EXHIBIT 7

(Filed Under Seal)

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

APPLE INC., a California corporation,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD., a Korean business entity, SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation, and SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, a Delaware limited liability company,

Defendants.

SAMSUNG ELECTRONICS CO., LTD., a Korean business entity, SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation, and SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, a Delaware limited liability company,

Counterclaim-Plaintiffs,

v.

APPLE INC., a California corporation,

Counterclaim-Defendant.

Civil Action No. 11-CV-01846-LHK

EXPERT REPORT OF WAYNE STARK REGARDING NON-INFRINGEMENT OF US PATENT NUMBER 7,362,867

I. Introduction

A. Prior Reports

1. I previously submitted a report on March 22, 2012, entitled "Expert Report of Dr. Wayne Stark Regarding Invalidity of U.S. Patent No. 7,362,867" (the "Stark Invalidity Report").
2. I have reviewed the report dated March 22, 2012, entitled "Expert Report of Richard D. Wesel, Ph.D. Regarding Infringement of U.S. Patent No. 7,362,867" (the "Wesel Opening Report").
3. I have also reviewed the report dated March 25, 2012, entitled "Samsung's First Supplement to the Expert Report of Richard D. Wesel, Ph.D. Regarding Infringement of U.S. Patent No. 7,362,867" (the "Wesel Supplemental Report").
4. I have received the report dated April 13, 2012, entitled "Samsung's Second Supplement to the Expert Report of Richard D. Wesel, Ph.D. Regarding Infringement of U.S. Patent No. 7,362,867. However, because this report was submitted only three days ago, I have not had adequate time to review it. Accordingly, I reserve the right to supplement the material contained herein in order to address the second supplemental report submitted by Dr. Wesel.

B. Summary of Report

5. This report responds to the Wesel Opening and Supplemental Reports. As explained below, in my opinion the accused products do not infringe the asserted claims of the '867 patent.
6. I expect to testify at trial about the matters set forth in this report, if asked about these matters by the Court or by the parties' attorneys.

C. Understanding of the Law

7. I am not an attorney. I have been informed about the legal standards for patent infringement by counsel for Apple.
8. I have been informed and understand that analyzing whether a product or process infringes a patent is a two-step process. First, the patent claims are construed by the Court. Second, the construed claims are compared to the allegedly infringing product or process to determine whether the product or process falls within the scope of the claims.

9. I have been informed and understand that, if the Court has not construed a claim term, the term should be given the ordinary and customary meaning that a person of ordinary skill in the art would give to the term. I have further been informed and understand that terms should be given the same meaning when used more than once in the same claim or when used in multiple claims of the same patent.
10. I have been informed and understand that the party asserting patent infringement bears the burden of proof.

1. Literal Infringement And Infringement Under The Doctrine Of Equivalents

11. I have been informed and understand that a patent claim is "literally" infringed when an accused product or process includes each and every element of a patent claim. I have been informed and understand that the person asserting literal patent infringement has the burden of proving that each and every element of the patent claim may be found in the accused product or process.
12. I have been informed and understand that statements made during prosecution, including arguments intended to distinguish the pending claims from the prior art, may limit the scope of the issued claims.
13. If a patent claim is not literally infringed, I have been informed and understand that a patent claim may also be infringed under the doctrine of equivalents. For example, I have been informed and understand that if an accused product does not have a structure or step required by a patent claim, then that product cannot literally infringe. However, if the accused product has a structure or step that is "insubstantially different" from what is required by the patent claim, then the product may nevertheless infringe the patent under the doctrine of equivalents. I have been informed and understand that one test to determine whether an accused product and patent claim are "insubstantially different" is to evaluate whether the structure or step in the accused product performs substantially the same function, in substantially the same way, and achieves substantially the same result as the structure or step in the patent claim.
14. I have been informed and understand that arguments made about the scope of a patent during its prosecution may limit the range of equivalents to a patent claim. For example, I have been informed and understand that, during the prosecution of a patent application,

an applicant may make amendments to narrow the scope of a patent claim. I understand that this creates a presumption that the patent would not have been awarded unless the claim was narrowed, and therefore the range of "equivalent" structures is likewise narrowed. I have been informed and understand that this presumption can be rebutted under limited circumstances, such as if the amendment only had a tangential relation to the equivalent now accused or if the equivalent now accused could not have been foreseen at the time of the amendment.

15. I have been informed and understand that representations made to foreign patent offices are also relevant evidence as to whether an allegedly infringing equivalent is insubstantially different than a patent claim.
16. I have been informed and understand that the doctrine of equivalents may not be used to broaden the scope of a patent to encompass products or processes which are the same as what was in the prior art (i.e., existed before the alleged invention of the patent was conceived), and/or would have been obvious given the products or processes that existed at the time of the patent application.
17. I have been informed and understand that each patent claim does not need to cover all the embodiments disclosed within a patent, and that different claims may be drafted to cover different embodiments. However, I have further been informed and understand that if a patent discloses an embodiment that is not claimed in the patent, then the unclaimed embodiment cannot be infringed, either literally or under the doctrine of equivalents.
18. I have been informed and understand that a "dependent" claim includes all of the requirements of an "independent" claim, plus additional requirements of its own. As a result, if an independent claim is not infringed, then the dependent claims are not infringed either. On the other hand, if an independent claim is infringed, a separate finding must still be made as to whether the additional requirements of the dependent claims have been met.

2. Direct Infringement

19. I have been informed and understand that a patent claim is directly infringed when a person makes, uses, sells, or offers to sell in the United States, or imports into the United States, a product or process that includes each element of a patent claim, either literally or under the doctrine of equivalents.

