UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE PATENT TRIAL AND APPEAL BOARD

_____

BLACKBERRY CORPORATION ET AL.
Petitioner

v.

WI-LAN USA, INC.
Patent Owner

_____

Case IPR_____
Patent 6,260,168 B1

_____

PETITION FOR *INTER PARTES* REVIEW

OF CLAIMS 1-5, 7 AND 8 OF U.S. PATENT NO. 6,260,168

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EX. 1004: EIA/TIA IS-54-B Interim Standard: Cellular System Dual-Mode Mobile Station – Base Station Compatibility Standard, IS-54-B ("IS-54-B")

EX. 1005: Masnick, B., Wolf, J., "On Linear Unequal Error Protection Codes" IEEE Trans. On Information Theory, vol. IT-3 (no. 4) (Oct. 1967)("Masnick")

EX. 1006: Modestino, J., Daut, D., "Combined Source-Channel Coding of Images," IEEE Trans. On Comm., vol. COM-27 (no. 11)(Nov. 1979)("Modestino")

EX. 1007: Farvardin, N., "A Study of Vector Quantization for Noisy Channels," IEEE Trans. On Information Theory, vol. 34 (no. 4)(July 1990)("Farvardin")

EX. 1008: European Telecommunication Standards Institute (ETSI), Global Systems for Mobile Communications: Digital Cellular Telecommunications System (Phase 2+); Channel Coding (GSM 05.03 version 5.2.2) (April 1997)("GSM 05.03")

EX. 1009: Suda, H., Miki, T., "An Error Protected 16 kbit/s Voice Transmission for Land Mobile Radio Channel," J. on Selected Areas in Comm., vol. 6, no. 2, IEEE, (Feb. 1988)("Suda")

EX. 1010: Swaminathan, K., et al., "Selective Error Projection of ITU-T G.729 CODEC for Digital Cellular Channels," 0-7803-3192, IEEE (March 1996)("Swaminathan")

EX. 1011: United States Patent No. 5,699,369 to Guha ("Guha")

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I. INTRODUCTION

Blackberry Corporation, *et al*. ("Petitioner" or "BlackBerry") petitions for *Inter Partes* Review ("IPR") under 35 U.S.C. §§ 311–319 and 37 C.F.R. § 42 of claims 1-5, 7 and 8 of U.S. Patent No. 6,260,168 (the "`168 Patent"), and asserts that there is a reasonable likelihood that it will prevail with respect to at least one of the claims challenged in this Petition.

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)

A. REAL PARTY-IN-INTEREST UNDER 37 C.F.R. § 42.8(b)(1)

Blackberry Limited (f/k/a Research In Motion Limited) and Blackberry Corporation (f/k/a Research In Motion Corporation) collectively d/b/a BlackBerry ("Petitioner"), are the real parties-in-interest for the instant Petition. Blackberry Corporation is a Delaware company, having a principal place of business at 14850 Quorum Drive, Suite 325, Dallas, Texas 75254, which operates as a subsidiary of Blackberry Limited, a Canadian corporation having a principal place of business at 295 Phillip Street, Waterloo, Ontario, N2L 3W8 Canada.

B. RELATED MATTERS UNDER 37 C.F.R. § 42.8(b)(2)

Petitioner is a named defendant in pending litigation concerning the `168 Patent styled *Wi-LAN USA, Inc. v. Research In Motion Ltd., et al.*, Southern District of Florida, Case No. 1:12-cv-24349 -DMM. The complaint was originally filed on December 10, 2012, and amended on February 25, 2013. *See* EX. 1016.

Petitioner is not aware of any pending prosecution or administrative proceedings concerning the `168 Patent.

C. LEAD AND BACK-UP COUNSEL UNDER 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

LEAD COUNSEL	BACK-UP COUNSEL
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D. SERVICE INFORMATION

Please address all correspondence to the lead and back-up counsel at the address provided in Section II(C) of this Petition. Petitioner also consents to electronic service by email at:

IPdocketMWE@MWE.com, pdevinsky@mwe.com and mmccloskey@mwe.com

III. PAYMENT OF FEES – 37 C.F.R. § 42.103

The Patent and Trademark Office is hereby authorized to charge Deposit Account No. 500417 for the fee set in 37 C.F.R. § 42.15(a) for this Petition for *Inter Partes* Review, and for any additional fees that may be due as a result of the submission of this Petition.

IV. REQUIREMENTS FOR IPR UNDER 37 C.F.R. §§ 42.104

A. Grounds for Standing Under 37 C.F.R. § 42.104(a)

Petitioner certifies that the `168 Patent is eligible for *inter partes* review and further certifies that Petitioner is not barred or otherwise estopped from requesting *inter partes* review challenging the identified claims on the grounds noted within the present petition. This petition is being filed within one year of the filing of the original complaint against Petitioner in the litigation described above.

B. Identification of Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested

Petitioner requests *inter partes* review of claims 1-5, 7 and 8 of the `168 Patent on the grounds set forth in the table below and requests that each of the claims be found unpatentable. The statutory grounds upon which claims 1-5, 7 and 8 are unpatentable are identified below, including detailed claim charts specifying where each claim element is found in the prior art patents or publications.[1] Additional explanation and support for each proposed ground of rejection is provided in the Declaration of Dr. Wayne Stark, Ph.D. ("Stark Dec.")(EX. 1001).

`168 Patent Claims	Basis for Rejection
1, 4, 5 and 8	Anticipation under § 102(b) by IS-54-B

[1] Exemplary portions of the exhibits corresponding to the references cited in the claim charts below have been highlighted for the convenience of the reader.

`168 Patent Claims	Basis for Rejection
5 and 8	Anticipation under § 102(b) by Farvardin
1, 4, 5 and 8	Anticipation under § 102(b) by GSM 05.03
5 and 8	Anticipation under § 102(b) by Suda
5 and 8	Anticipation under § 102(b) by Chennakeshu
5 and 8	Anticipation under § 102(b) by Suzuki
1, 4, 5 and 8	Obviousness under § 103(a) by IS-54-B in view of Admitted Prior Art ("APA")
1, 4, 5 and 8	Obviousness under § 103(a) by Masnick in view of APA
1, 4, 5 and 8	Obviousness under § 103(a) by Modestino in view of APA
1, 4, 5 and 8	Obviousness under § 103(a) by Farvardin in view of APA
1, 4, 5 and 8	Obviousness under § 103(a) by GSM 05.03 in view of APA
1, 4, 5 and 8	Obviousness under § 103(a) by Suda in view of APA
1, 4, 5 and 8	Obviousness under § 103(a) by Swaminathan in view of APA
1, 4, 5 and 8	Obviousness under § 103(a) by Suzuki in view of APA
2, 3, and 7	Obviousness under § 103(a) by Chennakeshu in view of Guha and APA
1-5, 7 and 8	Obviousness under § 103(a) by Meany in view of Guha and APA
2, 3 and 7	Obviousness under § 103(a) by Suda in view of Guha and APA
5 and 8	Obviousness under § 103(a) by APA in view of Dent

The IS-54-B standard

The IS-54-B standard was published by April 1992 and, therefore, qualifies as prior art against the `168 Patent under 35 U.S.C. § 102(b).

Farvardin

Farvardin, from the IEEE Transactions On Information Theory, Vol. 34, No. 4, was published in July 1990 and, therefore, qualifies as prior art under 35 U.S.C. § 102(b).

GSM 05.03

The GSM 05.03 standard (version 5.2.2) was published by ETSI in April 1997 and, therefore, qualifies as prior art under 35 U.S.C. § 102(b).

Suda

Suda, from the IEEE Journal on Selected Areas in Comm., Vol. 6, No. 2, was published in February 1988, and, therefore, qualifies as prior art under 35 U.S.C. § 102(b).

Chennakeshu

Chennakeshu, U.S. Patent No. 5,349,589, was filed on July 1, 1991 and published on September 20, 1994 and, therefore, qualifies as prior art under 35 U.S.C. §§ 102(b).

Suzuki

Suzuki, U.S. Patent No. 5,699,369, was filed on July 2, 1997 and published on March 13, 2001 and therefore, qualifies as prior art under 35 U.S.C. § 102(e).

Masnick

Masnick, from IEEE Transactions On Information Theory, Vol. IT-3, No. 4, was published in October 1967 and, therefore, qualifies as prior art under 35 U.S.C. § 102(b).

