- Illgner et al., Spatially Scalable Video Compression Employing Resolution Pyramids, 15 IEEE Journal on Selected Areas in Communications No. 9 (Dec. 1997).
- Hannuksela, Signaling of Enhanced GOPs, Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6) 4th Meeting: Klagenfurt, Austria, 22-26 July, 2002; Document: JVT-D098.
- Proposed Amendments to the Common Text ITU-T Recommendation H.262 | ISO/IEC 13818-2 (version decided by SG15 on 28 May 1996); International Telecommunication Union Telecommunication Standardization Sector Study Period 1993 – 1996; Source: Rapporteur for Q.2/15 (Sakae Okubo).
- Agreed Corrigenda (Corrigendum 1 and Corrigendum 2) to H.262 | ISO/IEC 13818-2, ITU - Telecommunication Standardization Sector, Study Group 15; Geneva, 27 May - 7 June 1996; Temporary Document 35-E (PLEN).
- ITU-T Recommendation H.263: Video coding for low bit rate communication (Feb. 1998).
- Wenger, Stephan, et al.; On Picture, GOP, and Sequence Headers; ITU - Telecommunications Standardization Sector Study Group 16 Question 6 Video Coding Experts Group (VCEG); 13th Meeting: Austin, Texas, USA, 2-4 April, 2001; Document: VCEG-M74.
- Suzuki, Teruhiko, et al.; Tool to support random access; ITU - Telecommunications Standardization Sector Study Group 16 Question 6 Video Coding Experts Group (VCEG); 15th Meeting: Pattaya, Thailand, 4-6 Dec., 2001; Document: VCEG-O53r2.
- Fröjdh, Per, et al.; Interim JVT File Format; ITU - Telecommunications Standardization Sector Study Group 16 Question 6 Video Coding Experts Group (VCEG); 15th Meeting: Pattaya, Thailand, 4-6 Dec., 2001; Document VCEG-O58.
- Hannuksela, Miska; Interim JVT File Format; ITU - Telecommunications Standardization Sector Study Group 16 Question 6 Video Coding Experts Group (VCEG); 15th Meeting: Pattaya, Thailand, 3-7 Dec., 2001; Document VCEG-O58 Appendix A.
- Sullivan, Gary, et al.; JVT 1st Meeting and VCEG 15th Meeting Draft Report; JVT-A005 draft 1.
- Wiegand, Thomas; Draft of Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document JVT-C167.
- ITU-T Recommendation H.262 / International Standard ISO/IEC 13818-2, Information Technology – Generic Coding of Moving Pictures and Associated Audio Information: Video (July 10, 1995).
- ITU-T Recommendation H.262 Technical Corrigendum 1 (Nov. 8, 1996).
- International Standard, ISO/IEC 13818-1, Information Technology – Generic Coding of Moving Pictures and Associated Audio Information: Systems (2d ed. Dec. 1, 2000).

- ITU-T Recommendation H.262 / International Standard ISO/IEC 13818-2, Information Technology – Generic Coding of Moving Pictures and Associated Audio Information: Video (Feb. 17, 2000).
- ITU-T Recommendation H.264, Advanced Video Coding for Generic Audiovisual Services (05/2003).
- ITU-T Recommendation H.264, Advanced Video Coding for Generic Audiovisual Services (03/2005).
- International Standard ISO/IEC 11172-2 - Information technology - Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video.

Prior Art Items and/or Knowledge

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on prior art items embodying and alleged inventions or structures described in, and/or any knowledge disclosed by or referred to in, any of the prior art patents or prior art publications identified above in Sections V.A.1 and V.A.2. Because Respondents have not yet completed discovery in this case, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through third-party discovery or other further investigation.

3. Prior Art Under 35 U.S.C. §§ 102(f) and 102(g)

Because Respondents have not yet completed discovery in this case, including but not limited to taking depositions of the named inventors of the asserted patents, reviewing Nokia's productions, and seeking discovery of prior inventions by third parties, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through discovery or other further investigation.

B. Anticipation and Obviousness

Respondents contend that the prior art references identified in Respondents' contentions anticipate or render obvious the asserted claims of the '321 patent. Respondents attach Exhibits B-1 to B-10, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '321 patent. The charts identify primary references.

Single items of prior art that anticipate the asserted claims of the '321 patent are cited and described in the claim charts attached hereto as Exhibits B-1 to B-10, each of which describes anticipation of one or more claims of the asserted patents by a primary reference. These claim charts provide citations to portions of the above references, illustrating how the prior art explicitly discloses every element of the asserted claims of the '321 patent. To the extent any element is not provided by an expressly enabling disclosure by the referenced prior art, all elements of the asserted claims of the '321 patent would still be the inherent result of putting into practice the systems and methods described by the prior art referenced herein, as set forth below.

Exhibit	Primary Reference
B-1	U.S. Patent No. 5,543,847 ("Kato") (RESPNOKIA_00024884)
B-2	U.S. Patent No. 5,956,741 ("Jones") (RESPNOKIA_00036258)
B-3	U.S. Patent App. Pub. No. 2003/0039308 ("Wu") (RESPNOKIA_00023750),
B-4	U.S. Patent No. 6,909,743 ("Ward") (RESPNOKIA_00038056)
B-5	U.S. Patent No. 6,912,352 ("Kim") (RESPNOKIA_00036553)
B-6	U.S. Patent No. 6,920,178 ("Curet") (RESPNOKIA_00023761)
B-7	Wiegand, Thomas; Text of Committee Draft of Joint Video Specification (ITU-T Rec. H.264 ISO/IEC 14496-10 AVC); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; 3rd Meeting: Fairfax, Virginia, USA, 6-10 May, 2002; Document JVT-C167 ("JVT-C167") (RESPNOKIA_00012025)
B-8	International Standard ISO/IEC 11172-2 - Information technology - Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video ("MPEG-1") (RESPNOKIA_00029598)
B-9	ITU-T Recommendation H.262 / International Standard ISO/IEC 13818-2, Information Technology – Generic Coding of Moving Pictures and Associated Audio Information: Video (Feb. 17, 2000) ("H.262/MPEG-2") (RESPNOKIA_00009846)
B-10	ITU-T Recommendation H.264 Advanced Video Coding for Generic Audiovisual Services (03/2005) ("H.264 (03/2005)") / ITU-T Recommendation H.264 Advanced Video Coding for Generic Audiovisual Services (05/2003) ("H.264 (05/2003)") (RESPNOKIA_00030787)

In addition to the discussion above, and to the extent not anticipated, the asserted claims of the '321 patent are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. Items of prior art that render obvious the asserted claims of the '321 patent are cited and described in the claim charts attached hereto as Exhibits B-1 to B-11. Respondents also identify secondary references and obviousness combinations in Exhibit B-11. In the event a particular primary reference identified in Exhibits B-1 to B-10 does not anticipate one of the asserted claims of the '321 patent, the reference, alone or in combination with one or more of the references identified in those exhibits or in Exhibit B-11 renders the claim obvious. For clarity, if a primary reference chart indicates that a limitation may be disclosed in Exhibit B-11, the limitation would also have been obvious in view of a combination with another primary reference that discloses the limitation. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to Respondents' right to rely on additional specific combinations as well as to detail and explain such combinations.

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id.* at 1732, 1738, 1742-1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id.* at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge

possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *Id.* at 1740-41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 580-81 (E.D. Tex. 2007). “[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ” to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits B-1 to B-11, persons of ordinary skill in the art would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the ’321 patent. The references identified in Exhibits B-1 to B-11 are analogous prior art to the subject matter of the asserted claims of the ’321 patent and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the asserted patents.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the asserted patents. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these initial invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a

number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '321 patent. Respondents' inclusion of exemplary combinations, in view of the factors and exemplary motivations to combine identified herein, does not preclude Respondents from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739-40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. Nevertheless, in addition to the information contained herein, Respondents hereby identify additional motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified above with others exists from the prior art references themselves, as well as from the interrelated teachings of other prior art references, common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the existence and nature of a known need or problem, and/or knowledge possessed by a person of ordinary skill. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market

forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success. Therefore, various reasons to combine the disclosed references exist. Respondents reserve the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include the allegedly missing limitation and to explain the motivation to combine the prior art elements.

In addition, it would have been obvious to combine any of the prior art in Exhibits B-1 to B-11 because all of these references relate to methods for grouping and numbering image frames.

For example, H.262/MPEG-2 discloses: “Group of picture header is an optional header that can be used immediately before a coded I-frame to indicate to the decoder if the first consecutive B-pictures immediately following the coded I-frame can be reconstructed properly in the case of a random access. In effect, if the preceding reference frame is not available, those B-pictures, if any, cannot be reconstructed properly unless they only use backward prediction or intra coding. This is more precisely defined in the clause describing `closed_gop` and `broken_link`.” H.262/MPEG-2, at 13. H262/MPEG-2 further discloses: “Random access is an essential feature for video on a storage medium. It requires that any picture can be accessed and decoded in a limited amount of time. It implies the existence of access points in the bitstream – that is segments of information that are identifiable and can be decoded without reference to other segments of data. In this Specification access points are provided by `sequence_header()` and this is then followed by intra information (picture data that can be decoded without access to previously decoded pictures).” H.262/MPEG-2, at 145.

As another example, Jones discloses: “A group of pictures (GOP) can start with B pictures that are predicted from a P picture in a previous GOP. This is called an ‘open GOP’. FIG. 41 illustrates this. Pictures 17 and 18 are B pictures at the start of the second GOP. If the GOP is ‘open’ then the encoder may have encoded these two pictures using predictions from the P picture 16 and also the I picture 19. Alternatively the encoder could have restricted itself to using predictions from only the I picture 19. In this case the second GOP is a ‘closed GOP.[.]’” Jones, 152:15-24.

As another example, Kim discloses: “The bit stream generated and transmitted to the recording/reproducing unit 140 as described above has a logical structure as shown in, e.g., FIG. 5A. As shown therein, each P-picture frame P1, P2, P3 has a current address CAD indicating the current address of the P-picture, and an I-picture reference address IAD indicating the address of the corresponding (or previous) I-frame. If image signals are obtained from more than one camera, the bit streams generated and transmitted to the recording/reproduction unit 140 can have a logical structure as shown in, e.g., FIG. 5B. In addition to the shown in FIG. 5A, the data stream of FIG. 5B includes a camera (channel) ID code CHID indicating the identification code of each camera or a signal source.” Kim, 4:46-58.

As another example, JVT-C167 discloses, “independent group of pictures (independent GOP): A group of pictures that can be decoded independently from previous or later pictures. The start of an independent GOP is explicitly signalled.” JVT-C167, at 3. JVT-C167 also discloses “An instantaneous decoder refresh picture (IDER picture) implies that all pictures in the multi-picture buffer are marked as “unused” except the current picture. Moreover, the maximum long-term index is reset to zero. An IDER picture contains only I or SI slices, and IDER slice type shall

be used for all slices of an IDER picture. The picture starts an independent group of pictures (independent GOP) that lasts until the next IDER picture.” JVT-C167, at 24.

As another example, MPEG-1 discloses, “A group of pictures is a series of one or more coded pictures intended to assist random access into the sequence. In the stored bitstream, the first coded picture in a group of pictures is an I-Picture. The order of the pictures in the coded stream is the order in which the decoder processes them in normal playback. In particular, adjacent B-Pictures in the coded stream are in display order. The last coded picture, in display order, of a group of pictures is either an I-Picture or a P-Picture.” MPEG-1 § 2.4. MPEG-1 further discloses: “The Temporal Reference is a ten-bit number which can be used to define the order in which the pictures must be displayed. It may be useful since pictures are not transmitted in display order, but rather in the order which the decoder needs to decode them. The first picture, in display order, in each group must have Temporal Reference equal to zero. This is incremented by one for each picture in the group.” MPEG-1 § D.5.3.2.

As another example, Yonemitsu discloses picture coding in relation to MPEG standards involving I-pictures, B-picture, and P-pictures organized in a “Group of Pictures (GOP).” Yonemitsu at 1:13-19, 12:64-13:26. A temporal reference signal “is a signal associated with each input picture and indicates the order in which the pictures in a Group of Pictures (GOP) are to be displayed.” *Id.* at 13:21-24. “The temporal__reference field is a 10-bit field, the contents of which indicate the display order.” *Id.* at 17:33-37. “A picture counter is incremented by one for each input picture to provide the temporal__reference. The temporal__reference counter is reset to zero for the first picture of each group of pictures, or if it reaches 1024.” *Id.* at 17:37-41.

As another example, Hanami discloses, “The GOP layer includes a GOP 1140 including a plurality of pictures 1130. The pictures 1130 included in the GOP 1140 include at least one I

picture and zero or a plurality of P or B pictures. A GOP header 1145 storing a GOP start code and information such as a flag indicating that this GOP 1140 requires no reference from image data of a preceding GOP is arranged at the head of the GOP 1140.” Hanami at 4:64-5:3. An exemplary structure of the coded bitstream including the GOP layer is shown in Fig. 87. Hanami at 4:1-10, Fig. 87.

As another example, Kato relates to “a picture encoding and decoding method and apparatus and a picture recording medium in which random accessing may be made to any GOP.” Kato at Col. 2:39-49. Specifically, Kato discusses including an indication in a GOP, such that “when encoding a P-picture belonging to a GOP, it can be recognized whether or not random accessing may be had to such GOP.” Id.; see also id. at Col. 7:52-63. “If random accessing is found to be possible from the random accessibility indicating flag S26, it is found that, in the case of the GOP constructions as shown in X, Y and Z in FIGS. 5 and 6, prediction from the pictures belonging to past GOPs is not made.” See Col. 8:21-34.

As another example, Ward relates to “communications systems generally and, more particularly, . . . to a method for splicing or concatenating information streams in a substantially seamless manner.” Ward at Col. 1:13-16. Specifically, Ward notes that “video information may be spliced together in a relatively seamless manner by defining “in-points” and “out-points” for each stream that are indicative of, respectively, appropriate stream entry and exit points.” Id. at Col. 1:55-58. Ward also comments that transition clip between the in-points and out-points is “encoded as a closed GOP structure” and that it is desirable for it to have “no external frame dependencies.” Id. at Col. 12:66-13:33.

As another example, Curet relates to “a method switching the video component(s) of a first digital, audio-visual program onto the video component(s) of a second digital, audio-visual

program.” Curet at Col. 1:9-12. Curet discusses using a GOP which “consists of a sequence of pictures of which the first is an I picture, the second a B picture, the third a P picture, the fourth a B picture, etc. [wherein each picture] constitutes a forward reference in the order of presentation.” Id. at Col 10:26-37.

As another example, H.264 discloses: “coded video sequence: A sequence of access units that consists, in decoding order, of an IDR access unit followed by zero or more non-IDR access units including all subsequent access units up to but not including any subsequent IDR access unit.” H.264 (03/2005), at 6; H.264 (05/2003), at 2.

Respondents incorporate by reference prior art from the prosecution histories and background sections of the asserted patents. Respondents expect to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Respondents contend that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims of the '321 patent. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, “can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). “A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision.” *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness “simply

cannot overcome [a] strong prima facie showing of obviousness.” *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). Nokia has not established the existence of any objective indicia of non-obviousness or secondary considerations. Respondents reserve the right to supplement their contentions to respond to any such evidence should Nokia be permitted to raise them in the future. While discovery in this case is ongoing, and Respondents’ investigation continues (which will include expert discovery), to the extent Nokia contends that one or more asserted claims of the ’321 patent is not obvious based on secondary considerations recognized by relevant authority Respondents contend such allegations are without merit.

For example, Nokia has not identified any evidence of copying of the purported inventions of the asserted claims of the ’321 patent. *See* Nokia’s January 3, 2024, Objections and Responses to Respondents’ First Set of Interrogatories (Nos. 1-112), Interrogatory No. 16. Similarly, Nokia has provided no evidence of any failure of others to realize any purported inventions of the asserted claims of the ’321 patent, or any evidence of any long felt but unsolved need solved by the purported inventions of the asserted claims of the ’321 patent. *Id.* To the contrary, the widespread availability of video codecs is contrary evidence of any long-felt need for the purported inventions of the asserted claims of the ’321 patent.

Nokia also has not identified any evidence that the purported inventions of the asserted claims of the ’321 patent have enjoyed any commercial success. *Id.* To the extent that Nokia claims that sales of any accused products constitutes commercial success, Nokia has not identified any evidence of any nexus between the claimed invention and such alleged commercial success. Moreover, any commercial success of the accused products may be due to factors other than the merits of the claims, including non-patented features or functionalities, marketing efforts, or other financial or economic incentives related to the sale or distribution of the accused products. Nokia

also has not provided evidence of unexpected results or unexpected properties in the purported inventions of the asserted claims of the '321 patent. *Id.*

Nokia has not identified any evidence of industry respect for the purported inventions of the asserted claims of the '321 patent, and also no evidence of any awards or other industry praise for any purported inventions of the asserted claims of the '321 patent. *Id.* Nokia has not identified any evidence of any skepticism of skilled artisans prior to purported inventions of the asserted claims of the '321 patent; to the contrary, the prior art identified herein establishes not only a lack of skepticism but an appreciation that the purported inventions of the asserted claims of the '321 patent were known to those of skill in the art. Nokia has not identified any evidence of any failed attempts by others to resolve any of the alleged problems that were allegedly solved by any of the alleged inventions claimed in the asserted patents. *Id.* Nokia has not identified any evidence of any teaching away from any of the alleged inventions claimed in the asserted patents. *Id.* Rather, and as discussed above, there are multiple references anticipating and/or rendering obvious the alleged inventions. Nokia has not identified any evidence of any long-felt but unresolved need for the alleged inventions claimed in the asserted patents. As described above, the asserted claims of the '321 patent are anticipated and/or rendered obvious by multiple prior art references. To the extent there was ever a need for any of the alleged inventions, they were well known to those in the art.