3. Indirect Infringement

20. I have been informed and understand that a party may be liable for indirectly infringing a patent claim, and that the person asserting indirect infringement has the burden of proof. I have been informed and understand that there are two types of indirect infringement: contributory infringement and inducing infringement. I have been informed and understand that both types of indirect infringement require proof of direct infringement.
21. I have been informed and understand that a party attempting to prove contributory infringement must show that a party has contributed to another's direct infringement of the patent. The contributory infringer must have supplied an important component of the infringing product with knowledge that the component was especially made or adapted for use to infringe the patent. I understand that if the component supplied to the direct infringer had other substantial, non-infringing uses, then there was no contributory infringement.
22. I have been informed and understand that a party attempting to prove inducement of patent infringement must show that a party induced another to commit direct infringement. The party who allegedly induced the infringement must have been aware of the patent and must have believed that his or her actions would encourage infringement.
23. I have been informed and understand that it is not enough that the accused inducer was indifferent to the possibility that it might be encouraging patent infringement or that the accused inducer took a substantial and unjustified risk that it would encourage patent infringement. I have further been informed and understand that a party that believes it is highly probable that its actions will encourage patent infringement cannot avoid liability by being "willfully blind" to the existence of the patent or to the fact that its actions will encourage patent infringement.
24. I have been informed and understand that if the party accused of inducing patent infringement did not know of the patent or believed that the patent was invalid, then the accused inducer is not liable. Similarly, I have further been informed and understand that if the accused inducer believed the acts it was inducing were non-infringing, then it is not liable.

II. Operation of the Accused Products

A. Scrambling code generation in the X-GOLD 608 and X-GOLD 616 chipsets

25 [redacted]

26. [redacted]

27. [redacted]

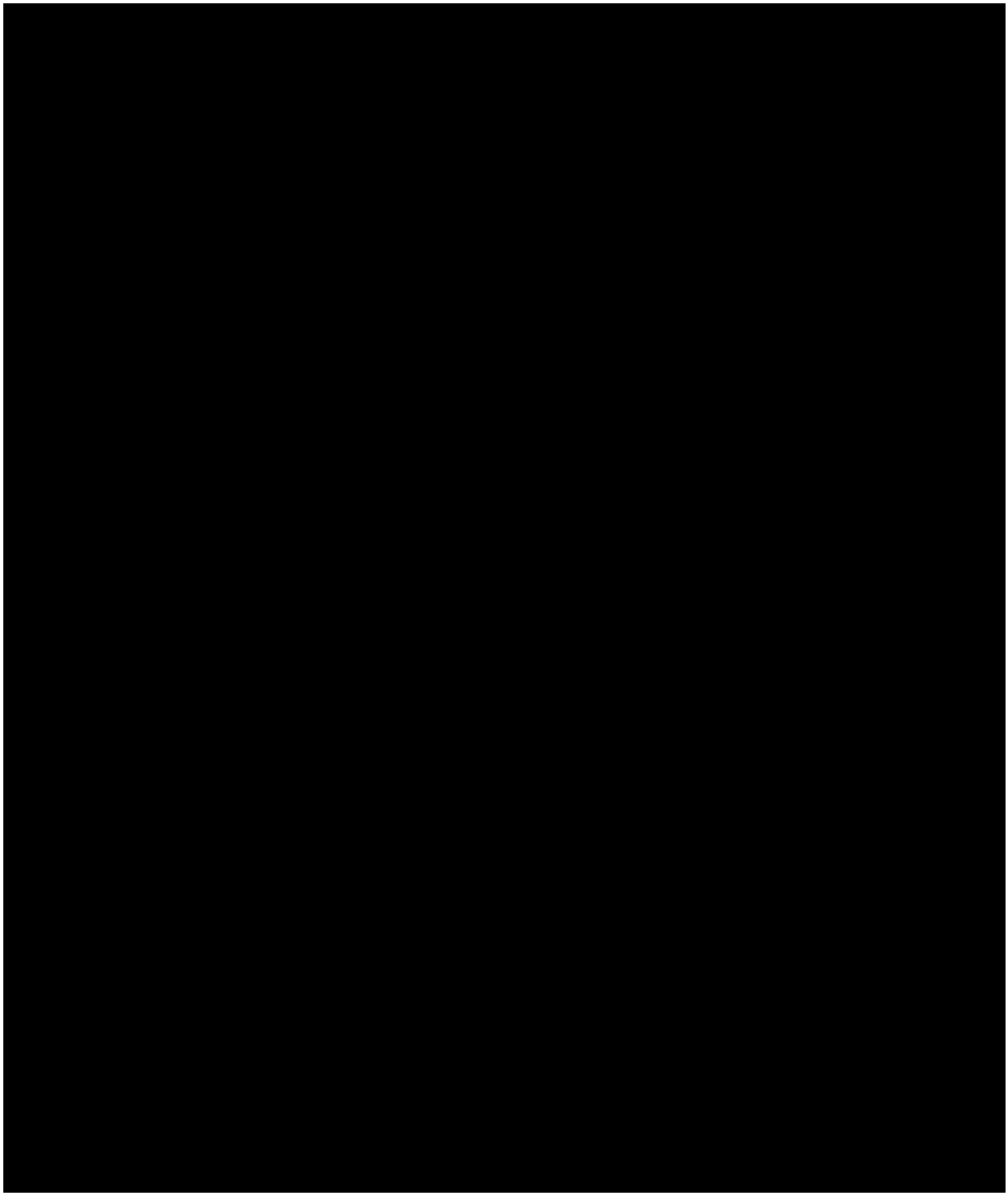
[1] The Wesel Opening Report also accuses the iPhone 4S of infringing because it accuses a baseband processor made by Qualcomm. However, I have been informed that Judge Koh has excluded the iPhone 4S from this case. Accordingly, I have not addressed Prof. Wesel's accusations regarding the iPhone 4S or Qualcomm's baseband chip.

[2] [redacted]

28.

29.

30. [redacted]



31

[redacted]

32. Each scrambling code generator creates two segments of m-sequences *x* and *y* using two shift registers of the type shown in Figure 10, reproduced below.

