US 20230232436A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0232436 A1**

KHOSHNEVISAN et al. (43) **Pub. Date: Jul. 20, 2023**

(54) **NON-TRANSPARENT SINGLE FREQUENCY NETWORK SCHEME**

(71) Applicant: **QUALCOMM Incorporated**, San Diego, CA (US)

(72) Inventors: **Mostafa KHOSHNEVISAN**, San Diego, CA (US); **Xiaoxia ZHANG**, San Diego, CA (US); **Tao LUO**, San Diego, CA (US); **Jing SUN**, San Diego, CA (US); **Sungwoo PARK**, Seoul (KR); **Wooseok NAM**, San Diego, CA (US)

(21) Appl. No.: **18/180,923**

(22) Filed: **Mar. 9, 2023**

Related U.S. Application Data

(63) Continuation of application No. 17/146,227, filed on Jan. 11, 2021, now Pat. No. 11,627,601.

(60) Provisional application No. 62/967,469, filed on Jan. 29, 2020.

Publication Classification

(51) **Int. Cl.**

H04W 4/20	(2006.01)
H04W 80/02	(2009.01)
H04W 76/27	(2018.01)

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

CPC ***H04W 72/53*** (2023.01); ***H04W 80/02*** (2013.01); ***H04W 72/0446*** (2013.01); ***H04W 76/27*** (2018.02); ***H04W 72/23*** (2023.01); ***H04W 72/0453*** (2013.01)

(57) **ABSTRACT**

Example implementations include a method, apparatus and computer-readable medium of wireless communication. A user equipment (UE) may receive a downlink control information (DCI) indicating two or more transmission configuration indication (TCI) states for a physical downlink shared channel (PDSCH). The UE may differentiate that the two or more TCI states apply to all demodulation reference signal (DMRS) ports or all transmission layers across all resource blocks and symbols for the PDSCH from TCI states that apply to different sets of DMRS ports or different sets of resource blocks or symbols. The UE may generate a composite quasi-co-location (QCL) based on the two or more TCI states in response to the differentiating. The UE may receive the PDSCH based on the composite QCL.