Modestino

Modestino, from the IEEE Transactions On Comm., Vol. COM-27, No. 11, was published in November 1979 and, therefore, qualifies as prior art under 35 U.S.C. § 102(b).

Swaminathan

Swaminathan, from IEEE 0-7803-3192, was published in March 1996, and, therefore, qualifies as prior art under 35 U.S.C. § 102(b).

Guha

Guha, U.S. Patent No. 5,699,369, was filed on March 25, 1995 and published on December 16, 1997 and, therefore, qualifies as prior art under 35 U.S.C. §§ 102(a) and 102(e).

Meany

Meany, U.S. Patent No. 5,850,482, was filed on April 17, 1996 and published on December 15, 1998 and, therefore, qualifies as prior art under 35 U.S.C. § 102(e).

Dent

Dent, U.S. Patent No. 5,896,375, was filed on July 23, 1996 and published on April 20, 1999 and therefore, qualifies as prior art under 35 U.S.C. § 102(e).

C. Claim Construction under 37 C.F.R. §§ 42.104(b)(3)

In an *inter partes* review, "[a] claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b). Under the broadest reasonable construction standard, claims are to be given their broadest reasonable interpretation consistent with the specification, reading claim language in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of widely accepted meaning of commonly understood words. *Phillips v. AWC Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005)(en banc). Thus for the purposes of *inter partes* review only, Petitioner submits that the claim terms must be given their broadest reasonable construction in view of the specification of the `168 Patent.[2]

Petitioner has submitted the following claim chart, with constructions for

[2] Because claim interpretation as applied in litigation differs from the "broadest reasonable construction" that applies here, Petitioner is not bound in the noted related litigation by any of the PTO's interpretation of claims in this IPR proceeding. *See, e.g.*, *In re Zletz*, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

claims 5 and 8[3], to the district court in the noted related litigation. *See* EX. 1017 (April 24, 2013 Joint Claim Construction Statement at Exhibit C). Petitioner submits that the constructions in the claim chart are consistent with the plain and ordinary meaning of the claim language as reflected in the intrinsic claim construction materials (the claim language in light of the attached specification, and the prosecution history) associated with the `168 Patent. Petitioner submits that for purposes of *inter partes* review, the broadest reasonable interpretation of claims 1-5, 7 and 8 should include the constructions below, with the exception that limitations deriving from prosecution history should not be part of the broadest reasonable construction (*i.e.*, the broadest reasonable constructions would not include "paging network" as a limitation in either of claims 5 and 8).

Claim Term	**Construction**	**Intrinsic Support**
1. performing data communication (Claims 5 and 8)	performing data communication on a paging network	Title; Abstract; Fig. 1; Col. 1:10-64; Col. 2:30-32; Col. 2:40-65; Claims 1-8; May 26, 2000 Response to Office Action, at pp. 2-4; January 11, 2001 Response to Office Action, at pp. 2-6; April 4, 2001, Notice of Allowance, at p. 2
2. determining the portions of a data link	determining the portions of data within the data link	Abstract; Fig. 2; Col. 1:23-63; Col. 1:65 –

[3] Claims 1-4 and 7 are not asserted in the district court case.

layer (Claims 5 and 8)	layer	Col. 2:7; Col. 2:12-14; Col. 2: 66 – Col. 3: 13; Claims 1-8; May 26, 2000 Response to Office Action, at pp. 2-4; January 11, 2011 Response to Office Action, at pp. 2-6; April 4, 2001, Notice of Allowance, at p. 2
3. assigning a portion of the data link layer segments . . . and a second portion (Claim 5) **and** assigning a first portion of the data link layer segment . . . and a second portion (Claim 8)	assigning, at the data link layer, a first portion of data within the data link layer . . . and a second portion of data within the data link layer	Abstract; Fig. 2; Col. 1:23-58; Col. 1:65 – 2:7; Col. 2:12-14; Col. 2: 66 – Col. 3: 13; Claims 1-8; May 26, 2000 Response to Office Action, at pp. 2-4; January 11, 2011 Response to Office Action, at pp. 2-6; April 4, 2001, Notice of Allowance, at p. 2
4. a first component for determining the portions of a data link layer that do not require forward error correction coding (Claim 8)	This element is a means-plus-function element. The function is "determining the portions of data within the data link layer that do not require forward error correction coding." The structure is a software "data application coupled to a processing unit." Because the structure is software, an algorithm must be disclosed for performing the function for the claim to	Abstract; Fig. 1; Fig. 2; Col. 1:10-64; Col. 1:65-Col. 2:22; Col. 2:30-38; Col. 2:51-Col. 3:18; Claims 1-8; May 26, 2000 Response to Office Action, at pp. 2-4; January 11, 2011 Response to Office Action, at pp. 2-6; April 4, 2001, Notice of Allowance, at p. 2

	be definite. The specification fails to disclose requisite accompanying structure, and, therefore, the claim is invalid for being indefinite.	
5. a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination (Claim 8)	This element is a means-plus-function element. The function is "assigning, at the data link layer, a first portion of data within the data link layer to be forward error correction coded and a second portion of data within the data link layer to be unprotected by FEC according to the first component determination" The structure is a software "data application coupled to a processing unit." Because the structure is software, an algorithm must be disclosed for performing the function for the claim to be definite. The specification fails to disclose requisite accompanying structure, and, therefore, the claim is invalid for being indefinite.	Abstract; Fig. 1; Fig. 2; Col. 1:10-64; Col. 1:65-Col. 2:22; Col. 2:30-38; Col. 2:51-Col. 3:18; Claims 1-8; May 26, 2000 Response to Office Action, at pp. 2-4; January 11, 2011 Response to Office Action, at pp. 2-6; April 4, 2001, Notice of Allowance, at p. 2

Claim 8 of the `168 Patent contains means-plus-function limitations invoking 35 U.S.C. § 112(f). Claim 8 recites, *inter alia*, "a first *component for*

determining the portions of a data link layer that do not require forward error correction coding." In this situation, the claim terminology "component for . . ." invokes 35 U.S.C. § 112(f). See MPEP § 2181(I)(A) (stating "[t]he following is a list of non-structural terms that may invoke 35 U.S.C. 112, paragraph 6: 'mechanism for,' 'module for,' 'device for,' 'unit for,' '*component for*,' 'element for,' 'member for,' 'apparatus for,' 'machine for,' or 'system for.'")[Emphasis added] Petitioner notes that the `168 Patent specification does not describe "a first component for determining . . ." and no corresponding algorithm or steps are linked by the `168 Patent specification to the limitation of "determining."[4] Petitioner submits that this claim element should be construed to mean "a software

[4] Petitioner notes that while the `168 Patent specification describes the end results of a determination ("[t]ypically, a binary data application *would determine* that all of the data would require FEC, while a voice data application *may determine* that voice data did not require FEC [3:11-13]"), nowhere does it describe the process or acts for actually performing such "determining" or "determination"; and Patentee's statement about the end result of the "determining" process is merely a restatement of what the APA discloses, *i.e.*, "[e]rror detection and correction are vital for alphanumeric and binary data, but some types of data, such as voice data, may be designed to allow a certain amount of errors in transmission and therefore do not require FEC." [`168 Patent col. 1:50-53]

data application coupled to a processing unit and operative to determine portions of a data stream that *do not require* forward error correction coding" as described at col. 2:66 through col. 3:1 and as shown in Fig. 1 of the `168 Patent specification. This construction is consistent with the claim language used in the claims of the `168 Patent. For example, claims 4, 5 and 8 expressly recite making a determination ("determining") only with respect to one type of data classification, *e.g.*, data requiring forward error correction ("FEC") coding, but according to the issued claims such a determining step is sufficient that the subsequent "assigning" step can be performed for both classes of data (*i.e.*, data requiring FEC and data not requiring FEC).

Claim 8 also recites "a second *component for assigning*[5] a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination." Notwithstanding that the specification fails to describe the claimed "second

[5] Petitioner notes that the `168 Patent specification does not include a description of structure clearly limited and corresponding to "a second component for assigning . . ." and that the subject claim element is therefore indefinite under 35 U.S.C. § 112(b). *See In re Aoyama* 656 F.3d 1293, 1298 (Fed. Cir. 2011); *cf. Telecordia Technologies, Inc. v. Cisco Systems, Inc.*, 612 F.3d 1365 (Fed. Cir. 2010).

component," Petitioner submits for the purposes of this Petition that this claim element should be construed to mean "a software data application coupled to a processing unit and operative to assign a first portion of data within the data link layer to be forward error correction coded and a second portion of data within the data link layer to be unprotected by FEC according to the first component determination," as described at col. 2:66 through col. 3:3 and Fig. 1 of the `168 Patent specification.[6] As developed in the claim charts below, under the broadest reasonable interpretation, claims 1-5, 7 and 8 of the `168 Patent are invalid in view of the prior art.