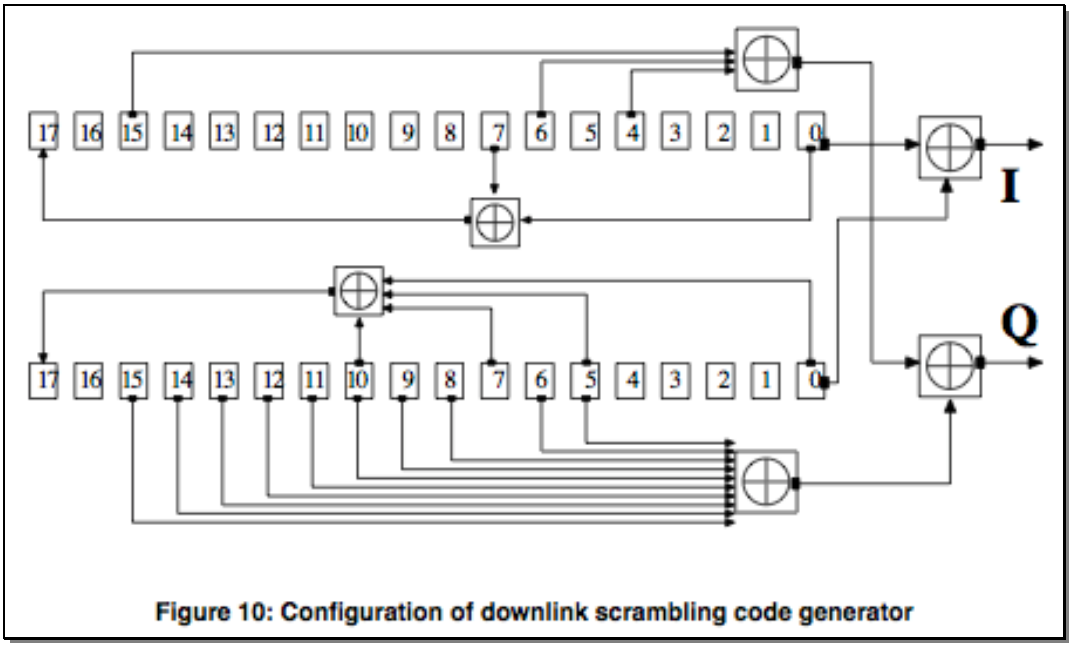


Figure 10: Configuration of downlink scrambling code generator

3GPP TS 25.213 v6.0.0 at 23.

33. As specified in the 25.213 standard, the X-GOLD 608 and 616 are able to generate both *primary* and *secondary* scrambling codes. For example, 25.213 states:

[5] Prof. Wesel apparently accuses devices compliant with either version 5.0.0 or 6.0.0 of 25.213 of infringing. In this report, I have cited to version 6.0.0 of the standard. As regards the '867 patent, those two versions of the standard are not materially different.

> A total of 2^{18}-1 = 262,143 scrambling codes, numbered 0…262,142 can be generated. However not all the scrambling codes are used. The scrambling codes are divided into 512 sets each of a primary scrambling code and 15 secondary scrambling codes.
>
> The primary scrambling codes consist of scrambling codes n=16*i where i=0…511. The i:th set of secondary scrambling codes consists of scrambling codes 16*i+k, where k=1…15.
>
> There is a one-to-one mapping between each primary scrambling code and 15 secondary scrambling codes in a set such that i:th primary scrambling code corresponds to i:th set of secondary scrambling codes.

3GPP TS 25.213 v6.0.0 at 22.

34. The 25.213 standard also includes a mathematical definition of the scrambling codes generated by the X-GOLD 616 and 608. It states:

> The n:th Gold code sequence z_n, $n=0,1,2,\ldots,2^{18}-2$, is then defined as:
>
> - $z_n(i) = x((i+n) \text{ modulo } (2^{18} - 1)) + y(i) \text{ modulo } 2$, $i=0,\ldots, 2^{18}-2$.
>
> These binary sequences are converted to real valued sequences Z_n by the following transformation:
>
> $$Z_n(i) = \begin{cases} +1 & \text{if } z_n(i) = 0 \\ -1 & \text{if } z_n(i) = 1 \end{cases} \quad \text{for} \quad i = 0,1,\ldots,2^{18} - 2.$$
>
> Finally, the n:th complex scrambling code sequence $S_{dl,n}$ is defined as:
>
> - $S_{dl,n}(i) = Z_n(i) + j\, Z_n((i+131072) \text{ modulo } (2^{18}-1))$, $i=0,1,\ldots,38399$.
>
> Note that the pattern from phase 0 up to the phase of 38399 is repeated.

3GPP TS 25.213 v6.0.0 at 23.[6]

35. As described above, the n^{th} scrambling code $S_{dl,n}$ is a complex code containing a real part $Z_n(i)$ mod $(2^{18}-1)$, and an imaginary part $Z_n(i+131072)$ mod $(2^{18}-1)$. The real and imaginary parts of the n^{th} scrambling code are sequences $Z_n(i)$ and $Z_n(i+131072)$, respectively, each of which comprises values +1 and -1 (i.e., they are {1,-1}-valued sequences).[7]
36. These {+1,-1}-valued sequences that form the real and imaginary portions of a scrambling code are each constructed from portions of a{0,1}-valued Gold code $z_n(i)$, as described on p. 23 of 25.213 v6.0.0, shown above.

III. There is no infringement of claims 25-27 and 30

37. As explained below, the accused products do not infringe the asserted claims of the '867 patent, either literally or under the doctrine of equivalents.

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[6] Prof. Wesel cites to this same portion of the 25.213 standard. See, e.g., Wesel Opening Report at ¶84.
[7] In this report, I will use the term "{1,0}-valued" to describe sequences that comprise 0s and 1s, and I will use the term "{+1,-1}-valued" to describe sequences that comprise +1s and -1s.