If Nokia identifies any additional secondary considerations of non-obviousness, Respondents reserve the right to amend and/or supplement their contentions.

C. Other Invalidity Grounds

Respondents hereby identify grounds upon which the asserted claims are invalid for failure to meet the requirements of 35 U.S.C. §§ 112(a), 112(b), and 112(f). These contentions shall not be construed as an admission that any claim construction advanced by Respondents in this case is

in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Respondents from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to Nokia's purported construction of the claim language or of other positions advanced by Nokia during the course of this litigation. Respondents' Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as Nokia's alleged scope of the asserted claims. Consequently, Respondents identify only the issues under 35 U.S.C. § 112 of which they are presently aware.

1. 35 U.S.C. § 101 – Ineligible Subject Matter

Under 35 U.S.C. § 101, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35].” “This provision, however, contains longstanding judicial exceptions, which provide that laws of nature, natural phenomena, and abstract ideas are not eligible for patenting.” *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765 (Fed. Cir. 2019). To determine if claims are patent eligible, the first step is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 217 (2014). If so, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* at 217–18 (internal quotation marks omitted). Under this framework, numerous cases have invalidated patents directed to video coding, encryption, and/or data manipulation. *See, e.g., Realtime Data LLC v. Array Networks Inc.*, No. 2021-2251, 2023 WL 4924814 (Fed. Cir. Aug. 2, 2023), *cert. denied sub nom. Realtime Data LLC v. Fortinet, Inc.*, No. 23-498, 2024 WL 72018 (U.S. Jan. 8, 2024); *Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349 (Fed. Cir. 2023);

PersonalWeb Techs. LLC v. Google LLC, 8 F.4th 1310, 1315 (Fed. Cir. 2021); *Sensormatic Elecs., LLC v. Wyze Labs, Inc.*, No. 2020-2320, 2021 WL 2944838, at *3 (Fed. Cir. July 14, 2021); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322 (Fed. Cir. 2017); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *see also In re Gitlin*, 775 F. App'x 689 (Fed. Cir. 2019).

The asserted claims of the '321 patent are directed to an abstract idea under the first step of the two-step *Alice* analysis. Specifically, the claims are directed to the patent-ineligible abstract idea of using an indication to track video frames. The addition of an “indication” or a numbering scheme to manage data is an abstract idea. While the asserted claims generally use the “indication” to limit prediction to those frames in the same GOP, that is merely abstract data management. The claims invoke nothing more than generic computer components to perform the data-management steps, confirming the claims are directed to the abstract idea itself. *See, e.g.*, Cl. 10 (“A video decoder comprising at least one processor and at least one memory including computer code”), 11 (“. . . the computer program product comprising: a computer program code for”).

The asserted claims of the '321 patent also fail the second step of the *Alice* analysis because they do not recite an “inventive concept” capable of rendering the abstract idea into patent-eligible subject matter. Importantly, the '321 patent acknowledges that conventional video coding systems could already perform the relevant steps of video encoding/decoding, with the exception of the use of an “indication” to track frames in a “group of pictures” (“GOP”). '321 patent, 2:34-37, 3:37-48, 4:8-35. There is nothing inventive about the “indication” itself, such as a particular way to generate that indication. Moreover, the '321 patent explains that for pre-existing video systems, “an I-frame typically initiates a video sequence defined as a [GOP], the P-frames of which can only be

determined on the basis of the I-frame and the previous P-frames of the GOP in question,” confirming that the data-management functions of the claims do not supply an inventive concept (which they could not do anyway, as data-management functions are themselves an abstract idea). ’321 patent, 2:34–37. The claims merely recite conventional functions performed by generic computing equipment, used in conventional ways. *See, e.g.*, ’321 patent, Cl. 10, 11. Using conventional components to increase the speed or efficiency of a process does not confer patent eligibility on an otherwise abstract idea. The use of a standard video encoder or decoder components to implement the abstract idea does not add anything significant to the abstract idea. “If a claim’s only ‘inventive concept’ is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea.” *BSG Tech. LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018) (patent directed to “system and method for indexing data” directed to patent-ineligible abstract idea and lacked inventive concept).

2. 35 U.S.C. § 112(a) – Enablement and Written Description

To comply with the enablement requirement of 35 U.S.C. § 112(a), the patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Courts consider multiple factors to determine whether experimentation is undue, including: “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

To comply with the written description requirement of 35 U.S.C. § 112(a), the patent specification must describe an invention in sufficient detail that one skilled in the art can clearly

conclude that the inventor invented the claimed invention. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). Further, to satisfy the written description requirement, the disclosure of the patent must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). “An applicant demonstrates that he was in possession of the invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). “[T]he written description inquiry looks to the four corners of the specification to discern the extent to which the inventor(s) had possession of the invention as broadly claimed. The knowledge of ordinary artisans may be used to inform what is actually in the specification, but not to teach limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure in the specification.” *Rivera v. Int’l Trade Comm’n*, 857 F.3d 1315, 1322-23 (Fed. Cir. 2017) (citations omitted). In other words, even if something reflects an obvious variation of the invention disclosed in the specification, the claims are invalid for lack of written description.

The asserted claims are invalid for failure to enable and/or provide a written description of the alleged invention as required by 35 U.S.C. § 112(a). A person skilled in the art would not be able to make and use the claimed inventions by reading the specification. For example, the ’321 patent fails to sufficiently describe or enable at least the following limitations: “decoding identifier values for image frames according to a numbering scheme,” “reset[ing] the identifier value for the indicated first image frame of the independent sequence,” and “whereby the video sequence is decoded without prediction from any image frame decoded prior to said first image frame.”

1. 35 U.S.C. § 112(b) – Indefiniteness

The claims of a patent must “particularly point out and distinctly claim the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(b). A claim is invalid as indefinite if it is not sufficiently precise to permit a potential competitor to determine whether or not it is infringing. *Morton Int’l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993). Specifically, “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 891, 901 (2014). Furthermore, when a claim includes a term of degree, the patent “must provide ‘some standard of measuring that degree’ such that the claim language provides ‘enough certainty to one of skill in the art when read in context of the invention.’” *GE Lighting Solutions, LLC v. Lights of Am., Inc.*, 663 Fed. Appx. 938, 940 (Fed. Cir. 2016); *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). For terms of degree, “the patent must provide that additional information in the form of ‘objective boundaries.’” *Id.* And the Federal Circuit’s “case law is clear that the objective boundaries requirement applies to terms of degree.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018).

Under this standard, a person skilled in the art would not be able to determine the scope of the invention because of the indefiniteness of at least the following terms: “start[ing] the decoding of the video sequence from said first image frame of the independent sequence” and “decoding identifier values for image frames according to a numbering scheme.”

For example, each of the independent claims 8, 10, and 11 include the limitation “start[ing] the decoding of the video sequence from said first image frame of the independent sequence.” However, the same claims specify that there can be more than one independent sequence in each video sequence, such that there can be more than one “first image frame.” Since the claims do not

specify how to select the specific “first image frame” that is referenced in the above-identified limitation. As such, the identified limitation is indefinite.

Because neither Nokia nor Respondents have yet briefed claim construction issues, Respondents’ contentions should not be seen as a suggestion that Respondents hereby limit their claims of indefiniteness, lack of enablement, or lack of written description to the terms identified herein. The contentions do not represent Respondents’ agreement or views as to the meaning of any claim term. The contentions also do not represent Respondents’ agreement or views as to the definiteness, written description support for, or enablement of any claim not specifically identified herein. Respondents reserve the right to supplement or amend these disclosures and to identify additional and/or different claim terms for construction.

VI. U.S. PATENT NO. 8,077,991

A. Identification of Relevant Prior Art

Respondents identify the following prior art references that anticipate and/or render obvious the asserted claims of the asserted patent. The following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g). Whether a prior art reference anticipates or renders obvious the asserted claims of the ’991 patent may depend upon claim construction. Respondents have identified each prior art patent by its inventor, title, number, country of origin, date of filing, date of issue, and, where applicable, the relevant priority date, or such information may be derived from the face of the patent. Each prior art publication is identified by its title, date of publication, and, where feasible, author and publisher. For prior art under 35 U.S.C. § 102(b), Respondents have identified the item offered for sale or publicly used or known, the date by which the offer or use took place or the information became known, and the identity of the person or entity which made the use or which made and received the offer, or the person or

entity which made the information known or to whom it was made known, to the full extent currently known.

Based on the information reasonably available to Respondents, the priority date for the '991 patent is April 10, 2008, the filing date of application No. 12/101,019 that led to the issuance of the '991 patent. Nokia bears the burden of showing on a claim-by-claim basis that it is entitled to a priority date earlier than April 10, 2008, including the filing date and description of the alleged inventions claimed in the '991 patent in any earlier provisional application. Nokia has not done so, including in any of its interrogatory responses served to date. If Nokia contends or demonstrates that any of the asserted claims of the '991 patent are entitled to a priority date before April 10, 2008, then Respondents reserve the right to identify additional prior art references which anticipate or make obvious the asserted claims of the '991 patent.

1. Prior Art Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following prior art patent publications. These patent publications constitute prior art under 35 U.S.C. § 102, and their patent numbers, countries of origin, and dates of publication and/or issue are included on the face of those documents. Respondents reserve the right to supplement this list as it learns in the course of discovery of other prior art patent publications that would anticipate and/or render the asserted claims obvious.

Prior Art Reference	Inventor
U.S. Patent No. 4,125,861	Mounts et al.
U.S. Patent No. 4,723,161	Koga
U.S. Patent No. 5,751,359	Suzuki et al.
U.S. Patent No. 5,912,815	Kim et al.
U.S. Patent No. 5,598,214	Kondo et al.
U.S. Patent No. 6,243,497	Chiang et al.
U.S. Patent No. 6,233,279	Boon
U.S. Patent No. 6,256,717	Takahashi
U.S. Patent No. 6,333,949	Nakagawa et al.

U.S. Patent No. 6,498,810	Kim et al.
U.S. Patent No. 6,697,427	Kurak et al.
U.S. Patent No. 7,369,709	Hsu et al.
U.S. Patent No. 7,496,141	Kwon et al.
U.S. Patent No. 7,760,964	Wang
U.S. Patent No. 7,848,445	She et al.
U.S. Patent No. 8,045,821	Tasaka et al.
U.S. Patent No. 8,155,189	Yan
U.S. Patent No. 8,194,989	
U.S. Patent No. 8,213,508	Boyce et al.
U.S. Patent No. 8,422,546	Lin et al.
U.S. Patent No. 8,908,766	Pace
U.S. Patent No. 9,749,660	Narroschke et al.
U.S. Patent Appl. Publication No. 2004/0151252	Sekiguchi et al.
U.S. Patent Appl. Publication No. 2005/0152611	Lee et al.
U.S. Patent Appl. Publication No. 2007/0047648	Tourapis et al.
U.S. Patent Appl. Publication No. 2007/0064795	Cho et al.
U.S. Patent Appl. Publication No. 2007/0064797	Miao et al.
U.S. Patent Appl. Publication No. 2007/0071092	Chin
U.S. Patent Appl. Publication No. 2007/0121731	Tanizawa et al.
U.S. Patent Appl. Publication No. 2007/0140339	Bhaskaran et al.
U.S. Patent Appl. Publication No. 2007/0183508	Kudo et al.
U.S. Patent Appl. Publication No. 2008/0225947	Narroschke et al.
U.S. Patent Appl. Publication No. 2011/0038410	Narroschke et al.
Int'l Patent Appl. Publication No. WO 1999/007154	Martens
Japanese Patent Appl. Pub. No. 2002-152049	Pelly
Japanese Patent Appl. Pub. No. JP2002191051	Burt
Japanese Patent Appl. Publication No. 2007-28034	Yukihiro
Int'l Patent Appl. Publication No. WO 00/27128	Kurak et al.

Int'l Patent Appl. Publication No. WO 2006/055512	Weiss et al.
European Patent Appl. No. EP 0123456	Chen et al.
European Patent Appl. No. EP1021043	Chung
German Patent Application Publication DE10200901	Illgner et al.
Korean Patent Appl. Publication No. KR20040099086	Kim

2. Prior Art Non-Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following published works of prior art. These publications constitute additional prior art under 35 U.S.C. § 102, and their titles, authors, publishers, and dates of publication are included on the face of those documents. In addition to the references listed below, Respondents hereby disclose as prior art publications all references disclosed below in Section 3 (regarding on sale/public use), such as press releases, users manuals, and other related documentation about such prior art products. Respondents reserve the right to supplement this list as it learns in the course of discovery of other references, prior art public use, and/or sale that would anticipate and/or render the asserted claims obvious.

- Giridhar Mandyam, Nasir Ahmed, Neeraj Magotra, “Lossless Image Compression Using the Discrete Cosine Transform”, Journal of Visual Communication and Image Representation, vol. 8, Issue 1, 1997, Pages 21-26, ISSN 1047-3203, <https://doi.org/10.1006/jvci.1997.0323>.
(<https://www.sciencedirect.com/science/article/pii/S1047320397903230>)
- Ascenso, João, Improving Frame Interpolation with Spatial Motion Smoothing for Pixel Domain Distributed Video Coding
- Scott, Willie, Block-Level Discrete Cosine Transform Coefficients for Autonomic Face Recognition
- Narroschke, Matthias et al., Adaptive prediction error coding in spatial and frequency domain for H.264/AVC, ITU - Telecommunications Standardization Sector, STUDY

GROUP 16 Question 6, Video Coding Experts Group (VCEG), 29th Meeting: Bangkok, Thailand, 16-20 January, 2006, Document VCEG-AB06.

- Sahafi, Laleh, "Context-Based Complexity Reduction Applied to H.264 Video Compression," 2005. Wiegand, Thomas, et al.; Working Draft Number 2, Revision 4 (WD-2 rev 5); Joint Video Team (JVT) of ISO/IEC MPEG and ITU-T VCEG; Geneva, Switzerland, January 29-February 1, 2002; Document: JVT-B118r5.
- Nokia Research Center; Proposal for Advanced Video Coding; ITU Telecommunication Standardization Sector; Study Group 15, Working Party 15/1; Expert's Group on Very Low Bitrate Video Telephony; Document: LBC-97-029.
- Sullivan, Gary; Draft Meeting Report of the Sixth Meeting (Meeting F) of the ITU-T Q.15/16 Advanced Video Coding Experts Group - Seoul, Republic of Korea, 3-6 November, 1998 (Study Period 1997-2000); ITU - Telecommunications Standardization Sector; Study Group 16; Video Coding Experts Group (Question 15); 6th Meeting: Seoul, Korea, 3-6 November, 1998; Document: Q15-F-49d2.
- Karczewicz, Marta, et al.; Nokia MVC H.26L Proposal Description; ITU - Telecommunications Standardization Sector; Study Group 16; Video Coding Experts Group (Question 15); 10th meeting: Osaka, 16-18 May, 2000; Document: Q15-J-19.
- Narroschke, Matthias, et al.; Adaptive prediction error coding in spatial and frequency domain with a fixed scan in the spatial domain; ITU - Telecommunications Standardization Sector; Study Group 16 Question 6; Video Coding Experts Group (VCEG); 30th Meeting: Hangzhou, China, 23-27 October, 2006; Document: VCEG-AD07.
- Bartnik, Christian, et al.; HEVC Extension for Multiview Video Coding and Multiview Video plus Depth Coding; ITU - Telecommunications Standardization Sector; Study Group 16 Question 6; Video Coding Experts Group (VCEG); 44th Meeting: San Jose, CA, USA, 03-10 February 2012; Document: VCEG-AR13.
- Reichel, Julien; Joint Scalable Video Model JSVM-5; Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6) 18th Meeting: Bangkok, Thailand, 14-20 January, 2006; Document: JVT-R202.

3. Prior Art Items and/or Knowledge

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on prior art items embodying and alleged inventions or structures described in, and/or any knowledge disclosed by or referred to in, any of the prior art patents or prior art publications identified above in Sections VI.A.1 and VI.A.2. Because Respondents have not yet completed discovery in this case, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through third-party discovery or other further investigation.

4. Prior Art Under 35 U.S.C. §§ 102(f) and 102(g)

Because Respondents have not yet completed discovery in this case, including but not limited to taking depositions of the named inventors of the asserted patents, reviewing Nokia's productions, and seeking discovery of prior inventions by third parties, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through discovery or other further investigation.

B. Anticipation and Obviousness

Respondents contend that the prior art references identified in Respondents' contentions anticipate or render obvious the asserted claims of the '991 patent. Respondents attach Exhibits C-1 to C-11, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '991 patent. The charts identify primary references.

