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Hansen et al.

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(54) **METHOD AND SYSTEM FOR COMPROMISE GREENFIELD PREAMBLES FOR 802.11N**

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(51) **Int. Cl.**
H04J 11/00 (2006.01)

(52) **U.S. Cl.**
USPC **370/203**

(58) **Field of Classification Search**
USPC 370/203
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,340,000	B1 *	3/2008	Hart et al.	375/260
7,366,250	B2 *	4/2008	Mujtaba et al.	375/267
7,382,832	B2 *	6/2008	Magee et al.	375/267
2003/0072452	A1	4/2003	Mody et al.	
2004/0192216	A1 *	9/2004	Marzetta et al.	455/67.14
2005/0170831	A1 *	8/2005	Magee et al.	455/434
2005/0276347	A1 *	12/2005	Mujtaba et al.	375/299
2006/0251193	A1 *	11/2006	Kopmeiners et al.	375/345
2007/0060073	A1 *	3/2007	Boer et al.	455/101
2007/0147336	A1 *	6/2007	Lee et al.	370/350
2007/0217546	A1 *	9/2007	Sandell et al.	375/299

(Continued)

FOREIGN PATENT DOCUMENTS

EP	1594275	A	11/2005
WO	WO2005106699		1/2005

OTHER PUBLICATIONS

Christopher J. Hansen, IEEE 802.11 Wireless LANs WWiSE Proposal: High Throughput Extension to the 802.11 Standard, Dec. 20, 2004.

(Continued)

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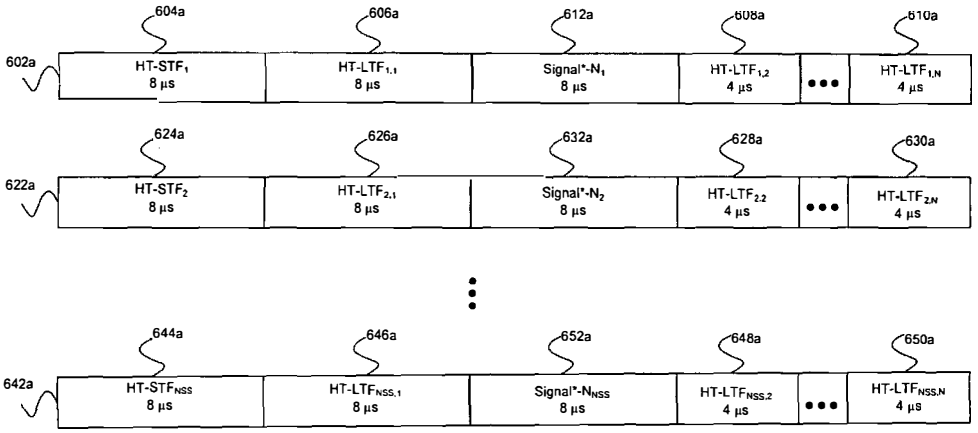
(57) **ABSTRACT**

Aspects of the invention described herein may enable a greenfield access mode in IEEE 802.11n WLAN systems in comparison to an alternative approach that may not provide greenfield access. The utilization of greenfield access may reduce the portion of time required to transmit data due to overhead comprising preamble fields and header fields. This may enable higher data throughput rates to be achieved. This may further enable more robust transmission of data by enabling comparable data rates to be maintained while reducing the coding rate of encoded transmitted data. The reduction of the coding rate may enable comparable data rates to be maintained for transmission via RF channels characterized by lower SNR while still achieving desired target levels of packet error rates. In another aspect of the invention, mixed mode access may be achieved while reducing the portion of time required for transmitting data due to overhead.

13 Claims, 11 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

2009/0238299	A1*	9/2009	van Zelst et al.	375/267
2011/0255488	A1*	10/2011	Lee et al.	370/329
2012/0195391	A1*	8/2012	Zhang et al.	375/295
2012/0327915	A1*	12/2012	Kang et al.	370/336

OTHER PUBLICATIONS

Syed Aon Mujtaba, IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification, Jan. 18, 2005.