38. [redacted]

39. [redacted]

40. I have reviewed the source code cited by Dr. Wesel in his Opening Report and First Supplemental Report, and the code is consistent with the noninfringement arguments I describe herein. I have not yet had adequate time to review the Second Supplemental Report of Dr. Wesel, which was submitted by Samsung only three days ago, but I have no reason to believe that any of the source code cited in that report is inconsistent with the arguments described herein.

A. The Asserted Claims Require the Scrambling Codes to Be Gold Codes

1. The Claims

41. Claim 25, the only asserted independent claim, requires the primary scrambling code to be a Gold code. Claim 25 recites:

> …at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a $(((K-1)*M+K)-1)$-times shifted first m-sequence and the second m-sequence, wherein K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code.

Claim 25 of the '867 patent (emphasis added).

42. That language of claim 25 requires the K^{th} primary scrambling code to be a Gold code.

43. Similarly, claim 26 recites:

> 26. The apparatus of claim 25, wherein the secondary scrambling codes of the K^{th} primary scrambling codes are the $((K-1)*M+K+1)^{th}$ through $(K*M+K)^{th}$ Gold codes.

Claim 26 of the '867 patent (emphasis added).

44. Once again, that claim language requires the secondary scrambling codes to be Gold codes.

2. The Specification

45. The specification of the '867 patent also explains that the scrambling codes of the alleged invention are Gold codes. It recites:

> A gold code used herein as a scrambling code is generated through binary adding of two distinct m-sequences.

'867 patent at 6:23-24 (emphasis added).

> First, when a gold sequence is selected from 2^{18}-1 length gold sequences, the first 38400 chips are used **as** a primary scrambling code…

'867 patent at 6:64-7:32 (emphasis added).

> Referring to FIG. 9, when M secondary scrambling codes correspond to one primary scrambling code, the first (M+2)-th, (2M+3)-th, . . . , ((K-1)*M+K)-th, . . . , and (511M+512)-th gold codes are used **as** primary scrambling codes. The secondary scrambling codes corresponding to the ((K-1)*M+K)-th gold code used as the (K)-th primary scrambling code **are composed of** M gold codes[8], i.e., ((K-1)*M+(K+1)), ((K-1)*M+(K+2)) . . . , and (K*M+K)-th gold codes.

'867 patent at 10:40-48 (emphasis added).

46. The final quote above makes it particularly clear that the scrambling codes are Gold codes.

3. The File History

[8] In this and similar quotes, the '867 patent and file history clarify that each of the M secondary scrambling codes is a single Gold code. In the '867 patent, there is a one-to-one correspondence between scrambling codes and Gold codes.

47. During prosecution of the '867 patent, Samsung confirmed that the claimed scrambling codes are Gold codes. For example, Samsung stated:

> Regarding new [pending] Claim 59[9], new Claim 59 recites, "an apparatus for generating scrambling codes in mobile communication system having a scrambling code generator", "a first m-sequence generator to generate a first m-sequence", and "a second m-sequence generator to generate a second m-sequence". In this context, the description on page 7 discloses in lines 14 and 15 that a Gold code used herein **as** a scrambling code is generated through binary adding of two distinct m-sequences.
>
> Moreover, new Claim 59 recites, "at least one adder for generating a ((K-1)*M+K)-th gold code as a K-th primary scrambling code by adding a ((K-1)*M+K-1)-times shifted first m-sequence and the second m-sequence". The description on page 12, lines 24 to 26 discloses, referring to Fig. 9, that when M secondary scrambling codes correspond to one primary scrambling code, the first, (M+2)'th, (2M+3)'th, ... , ((K-l)*M+K),th, …, and (511M+512)'th **Gold codes are used as primary scrambling codes**. The description also discloses on page 7, lines 23 to 25, that for the purpose of the present invention, the sum of the m-sequence m1(t) cyclically shifted time and the m-sequence m2(t) will be designated as a Gold code g, that is, g (t) = m1(t +)+m2(t).
>
> Finally, new Claim 59 recites, "wherein K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code". The description on page 12, lines 26 to 29 discloses that **the secondary scrambling codes** corresponding to the (((K-1)*M+K)'th Gold code used as the (K)'th primary scrambling code **are composed of M Gold codes**, i.e., ((K1)*M+(K+1)), ((K-1)*M+(K+2))..., and (K*M+K)'th Gold codes.

April 28, 2006, response at 15 (emphasis added).

> The present invention discloses:
>
> 1) generating a primary scrambling code and secondary scrambling codes with predetermined 2 m sequences;
>
> 2) using the sum of the first m sequence shifted (L-l) times and the first m sequence as L^{th} gold code; and
>
> 3) using ((K-l)*M+K)-th gold code **as** a K-th primary scrambling code (See claims 54, 59, and 65), and using ((K-l)*M+K+l)-

[9] Pending claim 59 corresponds to issued claim 25.

> (K*M+K)-th gold codes **as** secondary scrambling code corresponding to the K-th primary scrambling code (e.g., claim 54).

December 11, 2006, response at 16 (emphasis original).

> The invention as recited in Claim 59 relates to an apparatus for generating scrambling codes in mobile communication system having a scrambling code generator. The apparatus includes a first m-sequence generator to generate a first m-sequence. (Specification at page 1, line 18 to page 20, line 23, FIG. 10). The apparatus further includes a second m-sequence generator to generate a second m-sequence. (Specification at page 19, line 18 to page 20, line 23, FIG. 10). The apparatus still further includes at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code **as** a K^{th} primary scrambling code by adding a ((K-1)*M+K-1)-times shifted first m-sequence and the second m-sequence. (Specification at page 18, line 25 to page 19, line 18, and page 11, lines 6-15). Finally, in the apparatus K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code. (Specification at page 18, line 25 to page 19, line 18).

September 13, 2007, appeal brief at 4 (emphasis added).