Single items of prior art that anticipate the asserted claims of the '991 patent are cited and described in the claim charts attached hereto as Exhibits C-1 to C-11, each of which describes anticipation of one or more claims of the asserted patents by a primary reference. These claim charts provide citations to portions of the above references, illustrating how the prior art explicitly discloses every element of the asserted claims of the '991 patent. To the extent any element is not provided by an expressly enabling disclosure by the referenced prior art, all elements of the asserted claims of the '991 patent would still be the inherent result of putting into practice the systems and methods described by the prior art referenced herein, as set forth below.

Exhibit	Primary Reference
C-1	U.S. Patent No. 4,723,161 ("Koga") (RESPNOKIA_00037737)
C-2	U.S. Patent No. 7,760,964 ("Wang") (RESPNOKIA_00024341)
C-3	U.S. Patent No. 8,213,508 ("Boyce") (RESPNOKIA_00024268)
C-4	U.S. Patent Application Publication No. 2004/015252 ("Sekiguchi") (RESPNOKIA_00037572)

C-5	U.S. Patent Application Publication No. 2005/0152611 (“Lee”) (RESPNOKIA 00024983)
C-6	U.S. Patent Application Publication No. 2007/0047648 (“Tourapis”) (RESPNOKIA 00037604)
C-7	U.S. Patent Application Publication No. 2007/0140339 (“Bhaskaran”) (RESPNOKIA 00037690)
C-8	U.S. Patent Application Publication No. 2007/0183508 (“Kudo”) (RESPNOKIA 00024432)
C-9	U.S. Patent Application Publication No. 2008/0225947 (“Narroschke I”) (RESPNOKIA 00037705)
C-10	U.S. Patent Application Publication No. 2011/0038410 (“Narroschke II”) (RESPNOKIA 00037725)
C-11	WO 1999/007154 (“Martens”) (RESPNOKIA 00037976)

In addition to the discussion above, and to the extent not anticipated, the asserted claims of the '991 patent are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. Items of prior art that render obvious the asserted claims of the '991 patent are cited and described in the claim charts attached hereto as Exhibits C-1 to C-12. Respondents also identify secondary references and obviousness combinations in Exhibit C-12. In the event a particular primary reference identified in Exhibits C-1 to C-11 does not anticipate one of the asserted claims of the '991 patent, the reference, alone or in combination with one or more of the references identified in those exhibits or in Exhibit C-12 renders the claim obvious. For clarity, if a primary reference chart indicates that a limitation may be disclosed in Exhibit C-12, the limitation would also have been obvious in view of a combination with another primary reference that discloses the limitation. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to Respondents' right to rely on additional specific combinations as well as to detail and explain such combinations.

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id.* at 1732, 1738, 1742-1743, 1746. A patent claim may be obvious if

the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id.* at 1740. The Court stated that courts should “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *Id.* at 1740-41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 580-81 (E.D. Tex. 2007). “[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ” to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits C-1 to C-12, persons of ordinary skill in the art would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '991 patent. The references identified in Exhibits C-1 to C-12 are analogous prior art to the subject matter of the asserted claims of the '991 patent and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide

interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the asserted patents.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the asserted patents. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these initial invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '991 patent. Respondents' inclusion of exemplary combinations, in view of the factors and exemplary motivations to combine identified herein, does not preclude Respondents from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739-40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. Nevertheless, in addition to the information contained herein, Respondents hereby identify additional motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified above with others exists from the prior art references themselves, as well as from the interrelated teachings of other prior art references, common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the existence and nature of a known need or problem, and/or knowledge possessed by a person of ordinary skill. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success. Therefore, various reasons to combine the disclosed references exist. Respondents reserve the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include the allegedly missing limitation and to explain the motivation to combine the prior art elements.

In addition, it would have been obvious to combine any of the prior art in Exhibits C-1 to C-12 because all of these references relate to devices and methods for improving prediction error coding performance.

For example, Martens discloses that “[t]his invention is related to compression of video frames, respectively video images, especially with residual character, so as to allow more efficient transmission and storage of the residuals,” where residuals are “residual image is the difference between original image and motion compensated prediction.” Martens, “Field Of Invention;” Claim 20. In particular, Martens discloses: “Based on features of the original input frames or the

reference image, bounds for the residual are computed, so that a wanted image quality is assured as long as the residual stays within the bounds. The residual is then processed so as to minimise the number of bits necessary to transmit the residual, without violating the bounds.” *Id.*, “Summary Of The Invention.” “The residual frame is then derived by subtracting the prediction from the original frame. In many conventional encoding apparatus the residual frame would now be compressed in a compress module 110 without any preprocessing. Within the present invention the residual frame is pre-processed by a dampen module 108. The residual frame is influenced in such way that the output of the following compress module 110, based on a transform into frequency with following quantization of transform coefficients, requires less bits while retaining as much visual quality as possible.” *Id.*, 5. “Two versions of a technique for pre-processing the residual frame are described within the present invention. The aim of both versions is to reduce the amount of bits required for the compressed residual and to keep reconstruction quality at a given quality level. One preferred embodiment is the pre-processing by filtering of the residual frame in spatial domain.” *Id.*, 8.

As another example, Boyce discloses: “Accordingly, there is a need for a solution that allows for complexity scalable CODECs while maintaining high video coding bitrate efficiency. Many different methods of scalability have been widely studied and standardized, including SNR scalability, spatial scalability, temporal scalability, and fine grain scalability, in scalability profiles of the MPEG-2 and MPEG-4 standards. Most of the work in scalable coding has been aimed at bitrate scalability, where the low resolution layer has a limited bandwidth.” Boyce, 1:37-46. “The low resolution decoder 850 uses only the base layer bitstream. An additional enhancement layer bitstream is also transmitted, e.g., using 16×16 macroblocks, for use in the full resolution decoder 870. The enhancement layer bitstream includes a full resolution error signal, to be added to the

result of decoding of the base layer bitstream, which was done with full resolution motion compensation. The bitrate of the enhancement layer may end up being lower than that of the base layer, which differs from the typical spatial scalability case where the base layer bitrate is typically small compared with the enhancement layer bitrate. A full resolution error signal is not necessarily sent for every coded macroblock or slice/picture.” *Id.*, 7: 60-85; 8: 1-5.

As another example, Bhaskaran discloses: “The selection of a [encoding] mode often requires that the rate and distortion characteristics of each available mode to be identified. Typically, a rate distortion cost is computed for each available mode so that an appropriate mode may be selected.” Bhaskaran at ¶ [0010]. “In one embodiment of the invention, a spatial domain residual value is estimated by identifying a difference, within the transform domain, between a motion compensated prediction residual and its reconstructed signal that is associated with a mode for encoding a macroblock.” *Id.* at ¶ [0012]. “The estimated spatial domain residual value may be used to further calculate a rate distortion cost for an encoding mode.” *Id.* at ¶ [0013].

As another example, Narroschke ’410 discloses: “It is an object of the present invention to provide a coding and decoding method, respective coders and decoders, data signals as well as corresponding systems and semantics for coding and decoding video signals being more efficient than prior art.” Narroschke, ’410, ¶ [0003]. “According to this aspect of the invention, a concept and corresponding apparatuses, signals and semantics are provided to decide adaptively whether to process the prediction error signal in the frequency or in the spatial domain. If the prediction error samples have only small correlation, the subsequent steps of coding the samples may be more efficient and they would lead to a reduced data rate compared to coding the coefficients in the frequency domain. Therefore, an adaptive deciding step and adaptive control means to make the decision are implemented by the present invention.” *Id.* at ¶ [0005].

As another example, Narroschke '947 discloses: “An object of the present invention is to provide an enhanced quantization for hybrid video coding.” Narroschke '410, ¶ [0014]. “A quantization is fulfilled based on this prediction error signal to obtain quantized values. This quantization can be performed directly on the prediction error signal resulting in first quantized samples in the spatial domain. According to a further possibility the prediction error signal is first transformed into the frequency domain, resulting in coefficients.” *Id.* at ¶ [0016]. Subsequently, the quantization is performed on these coefficients, resulting in quantized coefficients. In a further step, the result of this quantization should be enhanced. I.e. some values (samples or coefficients) should be set to zero before being coded. This is useful for samples or coefficients respectively, that require a high data rate but may reduce the distortion only marginally.” *Id.* “If the efficiency for maintaining the quantized values of the quantization is better than the efficiency for setting all the quantized values to Zero, than the quantized values are kept as they are.” *Id.* at ¶ [0017].

As another example, US Patent Publication No. 2007/0047648 A1 (“Tourapis”) relates to “digital video CODECs, and more particularly to the hybrid use of both intra and inter coding for macroblocks.” Tourapis at Para. [0002]. Tourapis first describes creating a difference signal or residual, and performing transform coding on that residual. *See id.* at Para. [0005] (“the matched macroblock is used to predict the current macroblock, and the prediction error macroblock is further processed and transmitted to the decoder”), Para. [0008] (“The residual information is then transformed using a N×N transform (e.g., 4×4 or 8×8 DCT transform) and then quantized.”). Tourapis also describes combining that transform information with spatial information to improve the coding performance. *See id.* at Para. [0026] (“the reconstructed pixels . . . are spatially processed/filtered depending upon their mode (intra or inter), position (MB/block edges, internal pixels etc), motion information, associated residual, and the surrounding pixel difference.”). Based

on the disclosure of Tourapis, the ongoing development of video coding and the relevant prior art, it would be obvious to a POSITA to combine Tourapis with references relating to devices and methods for improving video coding performance.

As another example, US Patent Publication No. 2004/0151252 A1 (“Sekiguchi”) relates to “to a digital signal coding apparatus, a digital signal decoding apparatus, . . . and a digital signal arithmetic decoding method used for video compression coding and compressed video data transmission.” Sekiguchi at Para. [0001]. Specifically, Sekiguchi describes improving coding performance by using both (i) a “motion compensation unit 7 [that] constructs a temporal predicted image 8 based on the motion vector 5 extracted by the motion estimation unit 2 [in which a] subtractor 51 determines a difference between the input video signal 1 and the predicted image 8 and outputs the difference as an temporal prediction error signal 9” and (ii) a “spatial prediction unit 10a [that] refers to the input video signal 1 so as to generate a spatial prediction error signal.” *See id.* at Paras. [0045] – [0046]. Based on the disclosure of Sekiguchi, the ongoing development of video coding and the relevant prior art, it would be obvious to a POSITA to combine Sekiguchi with references relating to devices and methods for improving video coding performance.

As another example, US Patent Publication No. 2005/0152611 A1 (“Lee”) relates to “video compression, and more particularly, to a region-of-interest (ROI) method allowing only a particular region to be emphasized within a single frame during wavelet-based scalable video/image coding.” Lee at Para. [0003]. Specifically, Lee describes using motion estimation and transform coding to generate a prediction error coding signal. *See id.* at Paras. [0020] – [0021]. Lee then describes improving the coding performance through additional coding of certain pixels. *See id.* at Paras. [0111] – [0114]. Based on the disclosure of Lee, the ongoing development of

video coding and the relevant prior art, it would be obvious to a POSITA to combine Lee with references relating to devices and methods for improving video coding performance.

As another example, US Patent Publication No. 2007/0183508 A1 (“Kudo”) relates to “an image decoding device which decodes a coded picture on a block-by-block basis, and more particularly to an image decoding device which applies filtering processing to the decoded blocks.” Kudo at Para. [0001]. Specifically, Kudo describes using transform coding to generate a prediction error coding signal. *See id.* at Para. [0039] (“a prediction error, which is a difference between an image of the macroblock of the input picture signal and the predictive image . . . is transformed into a frequency component by the orthogonal transformation unit 905, and then compressed and coded into a quantized value in quantization”). Kudo then describes improving coding performance by using “de-blocking filtering” based on certain pixels. *See e.g., id.* at Para. [0006]. Based on the disclosure of Kudo, the ongoing development of video coding and the relevant prior art, it would be obvious to a POSITA to combine Kudo with references relating to devices and methods for improving video coding performance.

As another example, US Patent No. 7,760,964 (“Wang”) is related to “a unique universal deblocking and/or deflickering method and architecture usable as, for example, a loop filter in an encoder or a post-filter in a decoding path for noisy video transmission, video decoding, encoding, transrating, and homogenous and inhomogeneous transcoding environments.” Wang at Col. 1:7-10. Specifically, Wang describes using transform coding on a difference signal to create a first representation of the difference signal. *See e.g., id.* at Figure 8, Col. 5:5-6:52. Wang then uses a specific deblocking filter to improve the coding performance using spatial information. *Id.* Based on the disclosure of Wang, the ongoing development of video coding and the relevant prior art, it

would be obvious to a POSITA to combine Wang with references relating to devices and methods for improving video coding performance.

As another example, US Patent No. 5,398,078 (“Masuda”) relates to “an image coding apparatus, and more particularly to an image coding apparatus based on an adaptive quantization coding system for dividing image information into a plurality of blocks and subjecting the divided image information blocks to compression coding.” Masuda at Col. 1:7-13. Accordingly, Masuda describes creating a difference signal or residual and coding that signal using transform coding such as a discrete orthogonal transform circuit. Masuda at Col. 8:41-59; Masuda at 18:4-23. Based on the disclosure of Masuda, the ongoing development of video coding and the relevant prior art, it would be obvious to a POSITA to combine Masuda with references relating to devices and methods for improving video coding performance.

As another example, US Patent No. 7,620,109 (“Srinivasan”) relates to using prediction residuals and motion estimation to improve video coding. Srinivasan at Col. 9:26-61. Accordingly, Srinivasan describes creating a difference signal or residual and coding that signal using transform coding such as a discrete orthogonal transform circuit. *Id.* Srinivasan also describes implementing such encoders and decoders in a “suitable computing environment” which can include a “processing unit” and “memory” as well as “computer-executable instructions.” *Id.* at 7:25-8:39. Based on the disclosure of Srinivasan, the ongoing development of video coding and the relevant prior art, it would be obvious to a POSITA to combine Srinivasan with references relating to devices and methods for improving video coding performance.

Respondents incorporate by reference prior art from the prosecution histories and background sections of the asserted patents. Respondents expect to rely on the testimony of one

or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Respondents contend that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims of the '991 patent. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). Nokia has not established the existence of any objective indicia of non-obviousness or secondary considerations. Respondents reserve the right to supplement their contentions to respond to any such evidence should Nokia be permitted to raise them in the future. While discovery in this case is ongoing, and Respondents' investigation continues (which will include expert discovery), to the extent Nokia contends that one or more asserted claims of the '991 patent is not obvious based on secondary considerations recognized by relevant authority Respondents contend such allegations are without merit.

For example, Nokia has not identified any evidence of copying of the purported inventions of the asserted claims of the '991 patent. *See* Nokia's January 3, 2024, Objections and Responses

to Respondents' First Set of Interrogatories (Nos. 1-112), Interrogatory No. 16. Similarly, Nokia has provided no evidence of any failure of others to realize any purported inventions of the asserted claims of the '991 patent, or any evidence of any long felt but unsolved need solved by the purported inventions of the asserted claims of the '991 patent. *Id.* To the contrary, the widespread availability of video codecs is contrary evidence of any long-felt need for the purported inventions of the asserted claims of the '991 patent.

Nokia also has not identified any evidence that the purported inventions of the asserted claims of the '991 patent have enjoyed any commercial success. *Id.* To the extent that Nokia claims that sales of any accused products constitutes commercial success, Nokia has not identified any evidence of any nexus between the claimed invention and such alleged commercial success. Moreover, any commercial success of the accused products may be due to factors other than the merits of the claims, including non-patented features or functionalities, marketing efforts, or other financial or economic incentives related to the sale or distribution of the accused products. Nokia also has not provided evidence of unexpected results or unexpected properties in the purported inventions of the asserted claims of the '991 patent. *Id.*

Nokia has not identified any evidence of industry respect for the purported inventions of the asserted claims of the '991 patent, and also no evidence of any awards or other industry praise for any purported inventions of the asserted claims of the '991 patent. *Id.* Nokia has not identified any evidence of any skepticism of skilled artisans prior to purported inventions of the asserted claims of the '991 patent; to the contrary, the prior art identified herein establishes not only a lack of skepticism but an appreciation that the purported inventions of the asserted claims of the '991 patent were known to those of skill in the art. Nokia has not identified any evidence of any failed attempts by others to resolve any of the alleged problems that were allegedly solved by any of the

alleged inventions claimed in the asserted patents. *Id.* Nokia has not identified any evidence of any teaching away from any of the alleged inventions claimed in the asserted patents. *Id.* Rather, and as discussed above, there are multiple references anticipating and/or rendering obvious the alleged inventions. Nokia has not identified any evidence of any long-felt but unresolved need for the alleged inventions claimed in the asserted patents. As described above, the asserted claims of the '991 patent are anticipated and/or rendered obvious by multiple prior art references. To the extent there was ever a need for any of the alleged inventions, they were well known to those in the art.

If Nokia identifies any additional secondary considerations of non-obviousness, Respondents reserve the right to amend and/or supplement their contentions.