V. SUMMARY OF THE `168 PATENT

A. Brief Description

The `168 Patent is directed to a method and system for performing optional or selective forward error correction ("FEC") on data within the data link layer before the data is transmitted.[7] See `168 Patent at col. 1:66 through col. 2:2. The `168 Patent describes such selective FEC as used for a paging/communication system, and teaches that "[f]irst, a determination is made as to what data in the data link layer is required to be FEC encoded and what data in not required to be FEC

[6] In proposing this construction, Petitioner does not accede or imply that the noted claim terms comply with 35 U.S.C. § 112(a)-(b).

[7] For a description of the background of the technology, see Stark Dec. ¶¶ 10-21.

encoded" and "[n]ext, the data link layer data determined to require FEC encoding is protected by FEC and the remaining data link later data in not FEC protected." `168 Patent at col. 2:2-7 and col. 3:5-10; Stark Dec. ¶¶ 10-12 (Ex. 1001).

B. Summary of the Prosecution History of the `168 Patent

During prosecution of the application (U.S. Application No. 09/159,523 filed September 23, 1998) that matured into the `168 Patent, the Examiner issued two separate non-final Office actions rejecting the claims: the first was issued on November 26, 1999; the second on August 11, 2000. In the second Office action, the Examiner rejected pending claims 1 and 3-8 under 35 U.S.C. § 103(a) as being obvious over the Applicant's admitted prior art (variously referred to in the prosecution as "AAPA" or "APA") in view of U.S. Patent No. 5,850,482 to Meany et al. ("Meany"; EX. 1013). `168 Patent file history (EX. 1003), 08/11/200 Office Action at p. 2-7. Claim 2 was rejected under 35 U.S.C. § 103(a) as being obvious over the AAPA in view of Meany, and further in view of U.S. Patent No. 5,699,365 to Klayman et al. *Id.* at 7-8.

In the second Office Action (at 3), the Examiner stated the following regarding Meany:

> Meany teaches a method of formulating data for a transmission using FEC technique for transmission via data link [see Fig. 1, claim 6, column 18 begin at line 65] comprising the steps of determining the portions [prefix fields, col. 7 lines 30-52] that require forward error

correction coding [col. 5 lines 19-33] as a first portion; determining the portions [suffix fields, col. 7 lines 30-52] that do not require forward error correction coding as a second portion; assigning said first portion to be forward error correction coded and said second portion to be unprotected by forward error correction [col. 7 lines 30-52].

In its response (`168 Patent file history, Applicant's January 11, 2001 Response to Second Office Action at 4), the Applicant argued the following:

> In the prior art, a data link layer conventionally required either forward error correction coding of all of the data transmitted on the data link, or no error correction for the data transmitted on the data link. The Meany *et al.* reference, in fact, reinforces the teaching of the prior art approach. While the patent to Meany *et al*. teaches the generation of prefix fields and suffix fields and providing different error correction coding for the fields, Meany *et al.* teaches that the prefix and suffix fields are stored and/or transmitted separately. See column 17, lines 14-17. In terms of storage, the prefix fields are stored in a first data block 66, while the respective suffix fields are stored in a second data block 68. The first data block 66 provides error correction coding for all the data stored therein, while the second data block provides a reduced level of error protection or no protection.
>
> *Similarly, in terms of transmission, the prefix fields are transmitted via a first data link 22, while the suffix fields are transmitted via a second data link 24*. Data transmitted via the first data link 22 are all

> error protected, while data transmitted via the second data link 24 are not error protected (or are error protected to a lesser degree). In other words, the Meany *et al.* reference not only suggests but teaches *the prior art approach in which a data link (or data block in a storage medium) either protects all or none of the data in the data link (or data block).* [Emphasis added]

In an attempt to distinguish the invention over the teachings of the APA in view of Meany, the Applicant, stressing that some portions of the data stream are error protected and other portions of the same data link layer are not, argued that:

> In contrast to the foregoing [*i.e.*, the APA in view of Meany], the present invention is directed to a method and system of formulating and communicating paging messages via a data link layer in a paging network in which portions of the data link layer *(i.e., some portions of the data stream*[8]*)* are error protected, *and other portions of the same data link layer* are not error protected. *Assigning different error protection for different fields, as taught by Meany et al., is different from determining portions of a data link layer that require or do not require error correction coding and assigning said portions of the data link layer to be error corrected or not*. *Id.* at pp. 4-5. [Emphasis added]

[8]Petitioner does not accede that the Applicant's statement of equivalence between the data link layer and a data stream is supported by the specification of the `168 Patent.

Shortly thereafter, the Examiner issued a Notice of Allowance, relying specifically on the Applicant's argument over Meany in the reasons for allowance:

> [APA] teaches a conventional method of formulating paging messages for transmission to a mobile paging unit in accordance with a paging protocols [sic] having a data link layer that requires forward error correction coding of all of the data transmitted on the data link [background of the invention]. *Meany*, patent no. 5,850,842, *teaches the generation of prefix field and suffix fields and providing different error correction coding for the fields. Meany teaches that the prefix field and suffix fields are stored and transmitted separately on two different data links*, *the prefix field are transmitted via a first data link 22, while the suffix fields are transmitted via a second data link 24* [col. 17 lines 14-37 and Fig. 1]. The prior arts of record, however, failed to teach or suggest singly or in combination *a method and system of formulating and communicating paging messages via data link layer in a paging network in which portion* [sic] *of the data link layer are error protected, and other portions of the same data link layer are not error protected* as set forth in claims 1, 4, 5, and 8. `168 Patent file history (EX. 1003), 04/04/2001 Notice of Allowability at p. 2. [Emphasis added]

The Applicant's argument vis-à-vis the prior art of record, upon which patentability was predicated, is flawed in at least two crucial ways, which undermine the Examiner's reasons for allowance: (1) the features that the Applicant relied upon to distinguish the invention over the APA and Meany are not

recited in claims 1-8 of the `168 Patent (*e.g.*, the claims are not limited to transmission on a single data link)[9]; and (2) while Meany describes preferred embodiments of its invention as utilizing separate data links for transmission of prefixes and suffixes, Meany, considered in its entirety, clearly discloses selective FEC coding and, in particular, the variant of FEC coding known as Unequal Error Protection ("UEP"). See Stark Dec. ¶¶ 148-149; Meany col. 5:19-46.

Regarding the latter point, Meany plainly teaches that the FEC variant known as UEP "*separates a data set into several subsets and provides different levels of error protection for each subset by varying the amount of redundancy for each subset.*" (Meany at col. 5:36-38). Meany also clearly provides rationale or motivation for using such UEP:

> *The rationale for UEP is that different subsets of a data set may vary in importance.* The most important data may require correction of virtually all bit errors, whereas some higher level of bit errors may be acceptable in less important data. *By providing lower levels of protection to the less important subsets of the data, the amount of redundancy added by the channel coding can be reduced, and channel*

[9] Petitioner notes that in addition to omitting those limitations relied on to allegedly distinguish the prior art, at least claims 5 and 8 recite limitations at such an abstract level they fail to claim statutory subject matter under 35 U.S.C. § 101.

bandwidth may correspondingly be conserved. (Meany at col. 5:38-46) [Emphasis added]

Thus, this Petition and the Stark Dec. present Meany in a new light, including a description of how Meany discloses that the variant of FEC known as UEP was well known before the priority date of the `168 Patent.

VI. THERE IS A REASONABLE LIKELIHOOD THAT AT LEAST ONE CLAIM OF THE `168 PATENT IS UNPATENTABLE

A. Prior Art Not Before The Examiner Or Considered In A New Light

As detailed in the claim charts below, the noted prior art references and/or arguments that were not before (or considered by) the Examiner during prosecution of the `168 Patent, establish that all the limitations of claims 1-5, 7 and 8 of the `168 Patent were well known in the art. The claim charts include descriptions of the relevance of the noted prior art reference(s) to the statutory grounds on which the challenges to the claims are based. The `168 Patent claims merely recite the combination of "prior art elements according to known methods to yield predictable results" and/or the "[u]se of known technique[s] to improve similar devices (methods, or products) in the same way." MPEP § 2143(A, C).