> Claim 59 recites an apparatus for generating scrambling codes in mobile communication system having a scrambling code generator. The apparatus includes a first m-sequence generator to generate a first m-sequence. The apparatus further includes a second m-sequence generator to generate a second m-sequence. The apparatus still further includes at least one adder for generating a $((K-l)*M+K)^{th}$ Gold code **as** a K^{th} primary scrambling code by adding a ((K-l)*M+K-I)-times shifted first m-sequence and the second m-sequence. Finally, in the apparatus K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code.

September 13, 2007, appeal brief at 20 (emphasis added).

> Thus in Claim 59 a K-th primary scrambling code is generated. A specific gold code is used **as** the K-th primary scrambling code. The specific gold code is the ((K-l)*M+K)-th gold code. The ((K-l)*M+K^{th} gold code is generated by adding a ((K-l)*M+K-l)-times shifted first m-sequence and the second m-sequence. The K-th primary scrambling code is directly related to the total number of secondary scrambling codes per one primary scrambling code.

September 13, 2007, appeal brief at 21 (emphasis added).

48. Summarizing, during prosecution, Samsung repeatedly said that the claimed scrambling codes are Gold codes.

4. Summary

49. The language in the asserted claims is clear: the claimed scrambling codes must **be** Gold codes. The specification of the '867 patent also explains that the scrambling codes of the invention **are** Gold codes. Finally, during prosecution, Samsung repeatedly explained that the scrambling codes of the asserted claims **are** Gold codes.

50. Therefore, as explained below, the asserted claims cannot cover processors like Intel's in which the scrambling codes are **not** Gold codes.

B. The Accused Products Do Not Infringe Because Their Scrambling Codes are Not Gold Codes

51. As described above, the scrambling code generators of the accused products implement §5.2.2 of the 3GPP TS 25.213 standard. According to this section of the 25.213 standard, the n^{th} scrambling code $S_{dl,n}(i)$ is a complex number, comprising a real part $Z_n(i)$ and an imaginary part $jZ_n(i+131072 \text{ (modulo } 2^{18}-1))$, as shown below:

> The n:th Gold code sequence z_n, $n=0,1,2,\ldots,2^{18}-2$, is then defined as:
>
> - $z_n(i) = x((i+n) \text{ modulo } (2^{18} - 1)) + y(i) \text{ modulo } 2$, $i=0,\ldots, 2^{18}-2$.
>
> These binary sequences are converted to real valued sequences Z_n by the following transformation:
>
> $$Z_n(i) = \begin{cases} +1 & \text{if } z_n(i) = 0 \\ -1 & \text{if } z_n(i) = 1 \end{cases} \quad \text{for} \quad i = 0,1,\ldots,2^{18} - 2.$$
>
> Finally, the n:th complex scrambling code sequence $S_{dl,n}$ is defined as:
>
> - $S_{dl,n}(i) = Z_n(i) + j\, Z_n((i+131072) \text{ modulo } (2^{18}-1))$, $i=0,1,\ldots,38399$.
>
> Note that the pattern from phase 0 up to the phase of 38399 is repeated.

25.213v6.0.0 at 23.

52. [redacted]

[redacted]

53. [redacted]

[redacted]

a) No Literal Infringement

54 [redacted]

b) No Infringement Under the Doctrine of Equivalents

55. [redacted]

56. [redacted]

[redacted]

57. Even though Prof. Wesel was clearly on notice of this position, he failed to provide any analysis regarding infringement under the doctrine of equivalents. That reinforces my view that Samsung has failed to carry its burden to establish infringement under the doctrine of equivalents.

58. [redacted]

59. [redacted]

60. [redacted]

61. Therefore, the asserted claims of the '867 patent cannot be infringed under the doctrine of equivalents.

(i) Claim 30

62. Claim 30 reads,

> 30. The apparatus as claimed in claim 25, wherein the primary scrambling code and secondary scrambling code are I-channel components and the apparatus further comprises a means for delaying at least one of the primary scrambling codes and secondary scrambling code to produce Q-channel components.

63. Although Prof. Wesel has not argued that claim 30 affects the interpretation of independent claim 25 such that it can be infringed, either literally or under the doctrine of equivalents, I note that nothing about claim 30 changes my opinion expressed above regarding claim 25.

64. [redacted]

[redacted]

65. [redacted]

2. The Scrambling Codes Generated by the Accused Products are Not {0,1}-Valued Sequences, as Required by the '867 Claims

66. [redacted]

67. [redacted]

68. Claim 25, the only asserted independent claim, recites:

> …at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a $(((K-1)*M+K)-1)$-times shifted first m-sequence and the second m-sequence, wherein K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code.

Claim 25 of the '867 patent (emphasis added).

69. Claim 26 has a similar requirement for secondary scrambling codes.

70. That is, the asserted claims require the scrambling codes to be Gold codes, each of which is generated by binary adding together two m-sequences. The '867 patent makes clear that the m-sequences and Gold codes are {0,1}-valued sequences, i.e., each element of the Gold code is either a "0" or a "1." See, e.g., the '867 patent at 4:3-4 ("Referring to FIG. 5, a gold sequence is normally generated through binary adding to two distinct m-sequences") (emphasis added), 6:23-24 ("A gold code used herein as a scrambling code is generated through binary adding of two distinct m-sequences") (emphasis added). Moreover, the shift registers described in the '867 patent contain values comprising 0s and 1s, and these values are read out of the shift register and added together using modulo 2 arithmetic to form Gold codes. See, e.g., Figure 10 of the '867 patent, reproduced below, showing shift registers 1040 and 1045, and binary adders 1010, 1015,

1030, 1032, 1034, all of which are depicted using the same symbol. See also the '867 patent at 11:23-27 ("The first m-sequence generator 1050 generates the first m-sequence using the register memory 1040 and the adder 1010 which is a binary adder that adds the {1,0} values from the registers 0 and 7 of the register memory 1040 and outputs the sum into the register 17.") (emphasis added).

