



- (51) **International Patent Classification:**
H04B 7/024 (2017.01) *H04B 7/0417* (2017.01)
H04B 7/0452 (2017.01)
- (21) **International Application Number:**
PCT/US2018/013943
- (22) **International Filing Date:**
17 January 2018 (17.01.2018)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
62/459,290 15 February 2017 (15.02.2017) US
15/872,294 16 January 2018 (16.01.2018) US
- (71) **Applicant:** QUALCOMM INCORPORATED [US/US];
Attn: International IP Administration, 5775 Morehouse Drive,
San Diego, California 92121-1714 (US).
- (72) **Inventors:** VERMANI, Sameer; 5775 Morehouse Drive,
San Diego, California 92121-1714 (US). TIAN, Bin; 5775
Morehouse Drive, San Diego, California 92121-1714 (US).
- (74) **Agent:** GARG, Ankur et al.; Patterson & Sheridan,
L.L.P., 24 Greenway Plaza, Suite 1600, Houston, Texas
77046-2472 (US).
- (81) **Designated States** (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States** (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,

(54) **Title:** DISTRIBUTED MULTI-USER (MU) WIRELESS COMMUNICATION

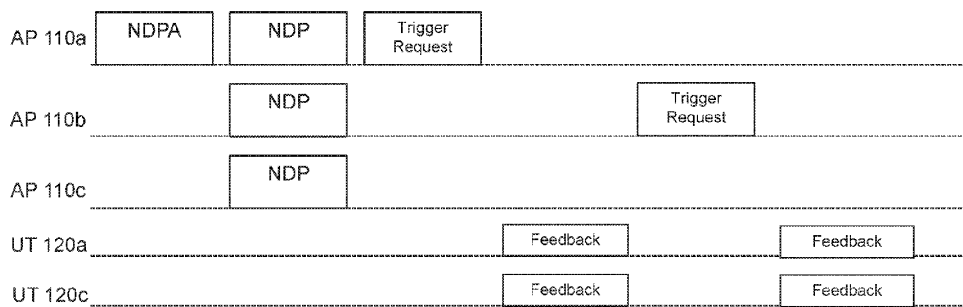


FIG. 5

(57) **Abstract:** This disclosure provides systems, methods and apparatus, including computer programs encoded on computer storage media, for group formation and sounding for distributed multi-user multiple input multiple output (MU-MIMO). Some implementations include a method of wireless communication. The method includes transmitting, from a first access point of a plurality of access points, an announcement frame for performing a beamforming procedure for a distributed transmission. The distributed transmission includes a transmission from the plurality of access points. The announcement frame includes at least one identifier of a user terminal in a different basic service set than a basic service set of the first access point. The method further includes transmitting a packet for measuring a channel. The method further includes receiving feedback information from the user terminal based on the packet for measuring the channel. The method further includes transmitting the distributed transmission using the beamforming procedure.

[Continued on next page]

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*