As explained above, during the initial examination, patentability was predicated either on arguments directed to features that are not recited in the claims or features that are well known in the art. As to the latter, several newly identified prior art references not before the Examiner during prosecution (e.g., IS-54-B,

GSM 05.03, and Suda) disclose selective FEC coding, adaptive FEC coding, and/or unequal error protection ("UEP") coding schemes. All of these prior art references teach selective application of FEC coding to some portions of a data stream and not to others, as recited in claims 1-5, 7 and 8 of the `168 Patent.

For example, the IS-54-B reference describes a technical standard for cellular mobile telecommunications systems that employs a UEP coding scheme in which a convolutional code (*i.e.*, a type of FEC code) is used for speech coder data to protect a first class of data bits, which the reference defines as the more vulnerable bits of the data stream, and other bits of data, in a defined second class of less vulnerable data bits, are transmitted without any error protection. Stark Dec. at ¶¶ 15 and 38-46. IS-54-B states "[t]he first step in the error correction process is the separation of the 159 bit speech coder frame's information into class 1 and class 2 bits." IS-54-B at p. 61. IS-54-B provides "*[t]he class 1 bits represent that portion of the speech data stream to which convolutional coding is applied*" while "*[c]lass 2 bits are transmitted without any error protection.*" *Id.* [Emphasis added]; and, Stark Dec. ¶ 39.

Similarly, the GSM 05.03 reference discloses a different technical standard for channel coding for the well-known GSM digital mobile phone system, and it too discloses a UEP coding scheme for which it defines a protected class of bits, Class 1, and an unprotected class of bits, Class 2, for a speech data channel. See,

e.g., Stark Dec. ¶¶ 54-58; GSM 05.03 pp. 11-13. Likewise, Suda discloses a bit-selective FEC ("BS-FEC") scheme that uses strong FEC codes for significant sources bits while less significant source bits are encoded by low capability FEC codes or not encoded at all. Stark Dec. ¶¶ 64-68; Suda p. 348, right col. (at A).

As demonstrated by the foregoing exemplary excerpts from the various references that were not before the Examiner during prosecution of the `168 Patent, the use of UEP coding schemes employing selective FEC coding was well known in the art at the time of the priority date of the `168 Patent.

In addition, the other recited features of the claims at issue were well known in the art. For example, the prior art establishes that selective use of FEC within a data link layer was well known. The prior art also discloses "assigning" the results of the "determination" steps (*i.e.*, to apply FEC to particular data and not to other data) by disclosing that the data falling within the separate defined classes are encoded (with or without FEC according to the definition of the respective data class) prior to transmission over a communication channel or link. See, *e.g.*, Stark Dec. ¶¶ 41, 58 and 68.

B. The `168 Patent Recites A Combination Of Prior Art Elements Yielding Predictable Results

As set forth in the claim charts below, various combinations of the prior art submitted by Petitioner render the claims of the `168 Patent unpatentable as obvious. The `168 Patent claims merely recite a combination of "prior art elements

according to known methods to yield predictable results" and/or the "[u]se of known technique[s] to improve similar devices (methods, or products) in the same way." *See* MPEP § 2143(A, C). For example, a person of ordinary skill in the art at the time of the invention (also referred to herein as a "POSITA" and described at Stark Dec. ¶ 26) would have understood, as of the priority date of the `168 Patent, that UEP coding employing selective FEC coding was a well-known endeavor among those in the data communications industry, and further would have appreciated the well-established benefits of utilizing such selective FEC coding, *e.g.*, increased error protection for data needing such while minimizing bandwidth or data rate requirements by not using FEC for certain other data. See, *e.g.*, Stark Dec. ¶¶ 14-19. Consistent with the admission in the APA, a POSITA would understand that implementing a selective FEC scheme for a communication node necessarily utilizes a data link layer to encode selected portions of a data stream passing through the data link layer with FEC. [The `168 Patent states "*it is the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique*, well-known to people skilled in the art of paging and radio data protocols."] See `168 Patent col. 1:46-50; Stark Dec. ¶ 19. Thus, the claims of the `168 Patent are not patentable in view of the above-noted references and others listed herein considered individually or in combination.

VII. GROUND 1: CLAIMS 1, 4, 5, AND 8 ANTICIPATED UNDER § 102(b) BY IS-54-B	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	IS-54-B discloses a technical standard for dual-mode (analog or digital operation) mobile station to base station compatibility in a wireless communications network. IS-54-B discloses a UEP channel coding scheme in which FEC is selectively used for one class of data and not for another class of data *for each frame of speech data*. See, *e.g.*, IS-54-B p. 59 (Sec. 2.1.3.3.3), and Stark Dec. ¶¶ 39-42. IS-54-B specifically discloses paging channels and paging functions. Stark Dec. ¶ 43; IS-54-B p. 109 ("Primary Paging Channel Selection") and p. i (lines 44-46). A POSITA would appreciate that such a UEP scheme could easily be used for data transmitted on a paging channel described by IS-54-B. Stark Dec. ¶ 43.
determining the portions of said data link layer that require forward error correction coding as a first portion;	IS-54-B discloses that varying degrees of FEC are required for different types or classes of data (p. 61, Sec. 2.1.3.3.3.2) ("*The class 1 bits represent that portion of the speech data stream to which the convolutional coding is applied.*"[Emphasis added] The selective FEC coding process is depicted in Figure 2.1.3.3.3.2-1: Error Correction for Speech Coder (p. 63). IS-54-B discloses determining which data portions require FEC coding by the definition of class 1 data. See Table 2.1.3.3.3.2-1; Stark Dec. ¶ 39. As expressly admitted in the APA, a POSITA would understand that compliance (by a mobile station, or "cell phone") with the technical requirements of IS-54-B necessarily utilizes a data link layer to implement the selective FEC scheme (with class 1 and class 2 data) on a data stream passing through the data link layer. [The `168 Patent states "*it is*

	the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique, well-known to people skilled in the art of paging and radio data protocols."] `168 Patent col. 1:46-50; Stark Dec. ¶ 41. Thus, consistent with the above-noted APA admission, IS-54-B discloses a step of "determining" which portions of data of a voice data stream passing through the data link layer (*e.g.*, from a microphone of an IS-54-B compliant cell phone) are processed as class 1 data (receiving FEC) and which are processed as class 2 data (not receiving FEC). See Table 2.1.3.3.3.2-1; Stark Dec. ¶ 41.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	IS-54-B discloses determining which portions of data do not require FEC coding by the definition of class 2 bits, which do not receive FEC. Stark Dec. ¶¶ 39-41; *see also* IS-54-B pp. 61-63. A POSITA would understand that a data link layer is utilized for implementing the selective FEC specified by IS-54-B. `168 Patent col. 1:46-50; Stark Dec. ¶ 41.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	IS-54-B discloses assigning FEC to class 1 data and not to class 2 data *for each frame* prior to transmission over a communication channel. See IS-54-B Section 2.1.3.3.3.2: Speech Data Classes (p. 61) ("The class 1 bits represent *that portion* of the speech data frame *to which the convolutional coding is applied*" and "Class 2 bits *are transmitted without any error protection*"); Table 2.1.3.3.3.2-1: *Speech Coder Parameter Class Bit Assignments* (p. 62); and, Fig. 2.1.3.3.3.2-1: Error Correction for Speech Coder (p. 63); Stark Dec. ¶¶ 39-42. As noted above, consistent with the admissions in the APA, a POSITA would understand IS-54-B discloses

	such subject matter by teaching that the different data classes in the same frame are encoded in the data link layer appropriately (FEC for class 1 but not for class 2) for transmission over a communication channel. Stark Dec. ¶¶ 39-42.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of IS-54-B, as addressed for claim 1, *supra*, is specifically incorporated by reference. Claim 4 is substantially similar to claim 1 except that claim 4 recites a paging system as opposed to a method.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of IS-54-B, as addressed for claim 1, *supra*, is specifically incorporated by reference. IS-54-B discloses that mobile stations are "programmed" and may be "software-controlled" and include a "mobile station logic program." See p. 107 and 145; Stark Dec. ¶ 44. A POSITA would understand that such programming or software would carry out or control a determination as to what data in a data stream (*e.g.*, passing through a data link layer) requires FEC coding according to IS-54-B. To the extent IS-54-B is determined to not disclose this subject matter, it would have been obvious to a POSITA. Stark Dec. ¶ 44.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of IS-54-B, as addressed for claim 1, *supra*, is specifically incorporated by reference. IS-54-B at least inherently discloses use of one or more processors, or such would be obvious to a POSITA. IS-54-B discloses that mobile stations are "programmed" and may be "software-controlled" and that such include a "mobile station logic program." See p. 107 and 145. A POSITA would understand that such programming or software would be implemented by one or more processors.