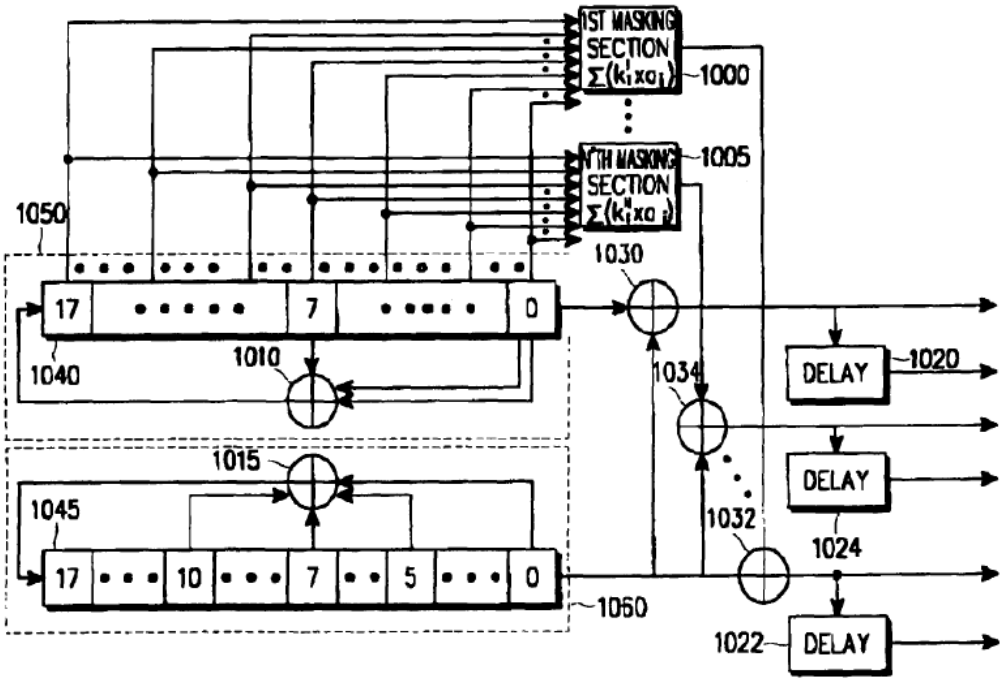


FIG. 10

71. One of ordinary skill in the art would understand that these operations can only be performed using binary arithmetic, which operates on {0,1}-valued sequences containing 0s and 1s. This is consistent with the understanding of those of ordinary skill that Gold codes are {0,1}-valued sequences.

72. [redacted]

73. [redacted]

a) No Literal Infringement

74. [redacted]

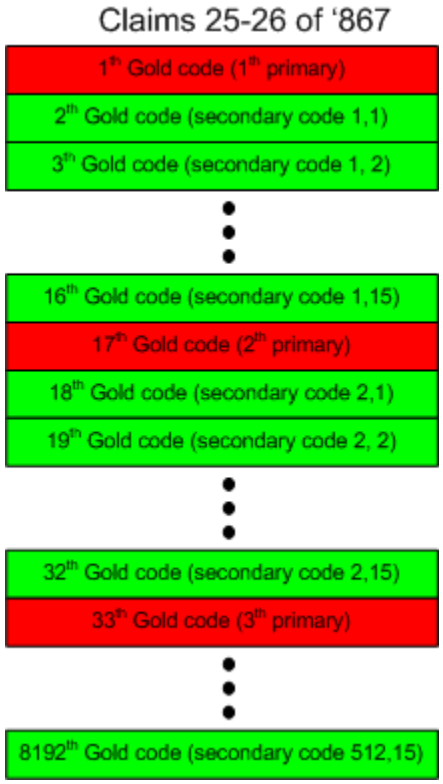
b) No Infringement under the Doctrine of Equivalents

75. [redacted]

76. [redacted]

C. The Accused Products do Not Use the Indexing Required by the Asserted Claims

77. The asserted claims of the '867 patent require a specific indexing, or numbering, of the scrambling codes. The indexing required by the claims is illustrated in the drawing below, for the case in which there are fifteen secondary codes for every primary code and there are a total of 512 primary codes.[10] Claim 25 specifies only the indexing used for the primary codes (illustrated in red in the drawing below). Dependent claim 26 specifies the indexing used for the secondary codes (illustrated in green in the drawing below). Together, claims 25 and 26 require the indexing illustrated in the drawing.



78. Of particular interest, in the asserted claims, the indexing begins with the 1th code, i.e., there is no 0th code. That the asserted claims exclude a 0th code can be shown in a variety of ways. First, the wherein clause of claim 25 recites that "K is a natural number." Natural numbers are positive integers. The smallest natural number is one. If the value of K=1 is plugged into claim 25, it yields,

[10] By making M, i.e., the number of secondary codes per primary code, be 15, and by using 512 primary codes, I have made the figure be as similar as possible to the indexing of 25.213.

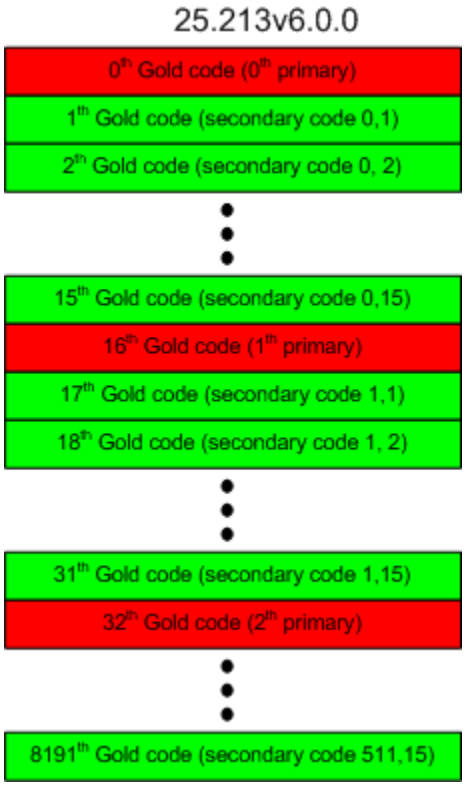
at least one adder for generating a 1th Gold code as a 1th primary scrambling code by adding a 0-times shifted first m-sequence and the second m-sequence…

79. In other words, plugging K=1 into claim 25 results in the 1th primary scrambling code being the 1th Gold code, which is exactly what is illustrated in the drawing.

