US 20240214117A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0214117 A1

Pan et al. (43) Pub. Date: Jun. 27, 2024

(54) EFFICIENT BROADCAST CHANNEL IN BEAMFORMED SYSTEMS FOR NR

(71) Applicant: **InterDigital Patent Holdings, Inc.**, Wilmington, DE (US)

(72) Inventors: **Kyle Jung-Lin Pan**, Saint James, NY (US); **Fengjun Xi**, San Diego, CA (US); **Robert L. Olesen**, Huntington, NY (US); **Chunxuan Ye**, San Diego, CA (US); **Janet A. Stern-Berkowitz**, Little Neck, NY (US)

(73) Assignee: **InterDigital Patent Holdings, Inc.**, Wilmington, DE (US)

(21) Appl. No.: **18/600,174**

(22) Filed: **Mar. 8, 2024**

Related U.S. Application Data

(63) Continuation of application No. 17/737,616, filed on May 5, 2022, now Pat. No. 11,968,041, which is a continuation of application No. 16/336,803, filed on Mar. 26, 2019, now Pat. No. 11,356,202, filed as application No. PCT/US2017/054160 on Sep. 28, 2017.

(60) Provisional application No. 62/454,491, filed on Feb. 3, 2017, provisional application No. 62/416,615, filed on Nov. 2, 2016, provisional application No. 62/401,024, filed on Sep. 28, 2016.

Publication Classification

(51) **Int. Cl.**

H04L 1/00	(2006.01)
H03M 13/09	(2006.01)
H04B 7/06	(2006.01)
H04W 48/10	(2006.01)
H04W 74/0833	(2006.01)

(52) **U.S. Cl.**

CPC ***H04L 1/0067*** (2013.01); ***H03M 13/09*** (2013.01); ***H04B 7/0617*** (2013.01); ***H04B 7/0623*** (2013.01); ***H04B 7/0695*** (2013.01); ***H04L 1/0057*** (2013.01); ***H04L 1/0061*** (2013.01); ***H04L 1/007*** (2013.01); ***H04L 1/0072*** (2013.01); ***H04W 74/0833*** (2013.01); *H04W 48/10* (2013.01)

(57) **ABSTRACT**

A method for transmitting system information on a PBCH is described herein. A transmission/reception point (TRP) may generate a concatenated master information block (MIB) transport block that includes information bits associated with system bandwidth information, timing information, system frame number (SFN), a beam sweeping configuration, and a control resource set (CORESET). The TRP may then attach at least 16 cyclic redundancy check (CRC) bits to the concatenated MIB and then prioritize the concatenated MIB and the at least 16 CRC bits based on content. The TRP may then perform channel coding of the prioritized concatenated MIB and the at least 16 CRC bits to produce coded bits using at least one polar encoder with a coding rate that is less than 1/3, perform rate matching via repetition on the coded bits, and then transmit the rate matched, coded bits on the PBCH of a radio frame.