* cited by examiner

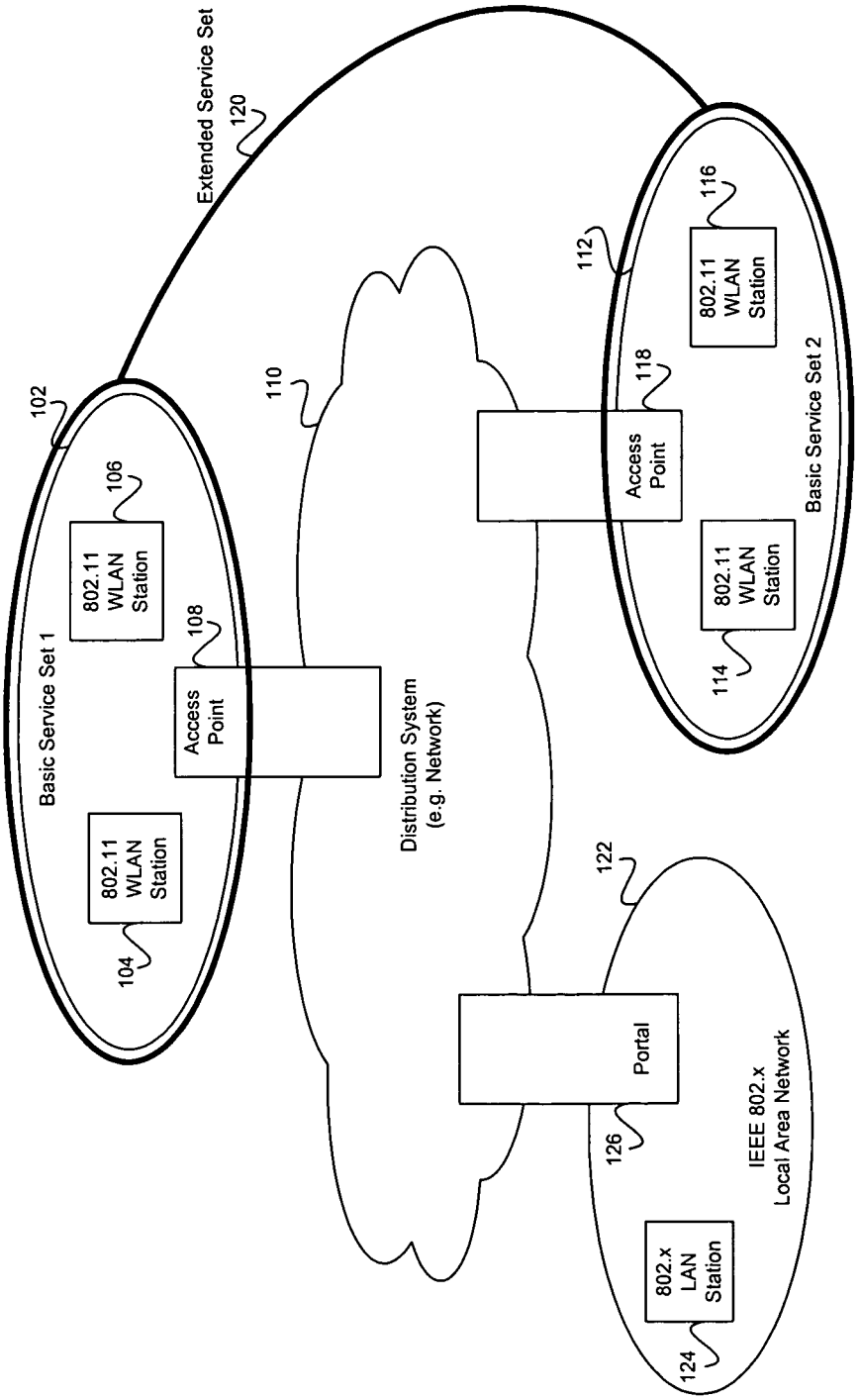


FIG. 1

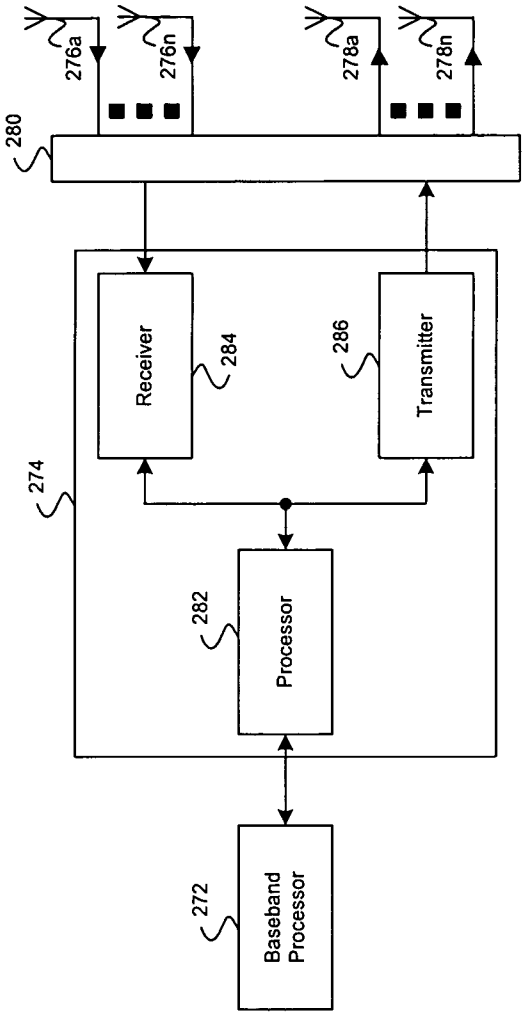