	Stark Dec. ¶ 45.
5. A method for performing data communication comprising:	The discussion of IS-54-B, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of IS-54-B, as addressed for claims 1and 4, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of IS-54-B, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of IS-54-B, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of IS-54-B, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of IS-54-B, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
VIII. GROUND 2: CLAIMS 5 AND 8 ANTICIPATED UNDER § 102(b) BY FARVARDIN	
5. A method for performing data communication comprising:	Farvardin discloses unequal error protection (UEP) for binary codewords as utilized by a sub-band coder designed for combined channel and source coding of speech transmitted over a communication channel. Stark Dec. ¶¶ 47-48 and Farvardin p. 807, left column and Abstract.

determining the portions of a data link layer that do not require forward error correction coding; and	Farvardin discloses that for its UEP scheme the leftmost or most important bit (MSB) is subject to FEC coding (specifically a rate ½ channel code) and the other bits are "transmitted without any protection." Stark Dec. ¶ 48; Farvardin p. 807, left col and Table II. As expressly admitted in the APA, a POSITA would understand that in order to implement the UEP scheme taught by Farvardin, a data link layer would necessarily be used to implement FEC on a data stream passing through the data link layer. [The `168 Patent states "*it is the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique*, well-known to people skilled in the art of paging and radio data protocols."] `168 Patent col. 1:46-50; Stark Dec. ¶ 48.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	Farvardin discloses that the leftmost bit is encoded with FEC coding and that "[t]he other bits *are transmitted* without any protection. Farvardin p. 802, left col. (last ¶); Stark Dec. ¶ 48. Farvardin discloses its UEP techniques in the context of fixed-length binary codewords (footnote 1 at p. 800), which a POSITA would appreciate as being capable of being (and preferably would be) transmitted *in the payload or packet of a single frame of a datastream*. Stark Dec. ¶ 48. A POSITA would appreciate that encoding certain data per the UEP scheme disclosed by Farvardin for transmission over a communication channel includes use of a data link layer. Stark Dec. ¶ 49.
8. A system for performing data communication comprising:	The discussion of Farvardin, as addressed for claim 5, *supra*, is specifically incorporated by reference. Farvardin discloses algorithms for vector quantization used by data

	compression systems that are operative to prepare data "for subsequent transmission over the communication channel." Stark Dec. ¶ 47; Farvardin p. 799, left col.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Farvardin, as addressed for claim 5, *supra*, is specifically incorporated by reference. A POSITA would understand that Farvardin discloses use of one or more processors ("components" including a "first component") to implement its UEP scheme, including the operation of determining that bits other than the leftmost bit *should not* receive FEC coding. Stark Dec. ¶ 50.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Farvardin, as addressed for claim 5, *supra*, is specifically incorporated by reference. A POSITA would appreciate that Farvardin discloses use of one or more processors ("components" including a "second component") to implement its UEP scheme at the data link layer by encoding the MSB with FEC and transmitting the remaining bits without FEC. Stark Dec. ¶ 51.
IX. GROUND 3: CLAIMS 1, 4, 5, AND 8 ANTICIPATED UNDER § 102(b) BY GSM 05.03	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	GSM 05.03 discloses a technical standard for channel coding of speech that, *for each block of data or speech frame,* defines a protected class of bits, Class 1, and an unprotected class of bits, Class 2, for a UEP scheme for the speech data channel. See pp. 11-13; Stark Dec. ¶¶ 53-54. GSM 05.03 expressly discloses a coding scheme for paging. Stark Dec. ¶ 56; GSM 05.03, *e.g.*, p. 22. A POSITA would appreciate that such a UEP scheme could be used for data transmitted on a paging channel described by GSM 05.03. Stark Dec. ¶ 57. GSM 05.03 incorporates a number (9) of other normative references describing other portions of GSM

	standards, including GSM 05.01 (TS/SMG-020501Q) (1996): "Digital cellular telecommunications system (Phase 2+); Physical layer on the radio path; General Description," which expressly describes *a data link layer*. See GSM 05.01 at p. 19, Annex B (showing Layer 2, a data link layer) reproduced at Stark Dec. ¶ 55.
determining the portions of said data link layer that require forward error correction coding as a first portion;	The channel coding disclosed by GSM 05.03 specifically defines *for each block of data or speech frame* a protected class of bits, Class 1, for the speech data channel. See pp. 11-13; Stark Dec. ¶ 54 and ¶ 57. GSM 05.03 describes a methodology or algorithm for determining the Class 1 data bits. *Id.* As expressly admitted in the APA, a POSITA would understand that compliance with the technical requirements specified by GSM 05.03 necessarily utilizes a data link layer to implement the FEC scheme (Class 1 and Class 2 data) on a data stream passing through the data link layer. [The `168 Patent states "*it is the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique*, well-known to people skilled in the art of paging and radio data protocols."] `168 Patent col. 1:46-50; Stark Dec. ¶ 57.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	GSM 05.03 describes selecting or determining an unprotected class of bits, Class 2, for the speech data channel. A POSITA would understand that a data link layer would be utilized to implement the UEP scheme of GSM 05.03. Stark Dec. ¶¶ 54 and 57-60; GSM 05.03 pp. 11-13; and `168 Patent col. 1:46-50.
assigning said first portion of the data link layer segments to be	GSM 05.03 provides that Class 1 and Class 2 bits *are encoded* with and without

forward error correction coded and said second portion to be unprotected by forward error correction.	FEC, respectively, thus meeting this limitation. Stark Dec. ¶¶ 54-58 and GSM 05.03 at p. 13. A POSITA would understand that a data link layer is utilized to implement the UEP scheme. Stark Dec. ¶¶ 57-60.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of GSM 05.03, as addressed for claim 1, *supra*, is specifically incorporated by reference. GSM 05.03 expressly describes paging channels. Stark Dec. ¶ 56; GSM 05.03, *e.g.*, p. 22.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of GSM 05.03, as addressed for claim 1, *supra*, is specifically incorporated by reference. A POSITA would understand that code, or a software application would carry out or control the UEP scheme. Stark Dec. ¶ 61.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of GSM 05.03, as addressed for claim 1, *supra*, is specifically incorporated by reference. GSM 05.03 discloses one or more processors to perform this recited operation. For example, GSM 05.03 discloses an "encoding unit" and a "convolutional encoder," which are used to either carry out or control the UEP scheme described by GSM 05.03. Stark Dec. ¶ 62.
5. A method for performing data communication comprising:	The discussion of GSM 05.03, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of GSM 05.03, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer	The discussion of GSM 05.03, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.

determination.	
8. A system for performing data communication comprising:	The discussion of GSM 05.03, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of GSM 05.03, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of GSM 05.03, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
X. GROUND 4: CLAIMS 5 AND 8 ANTICIPATED UNDER § 102(b) BY SUDA	
5. A method for performing data communication comprising:	Suda discloses a bit selective FEC scheme (BS-FEC) for mobile radio applications, in which several types of FEC codes are used and the transmitted bits are "protected by one of these types of codes according to the source coding bits' significance" *for each frame of speech data*. Stark Dec. ¶¶ 64-68; Suda p. 346, right col. (1st full para.).
determining the portions of a data link layer that do not require forward error correction coding; and	Suda discloses that the bits *in a frame are* divided into a number of classes according to their significance, and several types of FEC codes are used for the most significant classes, and that FEC is not required for the least significant class. *Id.* Suda gives an example of four classes used for different scenarios of bit error rate (BER). The least significant class was unprotected by FEC. Stark Dec. ¶¶ 64-68; Suda p. 350, right col. at B) and Table III (listing bit names for each class). As expressly admitted in the APA, a POSITA would understand that implementing