C. Other Invalidity Grounds

Respondents hereby identify grounds upon which the asserted claims are invalid for failure to meet the requirements of 35 U.S.C. §§ 112(a), 112(b), and 112(f). These contentions shall not be construed as an admission that any claim construction advanced by Respondents in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Respondents from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to Nokia's purported construction of the claim language or of other positions advanced by Nokia during the course of this litigation. Respondents' Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as Nokia's alleged scope of the asserted claims. Consequently, Respondents identify only the issues under 35 U.S.C. § 112 of which they are presently aware.

1. 35 U.S.C. § 101 – Ineligible Subject Matter

Under 35 U.S.C. § 101, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35].” “This provision, however, contains longstanding judicial exceptions, which provide that laws of nature, natural phenomena, and abstract ideas are not eligible for patenting.” *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765 (Fed. Cir. 2019). To determine if claims are patent eligible, the first step is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 217 (2014). If so, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* at 217–18 (internal quotation marks omitted). Under this framework, numerous cases have invalidated patents directed to video coding, encryption, and/or data manipulation. *See, e.g.*, *Realtime Data LLC v. Array Networks Inc.*, No. 2021-2251, 2023 WL 4924814 (Fed. Cir. Aug. 2, 2023), *cert. denied sub nom. Realtime Data LLC v. Fortinet, Inc.*, No. 23-498, 2024 WL 72018 (U.S. Jan. 8, 2024); *Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349 (Fed. Cir. 2023); *PersonalWeb Techs. LLC v. Google LLC*, 8 F.4th 1310, 1315 (Fed. Cir. 2021); *Sensormatic Elecs., LLC v. Wyze Labs, Inc.*, No. 2020-2320, 2021 WL 2944838, at *3 (Fed. Cir. July 14, 2021); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322 (Fed. Cir. 2017); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *see also In re Gitlin*, 775 F. App’x 689 (Fed. Cir. 2019).

The asserted claims of the ’991 patent are directed to an abstract idea under the first step of the two-step *Alice* analysis. Specifically, the claims are directed to the patent-ineligible abstract

idea of encoding and decoding image data using two mathematical algorithms. Combining steps of a mental process in a single claim does not change the focus of the claims from being on an abstract idea, i.e., a mental process for organizing data. Collecting conventional data analysis techniques—here, transform coding *and* spatial coding—and applying them to data is an abstract idea.

The asserted claims of the '991 patent also fail the second step of the *Alice* analysis because they do not recite an “inventive concept” capable of rendering the abstract idea into patent-eligible subject matter. The '991 patent specification confirms that transform coding and spatial coding were conventional before its invention and that its invention merely captures the abstract idea of using both techniques. '991 patent, 1:35-37, 2:25-29, 2:59-61. The asserted claims of the '991 patent do not limit the claims to a particular type of “transform coding” or “spatial coding,” and the independent claims are agnostic as to the order of coding operations, with dependent claims capturing either order. *See, e.g.*, '991 patent, Cl. 1, 3-4. The claims merely recite conventional functions performed by generic computing equipment, used in conventional ways. *See, e.g.*, '991 patent, Cl. 1 (“. . . performing, by a processor, transform coding . . .”). Using such conventional components to increase the speed or efficiency of a process does not confer patent eligibility on an otherwise abstract idea. The use of a standard video encoder or decoder to implement the abstract idea does not add anything significant to the abstract idea. “If a claim’s only ‘inventive concept’ is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea.” *BSG Tech. LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018) (patent directed to “system and method for indexing data” directed to patent-ineligible abstract idea and lacked

inventive concept). Nor is there anything inventive in the combined order of steps, which mirrors how video coding techniques already perform encoding/decoding.

2. 35 U.S.C. § 112(a) – Enablement and Written Description

To comply with the enablement requirement of 35 U.S.C. § 112(a), the patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Courts consider multiple factors to determine whether experimentation is undue, including: “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

To comply with the written description requirement of 35 U.S.C. § 112(a), the patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). Further, to satisfy the written description requirement, the disclosure of the patent must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). “An applicant demonstrates that he was in possession of the invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). “[T]he written description inquiry looks to the four corners of the specification to discern the extent to which the inventor(s) had possession of the invention as broadly claimed. The knowledge of ordinary artisans may be used to inform what is actually in the specification, but not to teach

limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure in the specification.” *Rivera v. Int’l Trade Comm’n*, 857 F.3d 1315, 1322-23 (Fed. Cir. 2017) (citations omitted). In other words, even if something reflects an obvious variation of the invention disclosed in the specification, the claims are invalid for lack of written description.

The asserted claims are invalid for failure to enable and/or provide a written description of the alleged invention as required by 35 U.S.C. § 112(a). A person skilled in the art would not be able to make and use the claimed inventions by reading the specification. For example, the ’991 patent fails to sufficiently describe or enable at least the following limitations: “joining, by a processor, the first and second representations to form a coded prediction error signal”; “adding, by a processor, the decoded transform information, the decoded spatial information, and a reconstructed prediction of the block of data, thereby forming a decoded representation of the block of data”; “computer code for decoding the plurality of spatial samples into decoded spatial information.”

For example, the ’991 patent fails to sufficiently describe or enable at least the limitation “joining . . . the first and second representations” as found in claims 1 and 13. The ’991 patent fails to provide any information about how a POSA should determine if the first and second representations have been “joined” according to the claims. In fact, the only reference to joining in the specification states only “the final coded representation of the prediction error signal is formed by joining the transform coded data and the spatial coded data.” Col. 5:47-49. This disclosure is insufficient to describe or enable the identified limitation.

As another example, the ’991 patent fails to sufficiently describe or enable the limitations of claims 8, 9, 20, 21, 23, 24, 32, and 33 which require “indications” related to the lack of “transform coefficients” or “spatial samples” in a “block of data.” The specification of the ’991

patent does not describe “transform coefficients” or “spatial samples” as being present in a “block of data”—instead, such coefficients and samples are part of the various representations of the difference signal (sometimes referred to as the coded prediction error signal). As such, the ’991 patent does not sufficiently describe or enable an “indication” that the coefficients or samples are not “in the block of data.”

3. 35 U.S.C. § 112(b) – Indefiniteness

The claims of a patent must “particularly point out and distinctly claim the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(b). A claim is invalid as indefinite if it is not sufficiently precise to permit a potential competitor to determine whether or not it is infringing. *Morton Int’l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993). Specifically, “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 891, 901 (2014). Furthermore, when a claim includes a term of degree, the patent “must provide ‘some standard of measuring that degree’ such that the claim language provides ‘enough certainty to one of skill in the art when read in context of the invention.’” *GE Lighting Solutions, LLC v. Lights of Am., Inc.*, 663 Fed. Appx. 938, 940 (Fed. Cir. 2016); *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). For terms of degree, “the patent must provide that additional information in the form of ‘objective boundaries.’” *Id.* And the Federal Circuit’s “case law is clear that the objective boundaries requirement applies to terms of degree.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018).

Under this standard, a person skilled in the art would not be able to determine the scope of the invention because of the indefiniteness of at least the following terms: “joining . . . the first and second representations” (claims 1 and 13); “indication that no transform coefficients exist in the

block of data” (claims 8, 20, 23, 32), “indication that no spatial samples exist in the block of data” (claims 9, 21, 24, 33), and “the block of data” (claims 20, 21, 22, 23, 24, 31, 32, 33). “the block of data.”

For example, the specification of the '991 patent does not provide sufficient guidance to a POSA to evaluate what operations are required to meet the “joining” limitation of claims 1 and 13. The '991 patent fails to provide any information about how a POSA should determine if the first and second representations have been “joined” according to the claims. In fact, the only reference to joining in the specification states only “the final coded representation of the prediction error signal is formed by joining the transform coded data and the spatial coded data.” Col. 5:47-49. This disclosure is insufficient to permit a POSA to evaluate the “joining” limitation, rendering such limitation indefinite.

As another example, claims 8, 9, 20, 21, 23, 24, 32, and 33 of the '991 patent require “indications” related to the lack of “transform coefficients” or “spatial samples” in a “block of data.” The specification of the '991 patent does not describe “transform coefficients” or “spatial samples” as being present in a “block of data.” As such, a POSA would be unable to understand the scope of the identified limitation, rendering the claims indefinite.

As another example, claims 20, 21, 22, 23, 24, 31, 32, and 33 of the '991 patent refer to “the block of data” but fail to provide any antecedent basis to allow a POSA to determine what the term “the block of data” encompasses. As such, a POSA would be unable to understand the scope of the identified limitation, rendering the claims indefinite. Because neither Nokia nor Respondents have yet briefed claim construction issues, Respondents’ contentions should not be seen as a suggestion that Respondents hereby limit their claims of indefiniteness, lack of enablement, or lack of written description to the terms identified herein. The contentions do not represent

Respondents' agreement or views as to the meaning of any claim term. The contentions also do not represent Respondents' agreement or views as to the definiteness, written description support for, or enablement of any claim not specifically identified herein. Respondents reserve the right to supplement or amend these disclosures and to identify additional and/or different claim terms for construction.

VII. U.S. PATENT NO. 10,536,714

A. Identification of Relevant Prior Art

Respondents identify the following prior art references that anticipate and/or render obvious the asserted claims of the asserted patent. The following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g). Whether a prior art reference anticipates or renders obvious the asserted claims of the '714 patent may depend upon claim construction. Respondents have identified each prior art patent by its inventor, title, number, country of origin, date of filing, date of issue, and, where applicable, the relevant priority date, or such information may be derived from the face of the patent. Each prior art publication is identified by its title, date of publication, and, where feasible, author and publisher. For prior art under 35 U.S.C. § 102(b), Respondents have identified the item offered for sale or publicly used or known, the date by which the offer or use took place or the information became known, and the identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known, to the full extent currently known.

Based on the information reasonably available to Respondents, the priority date for the '714 patent is November 1, 2012, the filing date of application No. 13/666,680, the earliest filed application to which the '714 patent claims priority as a continuation. Nokia bears the burden of showing on a claim-by-claim basis that it is entitled to a priority date earlier than November 1,

2012, including the filing date and description of the alleged inventions claimed in the '714 patent in any earlier provisional application. Nokia has not done so, including in any of its interrogatory responses served to date. If Nokia contends or demonstrates that any of the asserted claims of the '714 patent are entitled to a priority date before November 1, 2012, then Respondents reserve the right to identify additional prior art references which anticipate or make obvious the asserted claims of the '714 patent.

1. Prior Art Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following prior art patent publications. These patent publications constitute prior art under 35 U.S.C. § 102, and their patent numbers, countries of origin, and dates of publication and/or issue are included on the face of those documents. Respondents reserve the right to supplement this list as it learns in the course of discovery of other prior art patent publications that would anticipate and/or render the asserted claims obvious.

Prior Art	Author
U.S. Patent No. 8,953,689	Sugio et al.
U.S. Patent No. 8,989,271	Sugio et al.
U.S. Patent No. 9,066,110	Zhou
U.S. Patent No. 9,161,036	Sugio et al.
U.S. Patent No. 9,165,379	Lim et al.
U.S. Patent No. 9,204,162	Lee
U.S. Patent No. 9,300,963	Lin, et al.
U.S. Patent No. 9,307,239	Lin et al.
U.S. Patent No. 9,313,494	Zheng et al.
U.S. Patent No. 9,544,611	Oh et al.
U.S. Patent No. 9,565,447	Lee et al.
U.S. Patent No. 9,866,859	Zhou
U.S. Patent No. 9,918,101	Park et al.
U.S. Patent No. 9,924,193	Schwarz
U.S. Patent No. 10,063,876	Lin et al.
U.S. Patent No. 10,887,585	Sugio et al.

U.S. Patent No. 11,218,708	Sugio et al.
U.S. Patent Appl. Publication No. 2004/0234144	Sugimoto et al.
U.S. Patent Appl. Publication No. 2007/0189389	Boisson et al.
U.S. Patent Appl. Publication No. 2008/0159401	Lee et al.
U.S. Patent Appl. Publication No. 2008/0095408	Yokohota et al.
U.S. Patent Appl. Publication No. 2008/0232642	Chang
U.S. Patent Appl. Publication No. 2010/0220790	Jeon et al.
U.S. Patent Appl. Publication No. 2011/0013697	Choi et al.
U.S. Patent Appl. Publication No. 2011/0170602	Lee et al.
U.S. Patent Appl. Publication No. 2011/0176013	Robertson
U.S. Patent Appl. Publication No. 2011/0176612	Tsai et al.
U.S. Patent Appl. Publication No. 2011/0176615	Lee et al.
U.S. Patent Appl. Publication No. 2011/0182362	Kim et al.
U.S. Patent Appl. Publication No. 2011/0194608	Rusert et al.
U.S. Patent Appl. Publication No. 2011/0194609	Rusert et al.
U.S. Patent Appl. Publication No. 2011/0249721	Karczewicz
U.S. Patent Appl. Publication No. 2012/0230408	Zhou
U.S. Patent Appl. Publication No. 2012/0257678	Zhou
U.S. Patent Appl. Publication No. 2012/0269270	Chen
U.S. Patent Appl. Publication No. 2012/0300846	Sugio
U.S. Patent Appl. Publication No. 2012/0307905	Kim et al.
U.S. Patent Appl. Publication No. 2012/0320984	Zhou
U.S. Patent Appl. Publication No. 2013/0003850	Sugio

U.S. Patent Appl. Publication No. 2013/0004092	Sasai
U.S. Patent Appl. Publication No. 2013/0022127	Park et al.
U.S. Patent Appl. Publication No. 2013/0077691	Zheng et al.
U.S. Patent Appl. Publication No. 2013/0070855	Zheng
U.S. Patent Appl. Publication No. 2013/0083853	Coban
U.S. Patent Appl. Publication No. 2013/0272408	Chen
U.S. Patent Appl. Publication No. 2014/0140408	Lee et al.
U.S. Patent Appl. Publication No. 2015/0163508	Bici et al.
U.S. Provisional Patent Appl. No. 61/491,381	Sugio
CN101271580	Chang
CN101605255	Lai
CN101860754	
CN1757238	Boisson
Japanese Patent Appl. Publication No. 2004-032300	Nakayama
Int'l Patent Appl. Publication No. WO 2011/062392	Kim et al.
Int'l Patent Appl. Publication No. WO 2011/074874	Park et al.
Int'l Patent Appl. Publication No. WO 2011/099463	格温埃利·布瓦松多米尼克·托罗爱德华·弗朗索瓦
Int'l Patent Appl. Publication No. WO 2011/115659	Zheng et al.
Int'l Patent Appl. Publication No. WO 2011/126345	Kim

2. Prior Art Non-Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following published works of prior art. These publications constitute additional prior art under 35 U.S.C. § 102, and their titles, authors, publishers, and dates of publication are included on the face of those documents. In addition to the references listed below, Respondents

hereby disclose as prior art publications all references disclosed below in Section 3 (regarding on sale/public use), such as press releases, users manuals, and other related documentation about such prior art products. Respondents reserve the right to supplement this list as it learns in the course of discovery of other references, prior art public use, and/or sale that would anticipate and/or render the asserted claims obvious.

- Sargolzai, M.H., et al., "Low cost Error Tolerant Motion Estimation for H.264/AVC Standard" School of Electrical and Computer Engineering.
- Liu, Shan; Method and syntax for partial CU merge; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 5th Meeting: Geneva, CH, 16-23 March, 2011; Document: JCTVC-E085.
- Fukushima, Shigeru; Unified motion vector removal process for AMVP; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 5th Meeting: Geneva, CH, 16-23 March, 2011; Document: JCTVC-E095.
- Zhou, Minhua, et al.; A study on HM3.0 parsing throughput issue; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 6th Meeting: Torino, IT, 14-22 July, 2011; Document: JCTVC-F068.
- Zhou, Minhua Parallelized merge/skip mode for HEVC; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 6th Meeting: Torino, IT, 14-22 July, 2011; Document: JCTVC-F069.
- Zhang, Ximin; CE9: 4.4 Method for improving partial CU merge by merging inter NxN partitions; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 6th Meeting: Torino, IT, 14-22 July, 2011; Document: JCTVC-F071.
- Wiegand, Tomas, et al.; "WD3: Working Draft 3 of High-Efficiency Video Coding"; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11; 5th Meeting; Geneva, CH, Mar. 16-23, 2011; Document JCTVC-E603.
- Bici, O. et al., Non - CE13: Simplification of merge mode , Joint Collaborative Team on Video Coding (JCT-VC) of ITU - T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 7th Meeting: Geneva, CH, Nov. 21-30, 2011, Document JCTVC - G593 (and corresponding attachments).
- Bross, B. et al., Core Experiment 9: MV Coding and Skip / Merge Operations, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul. 14-22, 2011; Document JCTVC-F909r1.

