

(51) International Patent Classification:
H04L 27/26 (2006.01) **H04B 1/62** (2006.01)(21) International Application Number:
PCT/IB2011/054278(22) International Filing Date:
29 September 2011 (29.09.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PCT/IB2010/054387
29 September 2010 (29.09.2010) IB(71) Applicants (for all designated States except US): **EADS SINGAPORE PTE. LTD.** [SG/SG]; 110, Seletar Aerospace View, (level 3), Singapore 797562 (SG). **EADS DEUTSCHLAND GMBH** [DE/DE]; Willy-Messerschmidt-Strasse, 85521 Ottobrunn (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HELLER, Christoph** [DE/DE]; Keltenring 17, 82024 Taufkirchen (DE). **FATH, Thilo** [DE/DE]; Arzberger Str. 6, 81549 München (DE). **MEENAKSHISUNDARAM, Vivekanandan** [IN/SG]; Blk. 203E, Compassvale Road #15-79, Sengkang, Singapore 545203 (SG).(74) Agents: **SCHWEIGER, Martin** et al.; Schweiger & Partners (Singapore) LLP, 105 Cecil Street, #03-02, The Octagon, Singapore 069534 (SG).

(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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: METHOD AND DEVICE FOR CANCELLING DOPPLER SHIFT INDUCED INTER CARRIER INTERFERENCE IN AN OFDM COMMUNICATION SYSTEM BY USING SIGNAL PRE-DISTORTION

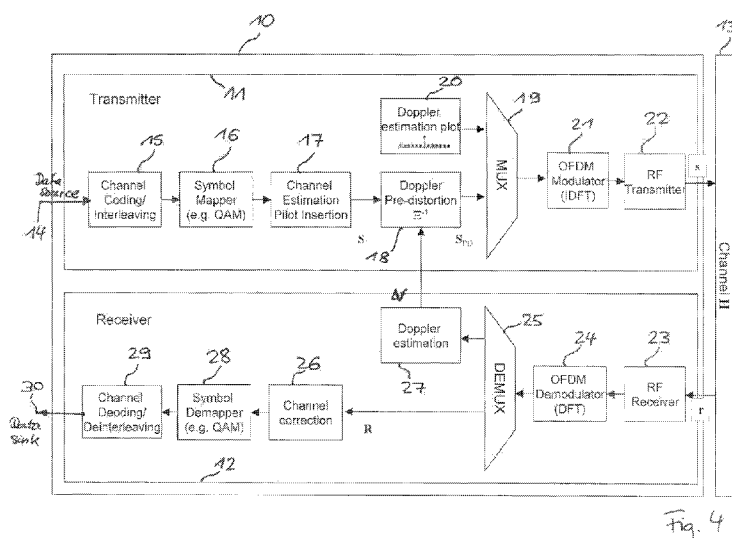


Fig. 4

(57) Abstract: A Transmitter for generating an OFDM signal is disclosed that comprises a Doppler pre-distortion unit with an input section for receiving a data vector S , an OFDM modulator, a Doppler Shift memory location for readably storing a pre-determined Doppler Shift value. The Doppler pre-distortion unit is adapted to generate a pre-distorted data vector S_{PD} from the data vector S . The components of the pre-distorted vector S_{PD} and of the data vector S represent data symbols and the pre-distorted data vector S_{PD} is a linear function of the data vector S , and the linear function is dependent on the Doppler shift value. The OFDM modulator is adapted to generate an OFDM signal such that sub-carrier amplitudes of the OFDM signal are based on the components of the pre-distorted data vector S_{PD} .