	the Suda selective FEC scheme necessarily utilizes a data link layer to implement the FEC scheme on a data stream passing through the data link layer. [The `168 Patent states "*it is the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique*, well-known to people skilled in the art of paging and radio data protocols."] `168 Patent col. 1:46-50; Stark Dec. ¶ 68.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	Suda teaches that "BS-FEC uses several types of error correcting codes and *the transmission bits are protected by one of these types of codes according the source coding bits' significance*." Stark Dec. ¶ 65; Suda p. 346. Suda discloses implementation of its selective BS-FEC scheme *for each frame of speech data*, *e.g.*, by disclosing simulations where coding and decoding procedures of BAPC-AB and BS-FEC were programmed in a computer and were carried out. Stark Dec. ¶¶ 64-68; Suda p. 351. A POSITA would understand that implementing the Suda selective FEC scheme necessarily utilizes a data link layer to implement the FEC scheme on a data stream passing through the data link layer. Stark Dec. ¶ 68.
8. A system for performing data communication comprising:	The discussion of Suda, as addressed for claim 5, *supra*, is specifically incorporated by reference. Suda discloses a voice transmission system for its BS-FEC scheme. Stark Dec. ¶¶ 64-68; Suda Fig. 3.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Suda, as addressed for claim 5, *supra*, is specifically incorporated by reference. Suda further discloses a voice transmission system for its BS-FEC scheme, including *a bit selector* that provides uncoded bits directly to a multiplexer. Stark Dec. ¶¶ 64-68 and Suda at Fig. 3.

a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Suda, as addressed for claim 5, *supra*, is specifically incorporated by reference. Suda discloses a voice transmission system for its BS-FEC scheme, including *a bit selector* that provides uncoded bits of one class directly to a multiplexer and also bits in other classes *to error correcting ("EC") coders*. Stark Dec. ¶¶ 64-68; Suda Fig. 3. A POSITA would appreciate that the bit selector operating in conjunction with the EC coders meet the recited limitations of this element by selecting which bits receive FEC and which bits are sent directly to the multiplexor without receiving FEC coding. Stark Dec. ¶ 67.
XI. GROUND 5: CLAIMS 5 AND 8 ANTICIPATED UNDER § 102(b) BY CHENNAKESHU	
5. A method for performing data communication comprising:	Chennakeshu discloses a method and apparatus for digital radio communication utilizing a UEP scheme that separates *a frame of data* to be transmitted into key bits, critical bits and unprotected bits. Stark Dec. ¶ 70; Chennakeshu col. 2:18-24.
determining the portions of a data link layer that do not require forward error correction coding; and	Chennakeshu discloses separating each incoming frame of speech data into three different groups of data bits: most significant or key bits, intermediate significant or critical bits, and least significant or *unprotected* bits. Chennakeshu discloses a "data separator," the operation of which either routes bits (via buffers) to a convolutional encoder or not; thus, determining which bits receive FEC coding and which do not. Stark Dec. ¶ 70-71; Chennakeshu at col. 2:18-23, col. 7:29-35 and Fig. 5. As expressly admitted in the APA, a POSITA would understand that implementing the Chennakeshu UEP scheme necessarily utilizes a data link layer to implement selective FEC on a data stream passing

	through the data link layer. [The `168 Patent states "*it is the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique*, well-known to people skilled in the art of paging and radio data protocols."] `168 Patent col. 1:46-50 and Stark Dec. ¶ 70-71.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	See step above. Additionally, Chennakeshu discloses that an embodiment of its coding scheme was "implemented in real-time on a single TMS320C30 chip for the GE-Ericsson Japanese Digital Cellular Radio"; the referenced Digital Cellular Radio was a 2G radio standard that utilized a data link layer. Stark Dec. ¶ 71-72.
8. A system for performing data communication comprising:	The discussion of Chennakeshu, as addressed for claim 5, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Chennakeshu, as addressed for claim 5, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Chennakeshu, as addressed for claim 5, *supra*, is specifically incorporated by reference.
XII. GROUND 6: CLAIMS 5 AND 8 ANTICIPATED UNDER § 102(b) BY SUZUKI	
5. A method for performing data communication comprising:	Suzuki discloses UEP scheme in which a data transmission device comprises a transmitter device that divides a data string to be transmitted into an original data string requiring protection against code error and a data string requiring no protection. Stark Dec.

	¶¶ 73-74; Suzuki Abstract.
determining the portions of a data link layer that do not require forward error correction coding; and	Suzuki discloses that various methods may be used for dividing transmitted data into a data requiring protection and a data not requiring protection are to be determined. Stark Dec. ¶ 74; Suzuki at col. 6:49-67. Suzuki discloses use of a transmitter for transmitting data encoded according to its disclosed selective FEC techniques. As expressly admitted in the APA, a POSITA would understand that implementing the Suzuki UEP scheme necessarily utilizes a data link layer to implement the FEC scheme on a data stream passing through the data link layer. [The `168 Patent states "*it is the data link layer that is responsible for both error detection and correction using a forward error correction (FEC) technique*, well-known to people skilled in the art of paging and radio data protocols."] `168 Patent col. 1:46-50, Stark Dec. ¶¶ 75, 78; Suzuki col. 6:51-65.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	Suzuki discloses that the different types of data, including types with and without FEC, are combined and provided to a communication channel. Stark Dec. ¶ 76 and Suzuki at col. 7:1-42. A POSITA would understand that the selective FEC scheme is implemented on data at the data link layer. Stark Dec. ¶¶ 75, 78.
8. A system for performing data communication comprising:	The discussion of Suzuki, as addressed for claim 5, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Suzuki, as addressed for claim 5, *supra*, is specifically incorporated by reference.
a second component for assigning	The discussion of Suzuki, as addressed for

a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	claim 5, *supra*, is specifically incorporated by reference.
XIII. GROUND 7: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY IS-54-B IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	The discussion of IS-54-B, as addressed for claim 1 for Ground 1, *supra*, is specifically incorporated by reference. The Admitted Prior Art ("APA") discloses the use of paging systems and that paging transmitter transmit paging messages in accordance with known paging protocols such as POCSAG, FLEX, and ERMES. The APA discloses that *it is the data link layer that is responsible for both error detection and correction using FEC* in a paging environment. Stark Dec. ¶ 82; `168 Patent col. 1:10-58, particularly col. 1:46-50. See also the Examiner's Statement of Reasons for Allowance, `168 Patent file history, 04/04/2001 Notice of Allowability at p. 2.
determining the portions of said data link layer that require forward error correction coding as a first portion;	The discussion of IS-54-B, as addressed for claim 1 for Ground 1, *supra*, is specifically incorporated by reference. In addition, the APA teaches that "[e]rror detection and correction are vital for alphanumeric and binary data." Stark Dec. ¶ 83; `168 Patent col. 1:50-51.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	The discussion of IS-54-B, as addressed for claim 1 for Ground 1, *supra*, is specifically incorporated by reference. In addition, the APA teaches that voice data *does not require FEC*. Stark Dec. ¶ 84; `168 Patent col. 1:51-53.

assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	The discussion of IS-54-B, as addressed for claim 1 for Ground 1, *supra*, is specifically incorporated by reference. The APA provides motivation for combining the teachings of prior art cited herein, *e.g.*, IS-54-B, etc., with the APA to overcome the problems noted by the APA. Stark Dec. ¶¶ 85-87; APA col. 1:42-58. A POSITA would have found it obvious to combine IS-54-B and the APA to arrive at the `168 Patent claims. Stark Dec. ¶ 88.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
5. A method for performing data communication comprising:	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically

portion to be unprotected by FEC according to the data link layer determination.	incorporated by reference.
8. A system for performing data communication comprising:	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of IS-54-B and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
XIV. GROUND 8: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY MASNICK IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	Masnick discloses a class of linear unequal error protection (UEP) codes that have different levels of error protection for different bits, and provides an example. Masnick explains that in the transmission of a real number (*e.g.*, 3.56) getting the first digit correct is much more important than getting the last digit correct. Because of the differences in importance, these different digits receive different levels of error correction. Masnick describes applying different amounts of error correction between different blocks of digits. Stark Dec. ¶ 89; Masnick Abstract. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said	Masnick discloses using different levels of

data link layer that require forward error correction coding as a first portion;	error protection for the different digits, respectively, of a code word. Stark Dec. ¶ 89 and Masnick at p. 600, left col. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	Masnick discloses using different levels of error protection for the different digits, respectively, of a code word. Stark Dec. ¶ 89; Masnick at p. 600, left col. One skilled in the art would understand that one level of such error protection is no error protection (no FEC). Stark Dec. ¶ 91. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	Encoding a certain type or class of data with FEC and encoding another type or class of data (in the same data stream as taught by Masnick) without FEC necessarily includes an assignment of FEC to the former type or class of data and an assignment of no FEC (or, "unprotected by forward error correction") to the latter type or class of data. Stark Dec. ¶ 90. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. A POSITA would find it obvious to combine the teachings of Masnick and the APA. Stark Dec. ¶ 92-94.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
at least one application for determining the portions of said	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically

data link layer that require forward error correction coding; and	incorporated by reference.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
5. A method for performing data communication comprising:	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Masnick and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.