80. [redacted]

81. [redacted]

82. The drawing below shows the indexing specified by 25.213 v6.0.0.

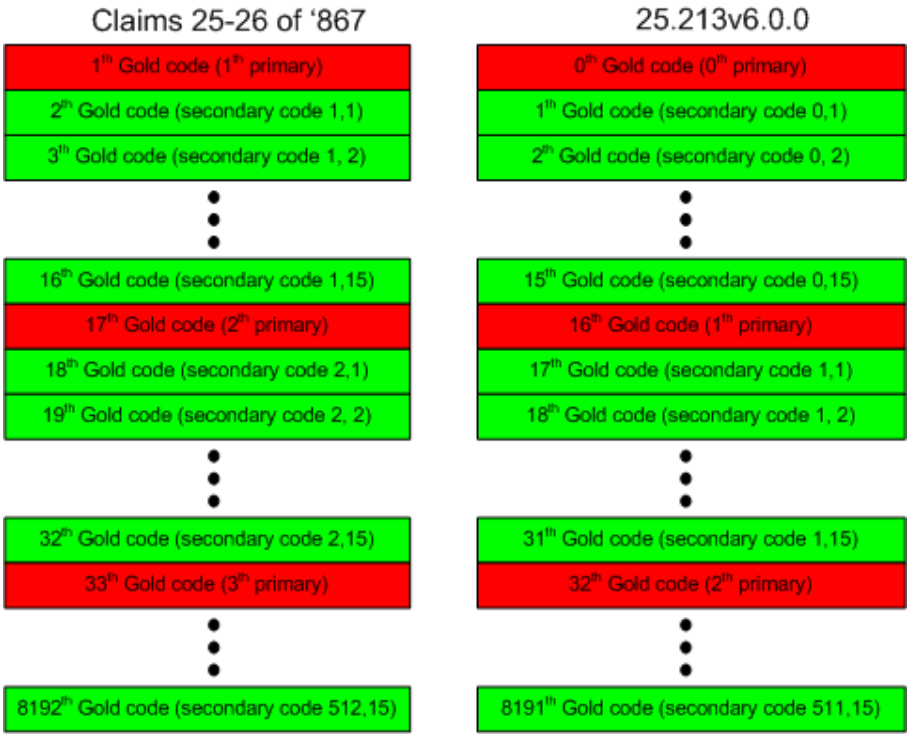


83. The portion of the 25.213 standard that requires the indexing specified in the drawing above is copied below.

> 5.2.2 Scrambling code
>
> A total of 2^{18}-1 = 262,143 scrambling codes, numbered 0…262,142 can be generated. However not all the scrambling codes are used. The scrambling codes are divided into 512 sets each of a primary scrambling code and 15 secondary scrambling codes.
>
> The primary scrambling codes consist of scrambling codes n=16*i where i=0…511. The i:th set of secondary scrambling codes consists of scrambling codes 16*i+k, where k=1…15.
>
> There is a one-to-one mapping between each primary scrambling code and 15 secondary scrambling codes in a set such that i:th primary scrambling code corresponds to i:th set of secondary scrambling codes.
>
> Hence, according to the above, scrambling codes k = 0, 1, …, 8191 are used. Each of these codes are associated with a left alternative scrambling code and a right alternative scrambling code, that may be used for compressed frames. The left alternative scrambling code corresponding to scrambling code k is scrambling code number k + 8192, while the right alternative scrambling code corresponding to scrambling code k is scrambling code number k + 16384. The alternative scrambling codes can be used for compressed frames. In this case, the left alternative scrambling code is used if n<SF/2 and the right alternative scrambling code is used if n≥SF/2, where $c_{ch,SF,n}$ is the channelisation code used for non-compressed frames. The usage of alternative scrambling code for compressed frames is signalled by higher layers for each physical channel respectively.

25.213v6.0.0 at 22.

84. The drawing below compares the indexing required by the asserted claims and that of 25.213.[11] As shown, they are not identical.



[11] Again, by making M, i.e., the number of secondary codes per primary code, be 15, and by using 512 primary codes, I have made the indexing required by the asserted claims appear as similar as possible to the indexing of 25.213.

1. No Literal Infringement

85. [redacted]

86. [redacted]

87. [redacted]

2. No Infringement Under the Doctrine of Equivalents

88. [redacted]

89. The prosecution of the '867 patent took almost eight years.[12] After the examiner had finally rejected the claims, Samsung filed an appeal brief. In that appeal brief, Samsung distinguished the cited prior art as follows:

> Claim 59 [which corresponds to asserted claim 25] recites an apparatus for generating scrambling codes in mobile communication system having a scrambling code generator. The apparatus includes a first m-sequence generator to generate a first m-sequence. The apparatus further includes a second m-sequence

[12] The application that led to the '867 patent was filed on Jul. 7, 2000, and the patent issued on Apr. 22, 2008.

> generator to generate a second m-sequence. The apparatus still further includes at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a $((K-1)*M+K-1)$-times shifted first m-sequence and the second m-sequence. Finally, in the apparatus K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code…
>
> Since neither Dahlman et al. nor Dahlman nor Bums teach or disclose at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a $((K-1)*M+K-1)$-times shifted first m-sequence and the second m-sequence, wherein K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code, neither reference, nor any combination thereof, can be used to render obvious Claim 59

September 13, 2007, appeal brief at 20-21 (emphasis added).