- Bross, Benjamin, et al.; “WD4: Working Draft 4 of High-Efficiency Video Coding”; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11; 6th Meeting; Torino, IT; Jul. 14-22, 2011; Document JCTVC-F803 d6.
- Bross, Benjamin, et al.; “WD4: Working Draft 4 of High-Efficiency Video Coding”; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11; 6th Meeting; Torino, IT; Jul. 14-22, 2011; Document JCTVC-F803 d1 v3.
- J.-L. Lin , Y.-W. Chen , Y.-W. Huang , S. Lei ; " CE9 : Results of Experiment ROB04": JCT-VC Doc. JCTVC-F052, Turin; Jul. 2011 (and corresponding attachments).
- Zheng, Yunfei; Unified Motion Vector Predictor Selection for Merge and AMVP; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 5th Meeting; Geneva, 16-23 March, 2011; Document JVT-E396.
- Bross, B. et al., CE9: Summary Report of Core Experiment on MV Coding and Skip/Merge Operations, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul. 14-22, 2011; Document JCTVC-F029r1.
- Jeon , Y. et al . , On MVP list pruning process , Joint Collaborative Team on Video Coding (JCT - VC) of ITU - T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul . 14-22 , 2011 , Document JCTVC-F105 (and thres1-10).
- Zheng, Y. et al., CE9: Unified Merge and AMVP candidates selection (UNI03), Joint Collaborative Team on Video Coding (ICT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul. 14-22, 2011; Document JCTVC-F297r1.
- Zheng, Y, et al.; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11 6th Meeting: Torino, IT, 14-22 July, 2011; Document: JCTVC-F302.
- Fukushima, Shigeru. et al., Merge based mvd transmission, Joint Collaborative Team on Video Coding (ICT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul. 14-22, 2011; Document JCTVC-F373.
- Nakamura, H. et al., Unification of derivation process for merge mode and MVP, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting; Torino, IT, Jul. 14-22, 2011; Document JCTVC-F419 and corresponding attachments.
- Zheng, Y. et al., Merge Candidate Selection in 2NxN, Nx2N, and NxN Mode, Joint Collaborative Team on Video Coding (ICT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul. 14-22, 2011; Document JCTVC-F302 and corresponding attachments.
- Bici, Oguz, et al.; CE9: Results of SP experiments on simplification of merge process; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11; 8th Meeting: San José, CA, USA, 1–10 February, 2012; Document: JCTVC-H0252.

3. Prior Art Items and/or Knowledge

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on prior art items embodying and alleged inventions or structures described in, and/or any knowledge disclosed by or referred to in, any of the prior art patents or prior art publications identified above in Sections VII.A.1 and VII.A.2. Because Respondents have not yet completed discovery in this case, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through third-party discovery or other further investigation.

4. Prior Art Under 35 U.S.C. §§ 102(f) and 102(g)

Because Respondents have not yet completed discovery in this case, including but not limited to taking depositions of the named inventors of the asserted patents, reviewing Nokia's productions, and seeking discovery of prior inventions by third parties, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through discovery or other further investigation.

B. Anticipation and Obviousness

Respondents contend that the prior art references identified in Respondents' contentions anticipate or render obvious the asserted claims of the '714 patent. Respondents attach Exhibits D-1 to D-9, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '714 patent. The charts identify primary references.

Single items of prior art that anticipate the asserted claims of the '714 patent are cited and described in the claim charts attached hereto as Exhibits D-1 to D-9, each of which describes anticipation of one or more claims of the asserted patents by a primary reference. These claim charts provide citations to portions of the above references, illustrating how the prior art explicitly discloses every element of the asserted claims of the '714 patent. To the extent any element is not

provided by an expressly enabling disclosure by the referenced prior art, all elements of the asserted claims of the '714 patent would still be the inherent result of putting into practice the systems and methods described by the prior art referenced herein, as set forth below.

Exhibit	Primary Reference
D-1	U.S. Patent No. 9,313,494 ("Zheng"); U.S. Provisional Application No. 61/499,112, U.S. Provisional Application No. 61/543,043, and U.S. Provisional Application No. 61/543,059 (RESPNOKIA_00033751)
D-2	U.S. Patent No. 10,063,876 ("Lin") (RESPNOKIA_00032719)
D-3	U.S. Patent Application Publication No. 2011/0176612 ("Tsai") (RESPNOKIA_00025539)
D-4	U.S. Patent Application Publication No. 2011/0194609 ("Rusert") (RESPNOKIA_00036723)
D-5	U.S. Patent Application Publication No. 2011/0249721 ("Karczewicz") (RESPNOKIA_00024668)
D-6	Bross, Benjamin, et al.; "WD4: Working Draft 4 of High-Efficiency Video Coding"; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11; 6th Meeting; Torino, IT; Jul. 14-22, 2011; Document JCTVC-F803d. ("Bross") (RESPNOKIA_00021028)
D-7	Nakamura, H. et al., Unification of derivation process for merge mode and MVP, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting; Torino, IT, Jul. 14-22, 2011; Document JCTVC-F419; URL: http://wftp3.itu.int/AV-ARCH/JCTVC-SITE/2011_07_F_Torino/ . ("JCTVC-F419") (RESPNOKIA_00021028)
D-8	Wiegand, Tomas, et al.; "WD3: Working Draft 3 of High-Efficiency Video Coding"; Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11; 5th Meeting; Geneva, CH, Mar. 16-23, 2011; Document JCTVC-E603. ("Wiegand") (RESPNOKIA_00019249)
D-9	Zheng, Y. et al., Merge Candidate Selection in 2NxN, Nx2N, and NxN Mode, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting, Torino, IT, Jul. 14-22, 2011; Document JCTVC-F302. ("JCTVC-F302") (RESPNOKIA_00019588)

In addition to the discussion above, and to the extent not anticipated, the asserted claims of the '714 patent are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. Items of prior art that render obvious the asserted claims of the '714 patent are cited and described in the claim charts attached hereto as Exhibits D-1 to D-10. Respondents also identify secondary references and obviousness combinations in Exhibit D-10. In the event a particular primary reference identified in Exhibits D-1 to D-9 does not anticipate one of the asserted claims of the '714 patent, the reference, alone or in combination with one or more of the references identified in those exhibits or in Exhibit D-10 renders the claim obvious. For clarity, if a primary reference chart indicates that a limitation may be disclosed in Exhibit D-10, the limitation would also have been obvious in view of a combination with another primary reference that discloses the limitation. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to Respondents' right to rely on additional specific combinations as well as to detail and explain such combinations.

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id.* at 1732, 1738, 1742-1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id.* at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge

possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *Id.* at 1740-41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 580-81 (E.D. Tex. 2007). “[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ” to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits D-1 to D-10, persons of ordinary skill in the art would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '714 patent. The references identified in Exhibits D-1 to D-10 are analogous prior art to the subject matter of the asserted claims of the '714 patent and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the asserted patents.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the asserted patents. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these initial invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a

number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '714 patent. Respondents' inclusion of exemplary combinations, in view of the factors and exemplary motivations to combine identified herein, does not preclude Respondents from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739-40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. Nevertheless, in addition to the information contained herein, Respondents hereby identify additional motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified above with others exists from the prior art references themselves, as well as from the interrelated teachings of other prior art references, common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the existence and nature of a known need or problem, and/or knowledge possessed by a person of ordinary skill. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market

forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success. Therefore, various reasons to combine the disclosed references exist. Respondents reserve the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include the allegedly missing limitation and to explain the motivation to combine the prior art elements.

In addition, it would have been obvious to combine any of the prior art in Exhibits D-1 to D-10 because all of these references relate to devices and methods for comparing motion information for generating candidate lists.

For example, Wiegand discloses: “Derivation process for luma motion vectors for merge mode” and “[d]erivation process for spatial merging candidates” where it is described that “[i]f one of the following conditions is true, the availableFlagN is set equal to 0, both components mvLXN are set equal to 0, refIdxLXN and predFlagLX[xN, yN] of the prediction unit covering luma location (xN, yN) are assigned respectively to mvLXN, refIdxLXN and predFlagLXN. The prediction unit covering luma location (xN, yN) is not available or PredMode is MODE_INTRA. PartMode of the current prediction unit is PART_2NxN and PartIdx is equal to 1 and the prediction units covering luma location (xP, yP – 1) (PartIdx = 0) and luma location (xN, yN) (Cand. N) have identical motion parameters.” Wiegand, 8.4.2.1.1; 8.4.2.1.2. “The derivation process for merging candidates from neighboring prediction unit partitions in subclause 8.4.2.1.4 is invoked with luma location (xP, yP), the width and the height of the prediction unit nPSW and nPSH and the partition index PartIdx as inputs and the output is assigned to the availability flags availableFlagN, the motion vectors mvL0N and mvL1N, the reference indices refIdxL0N and

refIdxL1N and the prediction list utilization flags predFlagL0N and predFlagL1N with N being replaced by A, B, C or D.” *Id.* at 8.4.2.1.1.

As another example, Bross discloses: “[d]erivation process for luma motion vectors for merge mode.” Bross at 8.4.2.1.1. “The derivation process for merging candidates from neighboring prediction unit partitions in subclause 8.4.2.1.2 is invoked with luma location (xP, yP), the width and the height of the prediction unit nPSW and nPSH and the partition index PartIdx as inputs and the output is assigned to the availability flags availableFlagN, the reference indices refIdxL0N and refIdxL1N, the prediction list utilization flags predFlagL0N and predFlagL1N and the motion vectors mvL0N and mvL1N with N being replaced by A0, A1, B0, B1 or B2.” *Id.*

As another example, Lee discloses: “A method and apparatus for encoding and decoding a motion vector of a current block.” Lee at Abstract. “Referring to FIG. 10A, in a method of predicting a motion vector, one of motion vectors of previously encoded blocks adjacent to a current block may be used as a motion vector predictor of the current block.” *Id.* at [0113]. “In FIG. 12, it is assumed that there are three elements MVP1, MVP2, and MVP3 in group C and a motion vector of a current block is MV. Since a motion vector predictor candidate that is most similar to a motion vector of a current block is used to predict the motion vector of the current block, MVP3 that is most similar to MV is used to predict the motion vector of the current block.” *Id.* at [0162].

As another example, Tsai discloses: “a motion prediction method.” Tsai at Abstract. “In this embodiment, motion vectors of four candidate units A, B, C, and D of the current frame 502 can be taken as candidates for determining the MVP of the current unit 512.” *Id.* at [0028]. “After a plurality of motion vectors corresponding to a current unit 512 is determined to be included in

the candidate set, at least one motion vector is adaptively selected from the candidate set for motion prediction of the current unit 512.” *Id.* at [0030].

Further, Wiegand is an “Output Document of [the Joint Collaborative Team on Video Coding] JCT-VC” and provides “Working Draft 3 of High-Efficiency Video Coding.” *Wiegand* at 1. Wiegand discloses “the ITU-T Video Coding Experts Group (VCEG) and the ISO/IEC Moving Picture Experts Group (MPEG) formed a Joint Collaborative Team on Video Coding (JCT-VC) in 2010 for development of a new Recommendation | International Standard.” *Id.* at 13. Based on the disclosure of Wiegand, the ongoing development of High-Efficiency Video Coding and the relevant prior art, it would be obvious to a POSITA to combine Wiegand with references relating to devices and methods for encoding and decoding, including other references relating to the development of High-Efficiency Video Coding.

For example, Lin discloses “[a] method and apparatus [to] derive a motion vector predictor (MVP) for a current block in an Inter, Merge, or Skip mode,” and discloses “determin[ing] redundant MVP candidates according to a non-MV-value based criterion.” *Lin* at Abstract. Lin discloses “High-Efficiency Video Coding (HEVC) is a new international video coding standard that is being developed by the Joint Collaborative Team on Video Coding (JCT-VC).” *Id.* at 1:40-42. Lin further discloses “[t]o further increase the coding efficiency of motion vector coding in HEVC, the motion vector competition (MVC) based scheme is applied to select one motion vector predictor (MVP) among a given MVP candidate set which includes spatial and temporal MVPs,” and that “[t]here are three inter-prediction modes including Inter, Skip, and Merge in the HEVC test model version 3.0 (HM-3.0).” *Id.* at 1:54-60. Based on the disclosure of Lin, the ongoing development of the HEVC and the relevant prior art, it would be obvious to a POSITA to combine

Lin with references relating to devices and methods for encoding and decoding, including other references relating to the development of HEVC.

In another example, Zheng discloses “techniques for determining a merge candidate set in a merge mode motion vector prediction process.” *Zheng* at 3:39-41. Zheng further discloses “a new video coding standard, namely High-Efficiency Video Coding (HEVC), being developed by the Joint Collaboration Team on Video Coding (JCT-VC) of ITU-T Video Coding Experts Group (VCEG) and ISO/IEC Motion Picture Experts Group (MPEG).” *Id.* at 3:48-52. Zheng further discloses “[c]urrent proposals for the HEVC standard implement techniques to avoid using redundant merge candidates for PUs of the same CU. *Id.* at 8:26-28. In at least one example Zheng “proposes to remove the comparison checking operation during generation of a merge candidate set, thus making merge candidate generation parallelization friendly.” *Id.* at 9:19-22. Based on the disclosure of Zheng, the ongoing development of the HEVC and the relevant prior art, it would be obvious to a POSITA to combine Zheng with references relating to devices and methods for encoding and decoding, including other references relating to the development of HEVC.

Sugio discloses “a moving picture coding method and a moving picture decoding method.” *Sugio* at 1:15-16. In the body of the specification, Sugio explicitly refers to “ITU-T Recommendation H.264, “Advanced video coding for generic audiovisual services”, March, 2010,” and “JCT-VC, “WD3: Working Draft 3 of High-Efficiency Video Coding”, JCTVC-E603, March 2011.” *Id.* at 1:47-50. Based on the disclosure of Sugio, the ongoing development of High-Efficiency Video Coding and the relevant prior art, it would be obvious to a POSITA to combine Sugio with references relating to devices and methods for encoding and decoding, including other references relating to the development of High-Efficiency Video Coding.

Lin '963 discloses “[a] method and apparatus for deriving a motion vector predictor (MVP).” *Lin '963* at Abstract. Lin '963 acknowledges that “High-Efficiency Video Coding (HEVC) is a new international video coding standard that is being developed by the Joint Collaborative Team on Video Coding (JCT-VC).” *Id.* at 2:55-57. Lin '963 further discloses that “HEVC adopts the MVP technique to increase the coding efficiency of motion vector coding, where the motion vector competition (MVC) based scheme is applied to select one motion vector predictor (MVP) among a given candidate set of MVPs.” Based on the disclosure of Lin '963, the ongoing development of High-Efficiency Video Coding and the relevant prior art, it would be obvious to a POSITA to combine Lin '963 with references relating to devices and methods for encoding and decoding, including other references relating to the development of High-Efficiency Video Coding.

Zhou discloses “inter-prediction candidate index coding independent of the construction of the corresponding inter-prediction candidate list, i.e., a merging candidate list or an advanced motion vector predictor list.” *Zhou* at Abstract. *Zhou* similarly acknowledges “[t]he Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T WP3/16 and ISO/IEC JTC 1/SC 29/WG 11 is currently developing the next-generation video coding standard referred to as High Efficiency Video Coding (HEVC).” *Id.* at 1:36-39. Zhou discloses that “[s]everal coding efficiency enhancement tools are proposed in HEVC, among them a merge mode designed to reduce coding overhead by allowing an inter-predicted prediction unit (PU) to inherit motion data, i.e., motion vectors, prediction direction, and reference picture indices, from a position selected from neighboring motion data positions in the same picture and a temporal motion data position derived based on a co-located block of the same size as the PU in a reference picture, referred to as the co-located PU.” *Id.* at 1:42-51. Based on the disclosure of Zhou, the ongoing development of High-

Efficiency Video Coding and the relevant prior art, it would be obvious to a POSITA to combine Zhou with references relating to devices and methods for encoding and decoding, including other references relating to the development of High-Efficiency Video Coding.

Park discloses that “since a neighboring motion vector candidate group is limited to neighboring partitions having the same reference picture list and the same reference picture as those of the current partition, the probability that an available neighboring motion vector can be acquired decreases.” Park at paragraph [0004]. Park further discloses “[i]n addition, complexity of a process of selecting a neighboring motion vector to be used for motion vector prediction increases as the number of candidates increase, and thus a method for efficiently perform the selection process is needed.” *Id.* at paragraph [0005]. Based on the recognition for the need to efficiently perform the selection process described in Park and the relevant prior art, it would be obvious to a POSITA to combine Park with references relating to devices and methods for encoding and decoding, including other references relating to the development of High-Efficiency Video Coding.

Respondents incorporate by reference prior art from the prosecution histories and background sections of the asserted patents. Respondents expect to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Respondents contend that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims of the '714 patent. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, “can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry

respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). “A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision.” *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness “simply cannot overcome [a] strong prima facie showing of obviousness.” *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). Nokia has not established the existence of any objective indicia of non-obviousness or secondary considerations. Respondents reserve the right to supplement their contentions to respond to any such evidence should Nokia be permitted to raise them in the future. While discovery in this case is ongoing, and Respondents’ investigation continues (which will include expert discovery), to the extent Nokia contends that one or more asserted claims of the ’714 patent is not obvious based on secondary considerations recognized by relevant authority Respondents contend such allegations are without merit.

For example, Nokia has not identified any evidence of copying of the purported inventions of the asserted claims of the ’714 patent. *See* Nokia’s January 3, 2024, Objections and Responses to Respondents’ First Set of Interrogatories (Nos. 1-112), Interrogatory No. 16. Similarly, Nokia has provided no evidence of any failure of others to realize any purported inventions of the asserted claims of the ’714 patent, or any evidence of any long felt but unsolved need solved by the purported inventions of the asserted claims of the ’714 patent. *Id.* To the contrary, the widespread availability of video codecs is contrary evidence of any long-felt need for the purported inventions of the asserted claims of the ’714 patent.