XV. GROUND 9: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY MODESTINO IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	Modestino describes a combined source-channel coding scheme for the encoding, transmission and remote reconstruction of image data as well as application of unequal error protection (UEP) codes to image data of varying degrees of importance. Modestino also describes performance results of a system using its UEP scheme, in which the most significant bit (MSB) was encoded using a FEC code (examples are given in which the rate is 1/2, 1/3, and 2/4, respectively) whereas the other bits (*e.g.*, the least significant bit) did not have FEC protection. See Stark Dec. ¶ 95; Modestino pp. 1652-1653, left col. and Figs. 13-14. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that require forward error correction coding as a first portion;	Modestino discloses a process and rationale for determining bits *that receive* error control protection (*e.g.*, FEC) for its UEP scheme: "[*e]rror control protection is applied only to the most significant bit(s) (MSB) since error here contribute most heavily to reconstructed image quality*." [Emphasis added] Stark Dec. ¶ 96; Modestino at p. 1653, left col. Modestino further discloses an example in which the MSB receives error correction ("a 2-bit system with an R = ½ code on the MSB") and the remaining bits do not receive error correction. *Id.* and Figs. 13-14. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.

determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	Modestino discloses a process and rationale for determining bits <u>*that do not receive*</u> error control protection for its UEP scheme: "[e]rror control protection is applied <u>*only*</u> to the most significant bit(s) (MSB) since error here contribute most heavily to reconstructed image quality." Stark Dec. ¶¶ 96-97; Modestino p. 1653, left col.; Figs. 13-14. The noted example given states further "with the remaining bit unprotected." *Id.* The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	See analysis above. Further, Modestino discloses performance results of its UEP scheme. Modestino pp. 1652-1653, left col. and Figs. 13-14; Stark Dec. ¶ 96. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. The APA provides motivation for the combination. Stark Dec. ¶¶ 98-100.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.

application determination.	
5. A method for performing data communication comprising:	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Modestino and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
XVI. GROUND 10: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY FARVARDIN IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	The discussion of the Farvardin, as addressed for claim 5 of Ground 2, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶¶ 101, 108, and 109.

determining the portions of said data link layer that require forward error correction coding as a first portion;	The discussion of the Farvardin, as addressed for claim 5 of Ground 2, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶ 102.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	The discussion of the Farvardin, as addressed for claim 5 of Ground 2, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶ 102.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	The discussion of the Farvardin, as addressed for claim 5 of Ground 2, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 103-104 and 107.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of Farvardin and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of Farvardin and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. A POSITA would understand that machine-readable code, programming, or software can constitute a software application or is the equivalent of such, and that such would naturally be implemented on one or more processors to carry out or control the UEP scheme described by Farvardin. Stark Dec. ¶ 105.
a processor for assigning a first portion of the data link layer segment to be forward error	The discussion of Farvardin and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. A POSITA would

correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	understand that Farvardin discloses use of one or more processors (or "components" including a "second component") to implement encoding of the bits with and without FEC according to the Farvardin UEP scheme. Stark Dec. ¶ 106.
5. A method for performing data communication comprising:	The discussion of Farvardin and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Farvardin and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Farvardin and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Farvardin and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Farvardin and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Farvardin and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
XVII. GROUND 11: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY GSM 05.03 IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission	The discussion of the GSM 05.03, as addressed for claim 1 of Ground 3, *supra*, is

to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶¶ 110-115.
determining the portions of said data link layer that require forward error correction coding as a first portion;	The discussion of the GSM 05.03, as addressed for claim 1 of Ground 3, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	The discussion of the GSM 05.03, as addressed for claim 1 of Ground 3, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	The discussion of the GSM 05.03, as addressed for claim 1 of Ground 3, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. This subject matter would have been obvious to a POSITA. Stark Dec. ¶¶ 113-115.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a processor for assigning a first portion of the data link layer	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically

segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	incorporated by reference.
5. A method for performing data communication comprising:	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of GSM 05.03 and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
XVIII. GROUND 12: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY SUDA IN VIEW ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging	The discussion of Suda, as addressed for claims 5 and 8 of Ground 4, *supra*, is specifically incorporated by reference.

messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶¶ 116-122.
determining the portions of said data link layer that require forward error correction coding as a first portion;	The discussion of Suda, as addressed for claims 5 and 8 of Ground 4, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶ 121.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	The discussion of Suda, as addressed for claims 5 and 8 of Ground 4, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶ 121.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	The discussion of Suda, as addressed for claims 5 and 8 of Ground 4, *supra*, is specifically incorporated by reference. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Stark Dec. ¶ 121.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of Suda and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. A POSITA would appreciate that the bit selector disclosed by Suda would be implemented by or with a processor such as a digital signal processor ("DSP"). A POSITA would appreciate that machine-readable code (which constitutes software or "an application") would be employed by such a DSP for operation. Stark Dec. ¶ 117.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of Suda and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶ 117.

a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of Suda and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶ 117.
5. A method for performing data communication comprising:	The discussion of Suda and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Suda and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Suda and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Suda and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Suda and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Suda and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
XIX. GROUND 13: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY SWAMINATHAN IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating	Swaminathan discloses a UEP scheme that

paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	applies FEC to a first class of data and not to a second class of data. See Swaminathan at Abstract; Stark Dec. ¶¶ 123-124. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that require forward error correction coding as a first portion;	Swaminathan describes performing bit sensitivity measurements on the different categories of data in a G.729 bitstream for determining the data that require error protection (class 1). A POSITA would understand that Swaminathan discloses use of a data link layer by describing its FEC scheme in reference to "digital cellular channels." See Swaminathan at p. 578; Stark Dec. ¶¶ 124-127 and 131. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	Swaminathan describes determining the data that do not require error protection (class 2). See Swaminathan p. 578; Stark Dec. ¶¶ 124,127, and 131. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	In addition to the foregoing regarding the "determining" steps, Swaminathan discloses performance evaluations of implementations of its UEP schemes. Swaminathan at p. 579 (left col.); Stark Dec. ¶ 128. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 131-132.
4. A paging system for communicating a paging message in accordance with a paging	The discussion of Swaminathan and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. Swaminathan

protocol, said paging protocol including a data link layer, the paging system comprising:	discloses use of a modified speech coder. See Swaminathan p. 578 (Section 4); Stark Dec. ¶ 128.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of Swaminathan and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. Swaminathan p. 578; Stark Dec. ¶¶ 129-130 for "application."
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of Swaminathan and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference. Also see Swaminathan p. 578; and Stark Dec. ¶¶ 129-130 regarding "processor."
5. A method for performing data communication comprising:	The discussion of Swaminathan and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Swaminathan and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Swaminathan and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Swaminathan and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Swaminathan and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error	The discussion of Swaminathan and APA, as addressed for claims 1 and 4, *supra*, is specifically incorporated by reference.

correction coded and a second portion to be unprotected by FEC according to the first component determination.	
XX. GROUND 14: CLAIMS 1, 4, 5 AND 8 OBVIOUS UNDER § 103(a) BY SUZUKI IN VIEW OF ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	The discussion of Suzuki, as addressed for claim 5 of Ground 6, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 133-137. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that require forward error correction coding as a first portion;	The discussion of Suzuki, as addressed for claim 5 of Ground 6, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 135-137. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	The discussion of Suzuki, as addressed for claim 5 of Ground 6, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 135-137. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	The discussion of Suzuki, as addressed for claim 5 of Ground 6, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 135-137. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. .
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.

including a data link layer, the paging system comprising:	
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to said at least one application determination.	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
5. A method for performing data communication comprising:	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second	The discussion of Suzuki and APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.