90. That is, Samsung distinguished the prior art by arguing that it did not teach the equations embedded in claim 25 that specify the claim's indexing. Having distinguished the prior art by arguing the importance of those limitations (i.e., the importance of the indexing), Samsung cannot now argue that those limitations are infringed under the doctrine of equivalents. Also, Samsung's argument regarding the required indexing was not limited to the material quoted above. Samsung went on to argue:

> Thus in Claim 59 a K-th primary scrambling code is generated. **A specific gold code is used** as the K-th primary scrambling code. The specific gold code is the $((K-1)*M+K)$-th gold code. The $((K-1)*M+K)^{th}$ gold code is generated by adding a $((K-1)*M+K-1)$-times shifted first m-sequence and the second m-sequence. The K-th primary scrambling code is directly related to the total number of secondary scrambling codes per one primary scrambling code.
>
> The Examiner alleges that generating a $((K-1)*M+K)$-th gold code as a K-th primary scrambling code of Claim 59 is disclosed by Dahlman et al. [footnote omitted]
>
> As stated above in section 2C, neither Dahlman et al., Dahlman or Burns teach or disclose an adder for adding two m-sequences to generate a scrambling code, namely, at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a $((K-1)*M+K-1)$-times shifted first m-sequence and the second m-sequence…

> Therefore, neither Dahlman et aI., Dahlman nor Burns, or any combination thereof, teaches of discloses at least one adder for generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a ((K−l)*M+K−l)-times shifted first m-sequence and the second m-sequence, wherein K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code.
>
> Since neither Dahlman et al., Dahlman nor Burns, either alone or in combination, teaches or discloses at least this recitation of Claim 59 of the present application, of at least one adder for generating a $((K-l)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a ((K−l)*M+K−l)-times shifted first m-sequence and the second m-sequence, wherein K is a natural number and M is a total number of secondary scrambling codes per one primary scrambling code, Claim 59 cannot be rendered unpatentable over Dahlman et al., Dahlman nor Burns.

September 13, 2007, appeal brief at 21-22 (emphasis added).

91. As shown by the quote above, Samsung again distinguished pending claim 59 (which corresponds to asserted independent claim 25), by arguing that the claimed indexing was not taught in the prior art. In the above argument, Samsung made the indexing argument by describing the "specific Gold code" required by the claims. After Samsung presented these arguments, the examiner allowed the claims. Again, having obtained its claims by specifically arguing the importance of the required indexing, Samsung cannot now argue that the indexing requirements of the claims are infringed under the doctrine of equivalents.

3. Invalidity

92. In the Stark Invalidity Report, I explained (e.g., in connection with Figure I) that the difference between the '867 patent's organization of codes and the prior art's organization is trivial and not patentable.

93. The difference described above between the indexing of the asserted claims and the indexing of the 25.213 standard (and the accused products) may also be a minor one. However, that difference relates to the indexing limitations (i.e., the equations embedded in claim 25, which require a particular indexing), which Samsung used during

prosecution to distinguish the prior art that was before the examiner.[13] The end result is that the '867 patent is both not infringed and invalid (e.g., over Ericsson).[14]

IV. Secondary Considerations of Non-Obviousness

94. [redacted]

95. Scrambling codes were widely known in the prior art, as were ways of generating them. As explained in my invalidity report, specifying a particular organization of scrambling codes was a trivial implementation detail needing only to be agreed upon before the technology could be specified in the standard. See, e.g., the Stark Invalidity Report at paras. 12-13.

96. Ericsson proposed a solution to the problem of generating and organizing scrambling codes shortly before Samsung made its own proposal. Ericsson solved the problem of organizing scrambling codes in a way that was different than, but as good as, Samsung's method. See my invalidity report at paras. 11-13 and Fig. 1, and Ericsson's proposal at APLNDC- WH0000013868-73.

97. [redacted]

98. [redacted]

V. Alternative Technology

99. In the Stark Invalidity Report, I reviewed alternative technology that could have been adopted by the 3GPP committee. See, e.g., Stark Invalidity Report at ¶188.

100. Another alternative to the '867 patent is to avoid use of the m-sequence generators required by claim 25, i.e., the only asserted independent claim. As an

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[13] As explained in my invalidity report, the prior art that was before the examiner is inferior to the prior art on which my invalidity opinions are based, such as Ericsson.

[14] I note that like the prior art, the indexing of 25.213 (and the accused products) begins at zero, not at one as is done in the asserted claims.

example, instead of using m-sequence generators, the two m-sequences used in 25.213 could be stored in advance in memory and then read out of the memory as needed. Such an implementation would avoid all the asserted claims of the '867 patent, and would not incur any significant loss of performance or additional cost. Each of the two m-sequences is 2^{18}-1 bits long, so storing both of them would require a total of 2^{19}-2 bits (i.e., 64 kilobytes) of memory. In practical terms, 64kB is a negligible amount of data; many common mobile devices, including the Accused Products, have storage capacities more than 100,000 times this size. Thus, this approach would be at least as feasible and cost-efficient as the approach described in the '867 claims.

Trial Exhibits

101. I may rely on visual aids and demonstrative exhibits that demonstrate the bases of my opinions. Examples of these visual aids and demonstrative exhibits may include, for example, claim charts, patent drawings, excerpts from patent specifications, file histories, interrogatory responses, deposition testimony and deposition exhibits, as well as charts, diagrams, videos and animated or computer-generated video.

102. Other than as referred to in this report, I have not yet prepared any exhibits for use at trial as a summary or support for the opinions expressed in this report, but I expect to do so in accordance with the Court's scheduling order.

VI. Supplementation of opinions

103. I reserve the right to supplement my opinions after I have and the opportunity to review expert reports or other materials from Samsung or other additional documents or materials that are brought to my attention.

Date: April 16

Wayne E. Stark