Nokia also has not identified any evidence that the purported inventions of the asserted claims of the '714 patent have enjoyed any commercial success. *Id.* To the extent that Nokia claims that sales of any accused products constitutes commercial success, Nokia has not identified any evidence of any nexus between the claimed invention and such alleged commercial success. Moreover, any commercial success of the accused products may be due to factors other than the merits of the claims, including non-patented features or functionalities, marketing efforts, or other financial or economic incentives related to the sale or distribution of the accused products. Nokia also has not provided evidence of unexpected results or unexpected properties in the purported inventions of the asserted claims of the '714 patent. *Id.*

Nokia has not identified any evidence of industry respect for the purported inventions of the asserted claims of the '714 patent, and also no evidence of any awards or other industry praise for any purported inventions of the asserted claims of the '714 patent. *Id.* Nokia has not identified any evidence of any skepticism of skilled artisans prior to purported inventions of the asserted claims of the '714 patent; to the contrary, the prior art identified herein establishes not only a lack of skepticism but an appreciation that the purported inventions of the asserted claims of the '714 patent were known to those of skill in the art. Nokia has not identified any evidence of any failed attempts by others to resolve any of the alleged problems that were allegedly solved by any of the alleged inventions claimed in the asserted patents. *Id.* Nokia has not identified any evidence of any teaching away from any of the alleged inventions claimed in the asserted patents. *Id.* Rather, and as discussed above, there are multiple references anticipating and/or rendering obvious the alleged inventions. Nokia has not identified any evidence of any long-felt but unresolved need for the alleged inventions claimed in the asserted patents. As described above, the asserted claims of the '714 patent are anticipated and/or rendered obvious by multiple prior art references. To the

extent there was ever a need for any of the alleged inventions, they were well known to those in the art.

If Nokia identifies any additional secondary considerations of non-obviousness, Respondents reserve the right to amend and/or supplement their contentions.

C. Other Invalidity Grounds

Respondents hereby identify grounds upon which the asserted claims are invalid for failure to meet the requirements of 35 U.S.C. §§ 112(a), 112(b), and 112(f). These contentions shall not be construed as an admission that any claim construction advanced by Respondents in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Respondents from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to Nokia's purported construction of the claim language or of other positions advanced by Nokia during the course of this litigation. Respondents' Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as Nokia's alleged scope of the asserted claims. Consequently, Respondents identify only the issues under 35 U.S.C. § 112 of which they are presently aware.

1. 35 U.S.C. § 101 – Ineligible Subject Matter

Under 35 U.S.C. § 101, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35].” “This provision, however, contains longstanding judicial exceptions, which provide that laws of nature, natural phenomena, and abstract ideas are not eligible for patenting.” *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765 (Fed. Cir. 2019). To determine if claims are patent eligible, the first step is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.”

Alice Corp. v. CLS Bank Int’l, 573 U.S. 208, 217 (2014). If so, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* at 217–18 (internal quotation marks omitted). Under this framework, numerous cases have invalidated patents directed to video coding, encryption, and/or data manipulation. *See, e.g., Realtime Data LLC v. Array Networks Inc.*, No. 2021-2251, 2023 WL 4924814 (Fed. Cir. Aug. 2, 2023), *cert. denied sub nom. Realtime Data LLC v. Fortinet, Inc.*, No. 23-498, 2024 WL 72018 (U.S. Jan. 8, 2024); *Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349 (Fed. Cir. 2023); *PersonalWeb Techs. LLC v. Google LLC*, 8 F.4th 1310, 1315 (Fed. Cir. 2021); *Sensormatic Elecs., LLC v. Wyze Labs, Inc.*, No. 2020-2320, 2021 WL 2944838, at *3 (Fed. Cir. July 14, 2021); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322 (Fed. Cir. 2017); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *see also In re Gitlin*, 775 F. App’x 689 (Fed. Cir. 2019).

The asserted claims of the ’714 patent are directed to an abstract idea under the first step of the two-step *Alice* analysis. Specifically, the claims are directed to the patent-ineligible abstract idea of comparing and selecting subsets of data. For example, the claims merely use a computer to select a first spatial motion vector prediction candidate from a set of candidate, determine based on location a subset of spatial motion vector prediction candidates, compare the candidates against other candidates in the subset, and determine whether to include or exclude the first spatial motion prediction candidate. Thus, the claims of the ’714 patent merely use a computer to organize data into groupings (a desired result), without providing any details or limitations as to how that

comparison or selection should be performed, which is simply abstract data analysis and/or management.

The asserted claims of the '714 patent also fail the second step of the *Alice* analysis because they do not recite an “inventive concept” capable of rendering the abstract idea into patent-eligible subject matter. The claims merely recite conventional functions performed by generic computing equipment, used in conventional ways (or do not involve computer components at all). *See, e.g.*, '714 patent, Cls. 1, 9. The abstract idea itself cannot provide the inventive concept, but that is all the claims purport to add—the use of a standard video encoder or decoder to implement the abstract idea does not add anything significant to the abstract idea. “If a claim’s only ‘inventive concept’ is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea.” *BSG Tech. LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018) (patent directed to “system and method for indexing data” directed to patent-ineligible abstract idea and lacked inventive concept). Further, the '714 patent specification confirms that it uses generic computer components (“processor,” “memory,” “computer code”) that are not themselves inventive. '714 patent at 24:41-25:4. Nor is there anything in the ordered combination of limitations that would be inventive, as they generally accord with the order for how existing video coding techniques already operated.

2. 35 U.S.C. § 112(a) – Enablement and Written Description

To comply with the enablement requirement of 35 U.S.C. § 112(a), the patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Courts consider multiple factors to determine whether experimentation is undue, including: “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior

art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

To comply with the written description requirement of 35 U.S.C. § 112(a), the patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). Further, to satisfy the written description requirement, the disclosure of the patent must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). “An applicant demonstrates that he was in possession of the invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). “[T]he written description inquiry looks to the four corners of the specification to discern the extent to which the inventor(s) had possession of the invention as broadly claimed. The knowledge of ordinary artisans may be used to inform what is actually in the specification, but not to teach limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure in the specification.” *Rivera v. Int’l Trade Comm’n*, 857 F.3d 1315, 1322-23 (Fed. Cir. 2017) (citations omitted). In other words, even if something reflects an obvious variation of the invention disclosed in the specification, the claims are invalid for lack of written description.

The asserted claims are invalid for failure to enable and/or provide a written description of the alleged invention as required by 35 U.S.C. § 112(a). A person skilled in the art would not be able to make and use the claimed inventions by reading the specification. For example, the ’714 patent fails to sufficiently describe or enable at least the following limitations: “determining a

subset of spatial motion vector prediction candidates based on a location of the block” as found in Claim 1; “the block associated with the first spatial motion vector prediction candidate” as found in Claims 1, 9, 15, 23, 29, and 30; “based on the/a location.,” as found in Claims 1, 9, 15, 23, 29, and 30; and “comparing motion information of the first spatial motion vector prediction candidate with motion information of another spatial motion vector prediction candidate of the set of spatial motion vector prediction candidates without making a comparison of each possible candidate pair from the set of spatial motion vector prediction candidates,” as found in Claim 9.

3. 35 U.S.C. § 112(b) – Indefiniteness

The claims of a patent must “particularly point out and distinctly claim the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(b). A claim is invalid as indefinite if it is not sufficiently precise to permit a potential competitor to determine whether or not it is infringing. *Morton Int’l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993). Specifically, “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 891, 901 (2014). Furthermore, when a claim includes a term of degree, the patent “must provide ‘some standard of measuring that degree’ such that the claim language provides ‘enough certainty to one of skill in the art when read in context of the invention.’” *GE Lighting Solutions, LLC v. Lights of Am., Inc.*, 663 Fed. Appx. 938, 940 (Fed. Cir. 2016); *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). For terms of degree, “the patent must provide that additional information in the form of ‘objective boundaries.’” *Id.* And the Federal Circuit’s “case law is clear that the objective boundaries requirement applies to terms of degree.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018).

Under this standard, a person skilled in the art would not be able to determine the scope of the invention because of the indefiniteness of at least the following terms: “the block associated with the first spatial motion vector prediction candidate,” as found in Claims 1, 9, 15, 23, 29, and 30; “comparing motion information of the potential spatial motion vector prediction candidate with motion information of at most one other spatial motion vector prediction candidate of the set of spatial motion vector prediction candidates” as found in Claims 3 and 10; “the potential spatial motion vector prediction candidate has essentially similar motion information than a spatial motion vector prediction candidate,” as found in Claims 6, 13, 20, and 27; and “comparing motion information of the first spatial motion vector prediction candidate with motion information of another spatial motion vector prediction candidate of the set of spatial motion vector prediction candidates without making a comparison of each possible candidate pair from the set of spatial motion vector prediction candidates,” as found in Claims 1, 9, 29, and 30.

Because neither Nokia nor Respondents have yet briefed claim construction issues, Respondents’ contentions should not be seen as a suggestion that Respondents hereby limit their claims of indefiniteness, lack of enablement, or lack of written description to the terms identified herein. The contentions do not represent Respondents’ agreement or views as to the meaning of any claim term. The contentions also do not represent Respondents’ agreement or views as to the definiteness, written description support for, or enablement of any claim not specifically identified herein. Respondents reserve the right to supplement or amend these disclosures and to identify additional and/or different claim terms for construction.

VIII. U.S. PATENT NO. 11,805,267

A. Identification of Relevant Prior Art

Respondents identify the following prior art references that anticipate and/or render obvious the asserted claims of the asserted patent. The following patents and publications are prior

art under at least 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g). Whether a prior art reference anticipates or renders obvious the asserted claims of the '267 patent may depend upon claim construction. Respondents have identified each prior art patent by its inventor, title, number, country of origin, date of filing, date of issue, and, where applicable, the relevant priority date, or such information may be derived from the face of the patent. Each prior art publication is identified by its title, date of publication, and, where feasible, author and publisher. For prior art under 35 U.S.C. § 102(b), Respondents have identified the item offered for sale or publicly used or known, the date by which the offer or use took place or the information became known, and the identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known, to the full extent currently known.

Based on the information reasonably available to Respondents, the priority date for the '267 patent is January 6, 2012, the filing date of application No. 13/344,893, the earliest filed application to which the '267 patent claims priority as a continuation. Nokia bears the burden of showing on a claim-by-claim basis that it is entitled to a priority date earlier than January 6, 2012, including the filing date and description of the alleged inventions claimed in the '267 patent in any earlier provisional application. Nokia has not done so, including in any of its interrogatory responses served to date. If Nokia contends or demonstrates that any of the asserted claims of the '267 patent are entitled to a priority date before January 6, 2012, then Respondents reserve the right to identify additional prior art references which anticipate or make obvious the asserted claims of the '267 patent.

1. Prior Art Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following prior art patent publications. These patent publications constitute prior

art under 35 U.S.C. § 102, and their patent numbers, countries of origin, and dates of publication and/or issue are included on the face of those documents. Respondents reserve the right to supplement this list as it learns in the course of discovery of other prior art patent publications that would anticipate and/or render the asserted claims obvious.

Prior Art	Inventor
U.S. Patent No. 5,754,240	Wilson
U.S. Patent No. 6,259,734	Boon
U.S. Patent No. 6,404,815	Sekiguchi et al.
U.S. Patent No. 6,512,523	Gross
U.S. Patent No. 6,539,058	Pearlstein et al.
U.S. Patent No. 6,704,360	Haskel et al.
U.S. Patent No. 6,950,469	Karczewicz et al.
U.S. Patent No. 7,224,733	Benzler et al.
U.S. Patent No. 7,555,043	Sato et al.
U.S. Patent No. 7,580,456	Li et al.
U.S. Patent No. 7,620,109	Srinivasan
U.S. Patent No. 7,792,191	Nyeongkyu Kwon
U.S. Patent No. 7,974,344	Ji et al.
U.S. Patent No. 8,005,137	Han et al.
U.S. Patent No. 8,149,910	Tanizawa et al.
U.S. Patent No. 8,284,835	Iguchi
U.S. Patent No. 8,374,237	Demos
U.S. Patent No. 8,428,133	Ye et al.
U.S. Patent No. 8,498,336	Tourapis et al.
U.S. Patent No. 8,514,939	Chen et al.
U.S. Patent No. 8,594,188	Demos
U.S. Patent No. 8,606,028	Noda
U.S. Patent No. 8,660,174	Fu et al.
U.S. Patent No. 8,665,964	Joshi et al.
U.S. Patent No. 8,676,000	Alshina et al.
U.S. Patent No. 8,711,930	Karczewicz et al.
U.S. Patent No. 8,711,939	Alshina et al.
U.S. Patent No. 8,750,378	Karczewicz et al.
U.S. Patent No. 8,831,086	Ye
U.S. Patent No. 8,942,289	Srinivasan et al.
U.S. Patent No. 8,971,412	Ye et al.
U.S. Patent No. 8,995,526	Karczewicz et al.
U.S. Patent No. 9,014,280	Ye et al.
U.S. Patent No. 9,161,057	Karczewicz et al.

U.S. Patent No. 9,237,355	Chien et al.
U.S. Patent No. 9,307,122	Ugur et al.
U.S. Patent No. 9,344,744	Kirchhoffer
U.S. Patent No. 9,432,693	Ugur et al.
U.S. Patent No. 9,877,037	Ugur et al.
U.S. Patent Appl. Publication No. 2003/0202607	Srinivasan
U.S. Patent Appl. Publication No. 2004/0208247	Barrau et al.
U.S. Patent Appl. Publication No. 2004/0247031	Hagai et al.
U.S. Patent Appl. Publication No. 2005/0053292	Mukerjee et al.
U.S. Patent Appl. Publication No. 2005/0105620	Fukushima
U.S. Patent Appl. Publication No. 2005/0207496	Komiya et al.
U.S. Patent Appl. Publication No. 2005/0281334	Walker et al.
U.S. Patent Appl. Publication No. 2006/0067406	Kitada et al.
U.S. Patent Appl. Publication No. 2006/0067406	Winger
U.S. Patent Appl. Publication No. 2007/0009044	Tourapis et al.
U.S. Patent Appl. Publication No. 2007/0086526	Koto et al.
U.S. Patent Appl. Publication No. 2007/0140351	Hsieh-Chang Ho
U.S. Patent Appl. Publication No. 2008/0075169	Ugur et al.
U.S. Patent Appl. Publication No. 2008/0089417	Bao et al.
U.S. Patent Appl. Publication No. 2008/0198927	Wu
U.S. Patent Appl. Publication No. 2008/0198935	Srinivasan et al.
U.S. Patent Appl. Publication No. 2008/0310745	Ye et al.
U.S. Patent Appl. Publication No. 2009/0087111	Noda et al.
U.S. Patent Appl. Publication No. 2009/0092188	Lee et al.
U.S. Patent Appl. Publication No. 2009/0232215	Park et al.

U.S. Patent Appl. Publication No. 2009/0257499	Karczewicz et al.
U.S. Patent Appl. Publication No. 2009/0257503	Ye et al.
U.S. Patent Appl. Publication No. 2010/0002770	Motta et al.
U.S. Patent Appl. Publication No. 2010/0086027	Panchal et al.
U.S. Patent Appl. Publication No. 2010/0111182	Karczewicz et al.
U.S. Patent Appl. Publication No. 2011/0007799	Karczewicz et al.
U.S. Patent Appl. Publication No. 2011/0032991	Sekiguchi et al.
U.S. Patent Appl. Publication No. 2011/0090966	Chujoh et al.
U.S. Patent Appl. Publication No. 2011/0200108	Joshi et al.
U.S. Patent Appl. Publication No. 2012/0051431	Chien et al.
U.S. Patent Appl. Publication No. 2012/0063515	Panchai et al.
U.S. Patent Appl. Publication No. 2013/0034158	Kirchhoffer et al.
U.S. Patent Appl. Publication No. 2013/0142262	Ye et al.
U.S. Patent Appl. Publication No. 2013/0182763	Yasuda et al.
U.S. Provisional Patent Appl. No. 60/305,891	Rajan et al.
U.S. Provisional Patent Appl. No. 60/341674	Lin et al.
Canadian Patent Application No. 2729615	Chujoh et al.
CN 101523922	Ye et al.
CN 101816183	Lee et al.
JP4355319B2	芳典 鈴木
Korean Patent Appl. No. KR10-2007- 0014956 A	Yun et al.
RU 2004103743	БАРРО Эрик et al.
RU 2008138706	НОДА Реико et al.
WO 2007/042063	Schwarz et al.
WO 2008/048864	Ye et al.
WO 2008/067734	Zhou et al.
WO 2009/151615	Gomila et al.
WO 2010/001832	Chujoh et al.

WO 2011/086777	Yasuda et al.
WO 2011/127964	Kirchoffer et al.
WO 2012/008040	Tanizawa et al.