portion to be unprotected by FEC according to the first component determination.	
XXI. GROUND 15: CLAIMS 2, 3 AND 7 OBVIOUS UNDER § 103(a) BY CHENNAKESHU IN VIEW OF GUHA AND ADMITTED PRIOR ART	
2. The method of claim 1, wherein the step of determining the portions required to be forward error correction coded is performed by a network protocol layer above the data link layer.	The discussion of Chennakeshu, as addressed for claim 5 of Ground 5, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 138-147. Guha discloses an adaptive FEC protocol for use in an ATM network. The adaptive FEC protocol determines whether a feasibility condition is met indicating that FEC can compensate for an expected number of burst errors in an FEC encoded payload. When the feasibility condition is met, FEC is used; if the condition is not met, FEC is not used. Guha col. 10:1-10, col. 27:31-64; Stark Dec. ¶ 140. Guha includes a figure showing mapping between the B-ISDN layers used for ATM to OSI layers of the OSI model. Guha, Fig. 2; Stark Dec. ¶ 141. Guha states that the determination of a feasibility condition (of whether to apply FEC) "preferably is accomplished *above an asynchronous transfer mode adaptation (AAL) layer (e.g., at an OSI network or transport layers.*" Stark Dec. ¶ 142; Guha col. 10:25-28. The discussion of the APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
3. The method of claim 1, further comprising: supplying the assigned data link layer segments to a network layer.	The discussion of Chennakeshu, Guha, and the APA as addressed for claim 2, *supra*, is specifically incorporated by reference.
7. The method of claim 5, further comprising: supplying the	The discussion of Chennakeshu, Guha, and the APA as addressed for claim 2, *supra*,

assigned data link layer segments to a network layer.	is specifically incorporated by reference.
XXII. GROUND 16: CLAIMS 1-5, 7 AND 8 OBVIOUS UNDER § 103(a) BY MEANY IN VIEW OF GUHA AND ADMITTED PRIOR ART	
1. A method of formulating paging messages for transmission to a mobile paging unit, the paging messages being formulated in accordance with a paging protocol having a data link layer, the method comprising the steps of:	Meany discloses that the FEC variant, known as UEP separates a data set into several subsets, providing different levels of error protection for each subset by varying the amount of redundancy for each. Meany provides rationale or motivation for using such UEP. Stark Dec. ¶¶ 148-149; Meany col. 5:33-46. The discussion of Guha, as addressed for claim 2 of Ground 15, *supra*, is specifically incorporated by reference. See also ¶¶ 150-152. The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. See also Stark Dec. ¶¶ 153-155.
determining the portions of said data link layer that require forward error correction coding as a first portion;	Meany discloses that different subsets of a data set may vary in importance, and the most important data may require FEC. Stark Dec. ¶ 149; Meany col. 5:33-46. The discussion of Guha, as addressed for claim 2 of Ground 15, *supra*, is specifically incorporated by reference. The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
determining the portions of said data link layer that do not require forward error correction coding as a second portion; and	Meany discloses that different subsets of a data set may vary in importance, and some higher level of bit errors may be acceptable in less important data such that FEC is not necessary. Stark Dec. ¶¶ 149-150; Meany col. 5:33-46. The discussion of Guha, as addressed for claim 2 of Ground 15, *supra*, is specifically

	incorporated by reference. The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
assigning said first portion of the data link layer segments to be forward error correction coded and said second portion to be unprotected by forward error correction.	Meany discloses transmission of data having varying degrees of FEC as specified by UEP. Stark Dec. ¶¶ 149-150; Meany col. 5:33-46. The discussion of Guha, as addressed for claim 2 of Ground 15, *supra*, is specifically incorporated by reference. The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
2. The method of claim 1, wherein the step of determining the portions required to be forward error correction coded is performed by a network protocol layer above the data link layer.	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
3. The method of claim 1, further comprising: supplying the assigned data link layer segments to a network layer.	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
4. A paging system for communicating a paging message in accordance with a paging protocol, said paging protocol including a data link layer, the paging system comprising:	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
at least one application for determining the portions of said data link layer that require forward error correction coding; and	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a processor for assigning a first portion of the data link layer segment to be forward error correction coded and a second	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.

portion to be unprotected by FEC according to said at least one application determination.	
5. A method for performing data communication comprising:	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
7. The method of claim 5, further comprising: supplying the assigned data link layer segments to a network layer.	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
8. A system for performing data communication comprising:	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of Meany, Guha, and the APA, as addressed for claim 1, *supra*, is specifically incorporated by reference.
XXIII. GROUND 17: CLAIMS 2, 3 AND 7 OBVIOUS UNDER § 103(a) BY SUDA IN VIEW OF GUHA AND ADMITTED PRIOR ART	
2. The method of claim 1,	The discussion of Suda, as addressed for

wherein the step of determining the portions required to be forward error correction coded is performed by a network protocol layer above the data link layer.	claims 5 and 8 of Ground 4, *supra*, is specifically incorporated by reference. The discussion of Guha, as addressed for claim 2 of Ground 15, *supra*, is specifically incorporated by reference. See Stark Dec. ¶¶ 157 and 160-162. The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference.
3. The method of claim 1, further comprising: supplying the assigned data link layer segments to a network layer.	The discussion of Suda, Guha, and the APA, as addressed for claim 2, *supra*, is specifically incorporated by reference.
7. The method of claim 5, further comprising: supplying the assigned data link layer segments to a network layer.	The discussion of Suda, Guha, and the APA, as addressed for claim 2, *supra*, is specifically incorporated by reference. .
XXIV. GROUND 18: CLAIMS 5 AND 8 OBVIOUS UNDER § 103(a) BY APA IN VIEW OF DENT	
5. A method for performing data communication comprising:	The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Dent discloses a short-range radio communications system and method of use, including a description of a UEP coding scheme for a packet having a combined voice-data payload, with each different field receiving a different level of error protection. Stark Dec. ¶¶ 164-167; Dent Fig. 10 and col 15:61-66.
determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. Dent discloses that a payload of burst information can include data of two different qualitative types, *i.e.*, voice and data fields combined in a payload section, with each field receiving a different level of error

	protection. Dent Fig. 10 and col 15:61-66; Dent states (at col. 14:30-32) that the header "typically contains link control information"; Stark Dec. ¶¶ 165-167.
assigning a portion of the data link layer segments to be forward error correction coded and a second portion to be unprotected by FEC according to the data link layer determination.	The discussion of APA, as addressed for claim 1 of Ground 7, *supra*, is specifically incorporated by reference. A POSITA would appreciate that encoding a certain type of data with FEC and encoding another type of data (in the same payload as taught by Dent) without FEC *necessarily includes* an "assignment" of FEC to the former type of data and of no FEC to the latter type of data, and that the UEP scheme of Dent in view of the APA would be implemented at the data link layer on data passing through the data link layer. Stark Dec. ¶¶ 169-170; see also ¶¶ 168, 171-172.
8. A system for performing data communication comprising:	The discussion of APA and Dent, as addressed for claim 5, *supra*, is specifically incorporated by reference.
a first component for determining the portions of a data link layer that do not require forward error correction coding; and	The discussion of APA and Dent, as addressed for claim 5, *supra*, is specifically incorporated by reference.
a second component for assigning a first portion of the data link layer segment to be forward error correction coded and a second portion to be unprotected by FEC according to the first component determination.	The discussion of APA and Dent, as addressed for claim 5, *supra*, is specifically incorporated by reference.

XXV. CONCLUSION

The cited prior art references identified in this Petition contain pertinent technological teachings, either explicitly or inherently disclosed, which were not

previously considered in the manner presented herein or relied upon on the record during original examination of the `168 Patent, and therefore should be considered important in determining patentability. In sum, these references provide new, non-cumulative technological teachings not previously considered and relied upon on the record, which indicate a reasonably likelihood of success as to Petitioner's claim that claims 1-5, 7 and 8 of the `168 Patent are not patent eligible pursuant to the grounds presented in this Petition. Accordingly, Petitioner respectfully requests institution of *inter partes* review for claims 1-5, 7 and 8 of the `168 Patent for each of the grounds presented herein, and that the claims accordingly be canceled as being unpatentable.

Respectfully submitted,

Dated: July 19, 2013

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that on July 19, 2013, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided via Federal Express, costs prepaid, to the Patent Owner by serving the correspondence address of record as follows:

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The undersigned further certifies that, on July 19, 2013, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided electronically to the attorneys of record in the concurrent litigation matter:

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