FIG. 2a

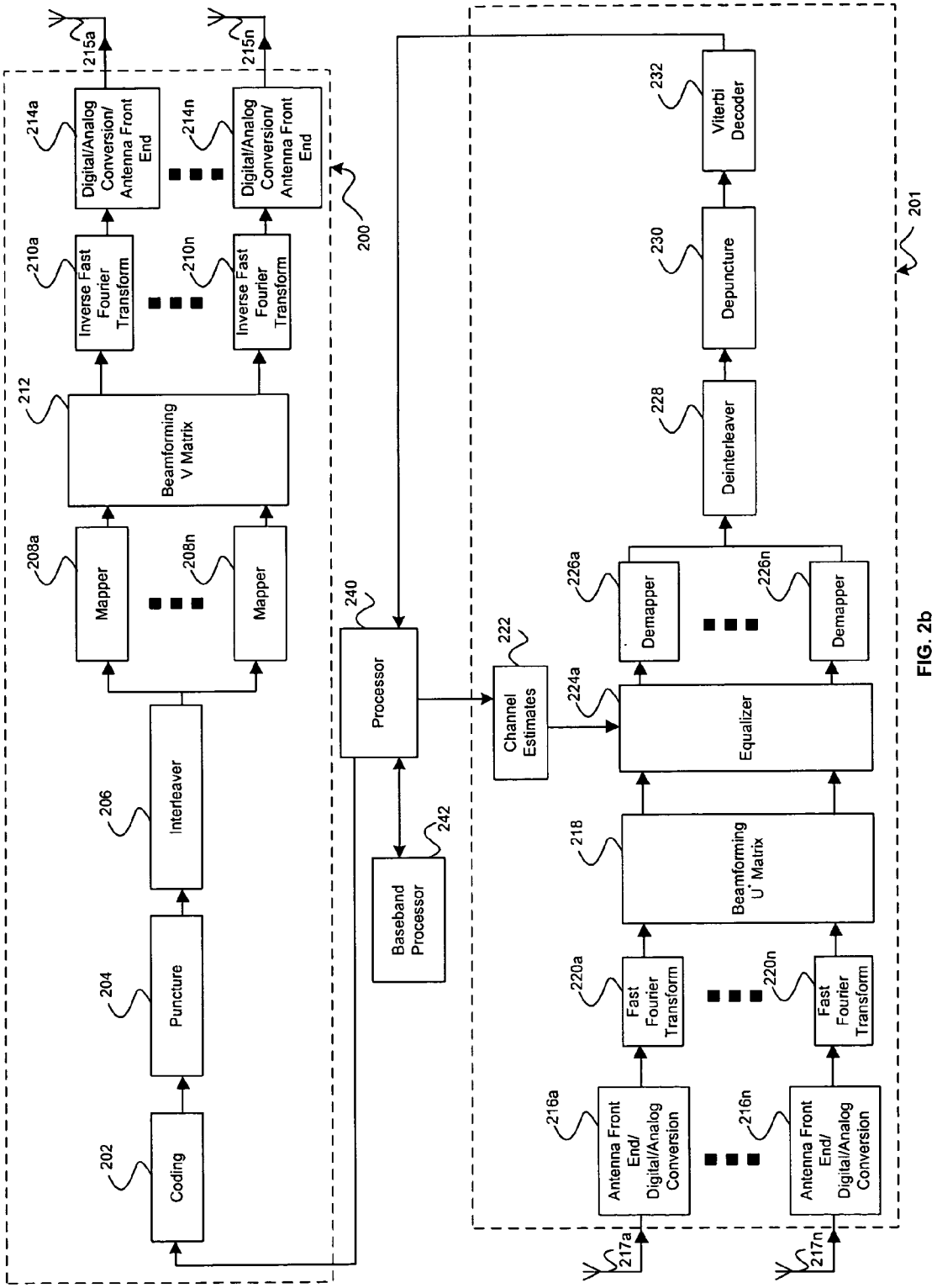


FIG. 2b

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