2. Prior Art Non-Patent Publications

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following published works of prior art. These publications constitute additional prior art under 35 U.S.C. § 102, and their titles, authors, publishers, and dates of publication are included on the face of those documents. In addition to the references listed below, Respondents hereby disclose as prior art publications all references disclosed below in Section 3 (regarding on sale/public use), such as press releases, users manuals, and other related documentation about such prior art products. Respondents reserve the right to supplement this list as it learns in the course of discovery of other references, prior art public use, and/or sale that would anticipate and/or render the asserted claims obvious.

- Weidi, et al.: "Motion- and Aliasing-Compensated Prediction for Hybrid Video Coding" IEEE Transactions on Circuits and Systems for Video Technology
- Ji, Xiangyang, et al., Block-Wise Adaptive Motion Accuracy Based B-Picture Coding with Low-Complexity Motion Compensation.
- Sun, Haiwei, et al., Fast Motion Vector And Bitrate Re-Estimation For Arbitrary Downsizing Video Transcoding.
- Marpe, Video Compression Using Nested Quadtree Structures, Leaf Merging, and Improved Techniques for Motion Representation and Entropy Coding.
- ITU-T Recommendation H.264, Advanced Video Coding for Generic Audiovisual Services, Series H: Audiovisual And Multimedia Systems, Infrastructure of audiovisual services - Coding of moving video, ITU-T Recommendation H.264, Nov. 2007.
- Alvarez, J., "Discrepancies in Documentation and Implementation of Sub-pel Interpolation in TML-8 (Draft 0)", ITU Telecommunications Standardization Sector, Study Group 16 Question 6, Video Coding Experts Group (VCEG), 14th Meeting, Santa Barbara, CA (Sep. 24-27, 2001); Document VCEG-N71.
- Chiu et al., "Description of Video Coding Technology Proposal: Self Derivation of Motion Estimation and Adaptive (Wiener) Loop Filtering", Joint Collaborative Team on Video

Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 1st Meeting, (Apr. 15-23, 2010); Document JCTVC-A106.

- Chujoh, T et al.; Bidirectional prediction for stored B-slice; ITU - Telecommunications Standardization Sector STUDY GROUP 16 Question 6 Video Coding Experts Group (VCEG); 35th Meeting; Berlin, Germany, 16-18 July, 2008; Document: VCEG -AI20 (and corresponding attachments).
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3. Prior Art Items and/or Knowledge

Respondents contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on prior art items embodying and alleged inventions or structures described in, and/or any knowledge disclosed by or referred to in, any of the prior art patents or prior art publications identified above in Sections VIII.A.1 and VIII.A.2. Because Respondents have not yet completed discovery in this case, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through third-party discovery or other further investigation.

4. Prior Art Under 35 U.S.C. §§ 102(f) and 102(g)

Because Respondents have not yet completed discovery in this case, including but not limited to taking depositions of the named inventors of the asserted patents, reviewing Nokia's productions, and seeking discovery of prior inventions by third parties, Respondents reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through discovery or other further investigation.

B. Anticipation and Obviousness

Respondents contend that the prior art references identified in Respondents' contentions anticipate or render obvious the asserted claims of the '267 patent. Respondents attach Exhibits E-

1 to E-8, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '267 patent. The charts identify primary references.

Single items of prior art that anticipate the asserted claims of the '267 patent are cited and described in the claim charts attached hereto as Exhibits E-1 to E-8, each of which describes anticipation of one or more claims of the asserted patents by a primary reference. These claim charts provide citations to portions of the above references, illustrating how the prior art explicitly discloses every element of the asserted claims of the '267 patent. To the extent any element is not provided by an expressly enabling disclosure by the referenced prior art, all elements of the asserted claims of the '267 patent would still be the inherent result of putting into practice the systems and methods described by the prior art referenced herein, as set forth below.

Exhibit	Primary Reference
E-1	U.S. Patent No. 7,620,109 ("Srinivasan") (RESPNOKIA_00023905)
E-2	U.S. Patent No. 9,161,057 ("Karczewicz '057") (RESPNOKIA_00026856)
E-3	US Pat. No. 9,344,744 ("Kirchhoffer") (RESPNOKIA_00024702)
E-4	U.S. Patent Application Publication No. 2005/0281334 A1 ("Walker") (RESPNOKIA_00024859)
E-5	U.S. Pat. Appl. No. 2009/0257499 A1 ("Karczewicz '499") (RESPNOKIA_00025222)
E-6	U.S. Pat. Appl. No. 2011/0007799 A1 ("Karczewicz '799") (RESPNOKIA_00024739)
E-7	Admitted Prior Art (RESPNOKIA_00024504) (RESPNOKIA_00015239)
E-8	JVT-R201 (RESPNOKIA_00015239)

In addition to the discussion above, and to the extent not anticipated, the asserted claims of the '267 patent are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. Items of prior art that render obvious the asserted claims of the '267 patent are cited and described in the claim charts attached hereto as Exhibits E-1 to E-

9. Respondents also identify secondary references and obviousness combinations in Exhibit E-9. In the event a particular primary reference identified in Exhibits E-1 to E-8 does not anticipate one of the asserted claims of the '267 patent, the reference, alone or in combination with one or more of the references identified in those exhibits or in Exhibit E-9 renders the claim obvious. For clarity, if a primary reference chart indicates that a limitation may be disclosed in Exhibit E-9, the limitation would also have been obvious in view of a combination with another primary reference that discloses the limitation. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to Respondents' right to rely on additional specific combinations as well as to detail and explain such combinations.

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id.* at 1732, 1738, 1742-1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id.* at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 1740-41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 580-81 (E.D. Tex. 2007). "[A]

court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ” to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits E-1 to E-9, persons of ordinary skill in the art would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '267 patent. The references identified in Exhibits E-1 to E-9 are analogous prior art to the subject matter of the asserted claims of the '267 patent and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the asserted patents.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the asserted patents. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these initial invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '267 patent. Respondents' inclusion of exemplary combinations, in view of the factors and exemplary motivations to combine

identified herein, does not preclude Respondents from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739-40 (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation to combine test, instead espousing an “expansive and flexible” approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 1742. Nevertheless, in addition to the information contained herein, Respondents hereby identify additional motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified above with others exists from the prior art references themselves, as well as from the interrelated teachings of other prior art references, common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the existence and nature of a known need or problem, and/or knowledge possessed by a person of ordinary skill. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success. Therefore, various reasons to

combine the disclosed references exist. Respondents reserve the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include the allegedly missing limitation and to explain the motivation to combine the prior art elements.

In addition, it would have been obvious to combine any of the prior art in Exhibits E-1 to E-9 because all of these references relate to devices and methods for motion prediction. Each prior art reference speaks to prediction techniques in the context of video coding, and if not, bi-directional prediction specifically. Each of these references speaks to predicting values of pixels (or $\frac{1}{2}$ or $\frac{1}{4}$ pixels) using interpolation and an N- or P-tap filter (or both). Each of these references includes disclosures of video coding techniques that involve similar computer components—processors, memory, communication devices, encoders, decoders, etc.—to perform the relevant steps of video coding. Many, if not all, of the inventors listed on the face of the prior art in Exhibits E-1 to E-9 were prominent engineers in the same field, they routinely attended meetings to develop video coding standards (such as H.264, etc.), and would have been familiar with and looked to the teachings of the others.

For example, Karczewicz '799 and Karczewicz '499 list the same three inventors on their cover page and involve duplicate figures, confirming they are directed to the same subject matter. Karczewicz '799, Cover Page, Figs. 1-2, Karczewicz '499, Cover Page, Figs. 1-2. Both Karczewicz references speak to digital video coding. Karczewicz '499 at [0002]; Karczewicz '799 at [0002]. Both relate to “digital televisions, digital direct broadcast systems, wireless communication devices, wireless broadcast systems, personal digital assistants (PDAs), laptop or desktop computers, digital cameras, digital recording devices, video gaming devices, video game consoles, cellular or satellite radio telephones, digital media players, and the like.” Karczewicz

'799, [0003], Karczewicz '499, [0003]. Both speak to video compression techniques, such as MPEG-2, MPEG-4, or ITU-T H.264/MPEG-4 standards. *Id.* Both speak to temporal prediction to reduce transmission of redundant video information, including interpolation techniques. Karczewicz '799, [0004], [0037], [0041]; Karczewicz '499, [0004], [0007], [0009], [52]. And '499 notes that its encoder can be used to perform bidirectional prediction, whereas the '799 then discloses additional teachings specific to bi-directional prediction. Karczewicz '799, [0002], [008], [0022]; Karczewicz '499, [0054].

As another example, Kirchhoffer relates to “intra predicting a block of a picture” using prediction. Kirchhoffer at 1:11-21. This addresses a “desire to improve a compression efficiency of the transmitted information and to reduce a computational load in video coding.” Kirchhoffer, 2:35-37. Kirchhoffer also discusses the H.264/AVC Video Coding Standard. *Id.*, 1:25-33). Kirchhoffer discloses a “concept for directional inter prediction with increased precision for arbitrary size blocks of images of video data,” that can be used in an encoder or decoder. *Id.*, 10:66-11:3. Kirchhoffer discloses using higher precision values during a prediction, which allows the system to obtain a more precise prediction and corresponding residual used for reconstruction. *See, e.g., id.* at 7:4-19. Kirchhoffer even cites to other inventors mentioned in the other primary references, including Yan Ye, a named inventor on both Karczewicz references. *Id.*, p. 2.

As another example, Walker relates to “weighted bi-directional predicted video pictures.” Walker at Abstract. Walker discusses numerous related video coding standards, including MPEG-1, MPEG-2, MPEG-4 (collectively designated MPEG-x), H.261, H.262, H.263, and H.264 (collectively designated H.26x). *Id.* at [0005]. Walker discloses pixel interpolation in the context of motion compensated predictive coding, as well as temporal prediction. *E.g.*, Walker at [0015],

[0114]. Walker relies on multiple types of encoder and decoder devices to execute predictive coding techniques. *Id.* at [0025].

As another example, Demos speaks to high precision encoding and decoding of video images using video encoders and decoders. Demos at Title, Abstract. Demos is “directed to improved quality video compression based on novel improvements to MPEG-like encoding and decoding systems. In one aspect, the invention provides a method for significantly improving image quality from MPEG-style video coding by preserving a higher number of bits during intermediate encoding and decoding processing steps.” Demos, 3:43-49; *see also id.* at 5:51-6:65 (speaking to the precision used for calculations during the prediction process). Demos discusses other related video coding standards, including MPEG-2 and MPEG-4, which teach the use of predictions to compactly represent video frame data. *Id.* at 1:25-34. Demos speaks to how prediction, including bidirectional prediction using B-frames can be used to represent video frames and capture/transmit only the “image differences”. *See, e.g., id.* at 1:60-67, 6:15-17.

As another example, Marpe discloses video compression using picture partitioning for predictions and residual coding. Marpe at 1677. As Marpe states, the “primary goal of this partitioning concept is to provide a high degree of adaptability for both temporal and spatial prediction as well as for the purpose of space-frequency representation of prediction residuals.” Marpe at Abstract. “This paper describes a video compression scheme that intends to address both the aspects of coding efficiency and implementation cost in a well-balanced relationship.” *Id.* at 1676. “The next section highlights the main features of the proposed video compression scheme... Internal bit-depth expansion and in-loop filtering are described in Sections VII and VIII, respectively.” *Id.*

As another example, U.S. Patent No. 9,161,057 (“Karczewicz ’057”) relates to “video encoding and, more particularly, video encoding techniques that use bi-directional prediction.” *See, e.g.*, Karczewicz ’057 at 1:13-16. Karczewicz ’057 describes Video encoder 22 and video decoder 28 may operate according to a video compression standard, such as the ITU-T H.264 standard, alternatively described as MPEG-4, Part 10, Advanced Video Coding (AVC). *See, e.g., Id.* at 1:49-2:28; 7:38-51; 9:4-19; 10:64-11:52 and 12:32-43. Karczewicz ’057 also discusses high precision interpolation and various weighed sample prediction techniques for bi-directional prediction. *See, e.g., Id.* 7:66-8:12; 12:32-43; 13:25-54. Based on the disclosure of Karczewicz, the ongoing development of video coding and the relevant prior art, it would be obvious to a person of ordinary skill in the art to combine Karczewicz with references relating to devices and methods for improving video coding performance.

For example, U.S. Patent No. 8,606,028 (“Noda”) relates to “an image encoding apparatus and an image encoding method and an image decoding apparatus and an image decoding method to improve an encoding efficiency by enhancing a precision of intra-prediction or motion compensation enough.” *See, e.g.*, Noda at 1:5-31. Noda describes video codec techniques to minimize rounding errors that occur in bi-directional prediction. *See, e.g.*, Noda. at 1:66-2:4; 28:12-39. Noda describes that the prediction image signal is created with precision higher than the input image signal by M bits such that the precision of a filter for motion compensation is improved, making it possible to decrease a prediction error signal and upgrade encoding efficiency. *See, e.g.*, Noda at 13:5-31; FIG. 42.

As another example, US Patent No. 7,620,109 (“Srinivasan”) relates to “techniques and tools for sub-pixel shifting in motion estimation/compensation in video coding/decoding applications.” *See, e.g.*, Srinivasan at 1:20-26. Specifically, Srinivasan describes improving coding

performance by increasing a bit-depth of values of pixels in the context of motion compensation. *See, e.g., Id.* at 5:12-28; 5:46-50; 16:21-17:17; 20:33-38; 21:22-52; Based on the disclosure of Srinivasan, the ongoing development of video coding and the relevant prior art, it would be obvious to a person of ordinary skill in the art to combine Srinivasan with references relating to devices and methods for improving video coding performance.

As another example, JVT-R201 relates to ITU-T Recommendation H.264 video coding to improve coding efficiency. *See, e.g., JVT-R201* at 1; 2. JVT-R201 describes video encoding/decoding process including fractional interpolation and weighted sample prediction processes for bi-directional prediction. *See, e.g., Id.* at 3; 146-147; 161; 164-165; 168-169. Based on the disclosure of JVT-R201, the ongoing development of video coding and the relevant prior art, it would be obvious to a person of ordinary skill in the art to combine JVT-R201 references relating to devices and methods for improving video coding performance and coding efficiency.

As another example, the admitted prior art set forth in U.S. Patent No. 11,805,267 (The admitted prior art (“*APA*”)) relates to H.264/AVC video coding supporting bi-directional prediction. *See, e.g., APA* at 1:24-65; 2:57-3:11. *APA* discusses conventional prediction techniques using two reference blocks to obtain two predictions with higher precision, obtaining a combined prediction based at least partly upon said first prediction and said second prediction and decreasing a precision of said combined prediction by shifting bits of the combined prediction to the right. *See, e.g., Id.* at 3:66-4:20. Based on the disclosure of *APA*, the ongoing development of video coding and the relevant prior art, it would be obvious to a person of ordinary skill in the art to combine *APA* references relating to devices and methods for improving video coding performance and coding efficiency.

US Patent No 8,831,086 (“Ye ’086”) relates to digital video devices implement video compression techniques, such as MPEG-2, MPEG-4, or ITU-T H.264/MPEG-4, Part 10, Advanced Video Coding (AVC). *See e.g.*, Ye ’086 at 1:20-34. Ye ’086 describes interpolation techniques have been developed in order to improve the level of compression that can be achieved in inter-coding including bi-directional prediction. *See e.g.*, *Id* at 2:19-31. Ye ’086 further discusses coding method for increasing precision of pixels to improve quality and/or compression for video sequences. *See e.g.*, *Id* at 21:56-23: 23. Based on the disclosure of Ye ’086, the ongoing development of video coding and the relevant prior art, it would be obvious to a person of ordinary skill in the art to combine Ye ’412 with references relating to devices and methods for improving video coding performance and coding efficiency.

US Patent No 8,971,412 (“Ye ’412”) relates to digital video devices implement video compression techniques, such as MPEG-2, MPEG-4, or ITU-T H.264/MPEG-4, Part 10, Advanced Video Coding (AVC). *See e.g.*, Ye ’412 at 1:20-33. Ye ’412 describes interpolation techniques have been developed in order to improve the level of compression that can be achieved in inter-coding including bi-directional prediction and minimize prediction error energy. *See e.g.*, *Id* at 2:19-31; 14:39-51. Based on the disclosure of Ye ’412, the ongoing development of video coding and the relevant prior art, it would be obvious to a person of ordinary skill in the art to combine Ye ’412 with references relating to devices and methods for improving video coding performance and coding efficiency. Respondents incorporate by reference prior art from the prosecution histories and background sections of the asserted patents. Respondents expect to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Respondents contend that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims of the '267 patent. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, “can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). “A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision.” *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness “simply cannot overcome [a] strong prima facie showing of obviousness.” *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). Nokia has not established the existence of any objective indicia of non-obviousness or secondary considerations. Respondents reserve the right to supplement their contentions to respond to any such evidence should Nokia be permitted to raise them in the future. While discovery in this case is ongoing, and Respondents’ investigation continues (which will include expert discovery), to the extent Nokia contends that one or more asserted claims of the '267 patent is not obvious based on secondary considerations recognized by relevant authority Respondents contend such allegations are without merit.

For example, Nokia has not identified any evidence of copying of the purported inventions of the asserted claims of the '267 patent. *See* Nokia’s January 3, 2024, Objections and Responses to Respondents’ First Set of Interrogatories (Nos. 1-112), Interrogatory No. 16. Similarly, Nokia has provided no evidence of any failure of others to realize any purported inventions of the asserted

claims of the '267 patent, or any evidence of any long felt but unsolved need solved by the purported inventions of the asserted claims of the '267 patent. *Id.* To the contrary, the widespread availability of video codecs is contrary evidence of any long-felt need for the purported inventions of the asserted claims of the '267 patent.

Nokia also has not identified any evidence that the purported inventions of the asserted claims of the '267 patent have enjoyed any commercial success. *Id.* To the extent that Nokia claims that sales of any accused products constitutes commercial success, Nokia has not identified any evidence of any nexus between the claimed invention and such alleged commercial success. Moreover, any commercial success of the accused products may be due to factors other than the merits of the claims, including non-patented features or functionalities, marketing efforts, or other financial or economic incentives related to the sale or distribution of the accused products. Nokia also has not provided evidence of unexpected results or unexpected properties in the purported inventions of the asserted claims of the '267 patent. *Id.*

Nokia has not identified any evidence of industry respect for the purported inventions of the asserted claims of the '267 patent, and also no evidence of any awards or other industry praise for any purported inventions of the asserted claims of the '267 patent. *Id.* Nokia has not identified any evidence of any skepticism of skilled artisans prior to purported inventions of the asserted claims of the '267 patent; to the contrary, the prior art identified herein establishes not only a lack of skepticism but an appreciation that the purported inventions of the asserted claims of the '267 patent were known to those of skill in the art. Nokia has not identified any evidence of any failed attempts by others to resolve any of the alleged problems that were allegedly solved by any of the alleged inventions claimed in the asserted patents. *Id.* Nokia has not identified any evidence of any teaching away from any of the alleged inventions claimed in the asserted patents. *Id.* Rather, and

as discussed above, there are multiple references anticipating and/or or rendering obvious the alleged inventions. Nokia has not identified any evidence of any long-felt but unresolved need for the alleged inventions claimed in the asserted patents. As described above, the asserted claims of the '267 patent are anticipated and/or rendered obvious by multiple prior art references. To the extent there was ever a need for any of the alleged inventions, they were well known to those in the art.

If Nokia identifies any additional secondary considerations of non-obviousness, Respondents reserve the right to amend and/or supplement their contentions.

C. Other Invalidity Grounds

Respondents hereby identify grounds upon which the asserted claims are invalid for failure to meet the requirements of 35 U.S.C. §§ 112(a), 112(b), and 112(f). These contentions shall not be construed as an admission that any claim construction advanced by Respondents in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Respondents from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to Nokia's purported construction of the claim language or of other positions advanced by Nokia during the course of this litigation. Respondents' Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as Nokia's alleged scope of the asserted claims. Consequently, Respondents identify only the issues under 35 U.S.C. § 112 of which they are presently aware.

1. 35 U.S.C. § 101 – Ineligible Subject Matter

Under 35 U.S.C. § 101, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35].” “This provision,

however, contains longstanding judicial exceptions, which provide that laws of nature, natural phenomena, and abstract ideas are not eligible for patenting.” *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765 (Fed. Cir. 2019). To determine if claims are patent eligible, the first step is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 217 (2014). If so, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* at 217–18 (internal quotation marks omitted). Under this framework, numerous cases have invalidated patents directed to video coding, encryption, and/or data manipulation. *See, e.g.*, *Realtime Data LLC v. Array Networks Inc.*, No. 2021-2251, 2023 WL 4924814 (Fed. Cir. Aug. 2, 2023), *cert. denied sub nom. Realtime Data LLC v. Fortinet, Inc.*, No. 23-498, 2024 WL 72018 (U.S. Jan. 8, 2024); *Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349 (Fed. Cir. 2023); *PersonalWeb Techs. LLC v. Google LLC*, 8 F.4th 1310, 1315 (Fed. Cir. 2021); *Sensormatic Elecs., LLC v. Wyze Labs, Inc.*, No. 2020-2320, 2021 WL 2944838, at *3 (Fed. Cir. July 14, 2021); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322 (Fed. Cir. 2017); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *see also In re Gitlin*, 775 F. App’x 689 (Fed. Cir. 2019).

The asserted claims of the ’267 patent are directed to an abstract idea under the first step of the two-step *Alice* analysis. Specifically, the claims are directed to the patent-ineligible abstract idea of deferring rounding until after combining two numbers to avoid rounding errors, which is a simple mathematical principal. The ’267 patent fundamentally seeks to monopolize the concept of using higher precision and deferring rounding to avoid rounding errors. While the claims arise in

the context of bidirectional prediction, limiting mathematical claims to particular field is insufficient to be patent eligible. Every accountant understands the importance of maintaining intermediate values at a higher precision until a final calculation, so as to avoid rounding errors. Maintaining an intermediate prediction at a higher precision until after combination merely captures a fundamental mathematical principal and is an abstract idea.

The asserted claims of the '267 patent also fail the second step of the *Alice* analysis because they do not recite an “inventive concept” capable of rendering the abstract idea into patent-eligible subject matter. The '267 patent contrasts the “existing systems” of the prior art depicted in Figure 10 with its invention in Figure 11, which confirms that the only difference between the '267 patent and the prior art is how many bits the prediction is down-shifted before combination. '267 patent, Figs. 10, 11, 13:51-55. Where the only difference between what was conventional and the challenged claims is the abstract idea itself, the claims are not inventive and are not patent-eligible. Moreover, the claims merely recite conventional functions performed by generic computing equipment, used in conventional ways. See, e.g., '267 patent, cl. 1 (“An apparatus . . . comprising: at least one processor and at least one memory including computer program code . . .”). Using conventional components to increase the speed or efficiency of a process does not confer patent eligibility on an otherwise abstract idea. The use of a standard video encoder or decoder to implement the abstract idea does not add anything significant to the abstract idea. “If a claim’s only ‘inventive concept’ is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea.” *BSG Tech. LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018) (patent directed to “system and method for indexing data” directed to patent-ineligible abstract idea and lacked inventive concept).

2. 35 U.S.C. § 112(a) – Enablement and Written Description

To comply with the enablement requirement of 35 U.S.C. § 112(a), the patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Courts consider multiple factors to determine whether experimentation is undue, including: “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

To comply with the written description requirement of 35 U.S.C. § 112(a), the patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). Further, to satisfy the written description requirement, the disclosure of the patent must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). “An applicant demonstrates that he was in possession of the invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). “[T]he written description inquiry looks to the four corners of the specification to discern the extent to which the inventor(s) had possession of the invention as broadly claimed. The knowledge of ordinary artisans may be used to inform what is actually in the specification, but not to teach limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure in the specification.” *Rivera v. Int’l Trade Comm’n*, 857 F.3d 1315, 1322-23 (Fed.

Cir. 2017) (citations omitted). In other words, even if something reflects an obvious variation of the invention disclosed in the specification, the claims are invalid for lack of written description.

The asserted claims are invalid for failure to enable and/or provide a written description of the alleged invention as required by 35 U.S.C. § 112(a). A person skilled in the art would not be able to make and use the claimed inventions by reading the specification. For example, the '267 patent fails to sufficiently describe or enable at least the following limitations: “obtaining a combined prediction based at least upon said first and second prediction.”

3. 35 U.S.C. § 112(b) – Indefiniteness

The claims of a patent must “particularly point out and distinctly claim the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(b). A claim is invalid as indefinite if it is not sufficiently precise to permit a potential competitor to determine whether or not it is infringing. *Morton Int’l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993). Specifically, “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 891, 901 (2014). Furthermore, when a claim includes a term of degree, the patent “must provide ‘some standard of measuring that degree’ such that the claim language provides ‘enough certainty to one of skill in the art when read in context of the invention.’” *GE Lighting Solutions, LLC v. Lights of Am., Inc.*, 663 Fed. Appx. 938, 940 (Fed. Cir. 2016); *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). For terms of degree, “the patent must provide that additional information in the form of ‘objective boundaries.’” *Id.* And the Federal Circuit’s “case law is clear that the objective boundaries requirement applies to terms of degree.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018).

Under this standard, a person skilled in the art would not be able to determine the scope of the invention because of the indefiniteness of at least the following terms: “first/second precision”, “obtaining a combined prediction based at least partly upon said first and second prediction.”

Because neither Nokia nor Respondents have yet briefed claim construction issues, Respondents’ contentions should not be seen as a suggestion that Respondents hereby limit their claims of indefiniteness, lack of enablement, or lack of written description to the terms identified herein. The contentions do not represent Respondents’ agreement or views as to the meaning of any claim term. The contentions also do not represent Respondents’ agreement or views as to the definiteness, written description support for, or enablement of any claim not specifically identified herein. Respondents reserve the right to supplement or amend these disclosures and to identify additional and/or different claim terms for construction.

IX. UNENFORCEABILITY

A. Laches, Acquiescence, and Waiver

“All legal and equitable defenses may be presented in all cases.” 19 U.S.C. § 1337(c). Laches exists where a complainant delayed filing suit for an unreasonable and inexcusable length of time after it knew or reasonably should have known of allegedly infringing activities and the delay resulted in material prejudice or injury to the respondents. *Certain Network Devices, Related Software and Components Thereof (I)*, Inv. No. 337-TA-944, Comm’n Op. at 26 (April 19, 2017) (post-*SCA Hygiene* decision declining to hold that laches is not a valid defense for Section 337 actions and addressing the defense on the merits). A presumption of laches exists with a six-year delay. See *A.C. Aukerman Co. v. R.L. Chaides Const. Co.*, 960 F. 3d 1029, 1035 (Fed. Cir. 1992) (*en banc*) abrogated on other grounds by *SCA Hygiene Prod. Aktiebolag v. First Quality Baby Prod., LLC*, 580 U.S. 328 (March 21, 2017) (“The presumption of laches arising from a more than six-year delay in filing suit is consonant with the mainstream of the law.”) In the context of laches,

the Federal Circuit has held that a delay of more than six years raises a “presumption that it is unreasonable, inexcusable, and prejudicial.” *Wanlass v. Gen. Elec. Co.*, 138 F.3d 1334, 1337 (Fed. Cir. 1998). That presumption shifts the burden to the patentee. Acquiescence occurs where (1) with knowledge of the facts giving rise to the claim, (2) a complainant engages in implicit or explicit assurances to its opponent, and (3) the opponent relies thereon. *See Certain Color Intraoral Scanners & Related Hardware & Software*, Inv. No. 337-TA-1091, Initial Determination (March 1, 2019). And waiver requires conduct that “was so inconsistent with an intent to enforce its rights as to induce a reasonable belief that such right has been relinquished.” *Id.*

Amazon has been selling the Amazon Fire Tablets, formerly called the Kindle Fire since their first release in November 2011.¹ The first Fire TV product was made available in 2014.² The first Amazon Echo Show was released in 2017.³ The Ring video doorbell and its related products have been sold since 2014.⁴ And Blink has been selling security cameras since 2016.⁵ These releases, sales, and functionality have been high profile, open, and notorious. These dates range from more than six years to twelve years before Nokia filed the Complaint in this Investigation. Thus, the presumption of laches applies and shifts the burden to Nokia. Nokia in its Complaint alleges that “Nokia has been negotiating with Amazon in good faith to license various standard essential patent (“SEP”) claims *since 2009*. During this time, Amazon has sold millions of [allegedly] infringing products and offered services that [allegedly] infringe Nokia’s patents to

¹ https://www.techotopia.com/index.php/An_Overview_and_History_of_the_Kindle_Fire

² Horn, Leslie (April 2, 2014). “Fire TV: Everything You Need to Know About Amazon’s \$100 Streaming Box”. Gizmodo. Gawker Media, available at <https://gizmodo.com/amazons-fire-tv-everything-you-need-to-know-1556889628>.

³ <https://www.digitaltrends.com/home/history-of-amazon-echo/>

⁴ <https://www.aboutamazon.com/news/devices/a-brief-history-of-the-ring-video-doorbell-and-its-evolution-over-the-last-10-years>

⁵ Heater, Brian (5 December 2016). “Blink’s home security camera gets an outdoor version”. TechCrunch available at <https://techcrunch.com/2016/12/05/blink-xt/> .

millions of subscribers.” Complaint at ¶ 71. The Complaint then alleges that Amazon “increased its use of video technologies,” and that Nokia specifically “notified Amazon that Amazon was infringing Nokia’s H.264 Patents” in *April 2015*—a claim for which Nokia provides no support. That was more than eight years before Nokia filed its Complaint. In that time, Nokia waited to bring suit after the growth of popularity of the products and widespread adoption of the H.264 standard. Many of the Amazon accused product lines created and grew their respective markets. And only after such widespread adoption and after the vast majority of relevant patents to the H.264 Standard held by others were licensed on reasonable terms, did Nokia begin with its unreasonable demands and worldwide litigation campaign against the Respondents, including seeking injunctions in foreign jurisdictions.^{6, 7}

⁶ As to Amazon, Nokia has launched litigation in the U.S. District Courts for the District of Delaware and the Eastern District of Virginia, the United Kingdom, multiple proceedings in Germany, the Unified Patent Court, India, and Brazil. *See Nokia Technologies Oy v. Amazon.com, Inc. et al*, No. 1:23-cv-01236-GBW (D. Del.); *In re Nokia Technologies Oy and Alcatel Lucent SAS*, No. 1:23-mc-0032 (E.D. Va.) (transferred to the District of Delaware); *Alcatel Lucent SAS v. Amazon Digital UK Ltd. et al*, No. HP-2023-000038; *Nokia Technologies Oy v. Amazon Europe Core S.à r.l. et. al*, 7 O 77/23 (Landgericht Mannheim); *Nokia Technologies Oy v. Amazon Europe Core S.à r.l. et. al*, 7 O 14174/23 (Landgericht Muenchen I) ; *Alcatel Lucent SAS v. Amazon Europe Core S.à r.l. et. al*, 7 O 13903/23 (Landgericht Muenchen I); *Alcatel Lucent SAS v. Amazon Europe Core S.à r.l. et. al*, 4c O 49/23 (Landgericht Duesseldorf) ; *Nokia Technologies Oy v. Amazon Europe Core S.à r.l. et. al*, 4c O 50/23 (Landgericht Duesseldorf) ; *Nokia Technologies Oy v. Amazon EU S.a.r.l.*, Case No. ACT_584119/2023 (Unified Patent Court); *Nokia Technologies Oy v. Amazon Seller Servs. Private Ltd. & Ors. et al*, I.A. No. 22003 of 2023 (High Court of Delhi at New Delhi); *Nokia Technologies Oy v. Amazon Servicios de Varejo do Brasil Ltda.* (Brazil); *In Re: Request from Germany) In Re: Nokia Technologies Oy*, No. 1:23-cv-01395 (D. Del.).

⁷ As to HP, Nokia has launched litigation in the U.S. District Court of Delaware, multiple proceedings in Germany, the Unified Patent Court, and Brazil. *See, Nokia Corp. v. HP Inc.*, 1:23-cv-01237-GBW (D. Del); *Nokia Technologies Oy v. HP Brasil Industria E Comercio De Equipamentos El*, Case No. 0958559-14.2023.8.19.0001; *Nokia Technologies Oy v. HP Inc. et. al.*, Munich Regional Court I, 7 O 14901/23; *Nokia Technologies Oy v. HP Inc. et. al.*, Munich Regional Court I, 7 O 14902/23; *Nokia Technologies Oy v. HP Inc. et. al.*, UPC LD Munich, ACT_588466/2023.

The course of negotiations between Nokia and Amazon also makes clear, that despite being in discussions, according to the Complaint, for six years on SEPs, Nokia did not raise the asserted patents, its H.264 portfolio, or indeed any video coding at all, actions inconsistent with an intent to enforce its rights as to induce a reasonable belief that such right has been relinquished, particularly as Nokia sold its mobile business to Microsoft in 2014 and Amazon ceased its sales of the Fire phone. Negotiations continued to focus on WiFi technology. Even after Nokia claims to have notified Amazon of alleged infringement of its H.264 Patents, for which it provides no support, Nokia claims it did not offer a list of Video Patents for another five years. In other words, Nokia did not identify any H.264 Patents, let alone the Asserted Patents, for more than ten years after it purportedly started to negotiate with Amazon on its SEPs. *See* Complaint ¶ 75.

As to HP, it has been selling products that are capable of supporting the H.264 Standard for approximately 15 years. HP's release of its products is public and open. Indeed, HP's products are listed for sale on www.hp.com and consumers can purchase HP's products at retail stores such as Best Buy. Because HP's products that are capable of supporting H.264 have been offered for sale for approximately fifteen years before the filing of the complaint, the presumption of laches applies and shifts the burden to Nokia.

Respondents also incorporate by reference their unenforceability contentions as set forth in their Initial Joint Responses to Contention Interrogatories regarding RAND/SEP Defendants and the Public Interest, including with respect to waiver.

Dated: February 15, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of **RESPONDENTS JOINT DISCLOSURE OF INITIAL INVALIDITY CONTENTIONS IN RESPONSE TO INDIVIDUAL INTERROGATORY NOS. 10-12** has been served on February 15, 2024, as indicated, on the following:

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