

(43) International Publication Date
21 April 2022 (21.04.2022)



(10) International Publication Number
WO 2022/081844 A1

(51) International Patent Classification:

<i>H01Q 1/08</i> (2006.01)	<i>H01Q 21/26</i> (2006.01)
<i>H01Q 15/00</i> (2006.01)	<i>H01Q 1/28</i> (2006.01)

(21) International Application Number:

PCT/US2021/054985

(22) International Filing Date:

14 October 2021 (14.10.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/091,909 14 October 2020 (14.10.2020) US

(71) **Applicant:** VIASAT, INC. [US/US]; PATENT DEPARTMENT, 6155 EL CAMINO REAL, CARLSBAD, California 92009 (US).

(72) **Inventors:** WITTWER, David C.; VIASAT, INC., C/

O PATENT DEPARTMENT, 6155 EL CAMINO REAL, CARLSBAD, California 92009 (US). **GREENIDGE, David D.**; VIASAT, INC., C/O PATENT DEPARTMENT, 6155 EL CAMINO REAL, CARLSBAD, California 92009 (US). **KRETSCH, Michael T.**; VIASAT, INC., C/O PATENT DEPARTMENT, 6155 EL CAMINO REAL, CARLSBAD, California 92009 (US). **HOUSE, Kevin D.**; VIASAT, INC., C/O PATENT DEPARTMENT, 6155 EL CAMINO REAL, CARLSBAD, California 92009 (US). **VOSSLER, Mark D.**; VIASAT, INC., C/O PATENT DEPARTMENT, 6155 EL CAMINO REAL, CARLSBAD, California 92009 (US).

(74) Agent: BURRASTON, N. Kenneth et al.; VIASAT, INC.,

C/OPATENT DEPARTMENT, 6155 EL CAMINO REAL,
CARLSBAD, California 92009 (US).

(54) Title: DEPLOYABLE ANTENNA APPARATUS WITH INFLATE TO LATCH MECHANISM

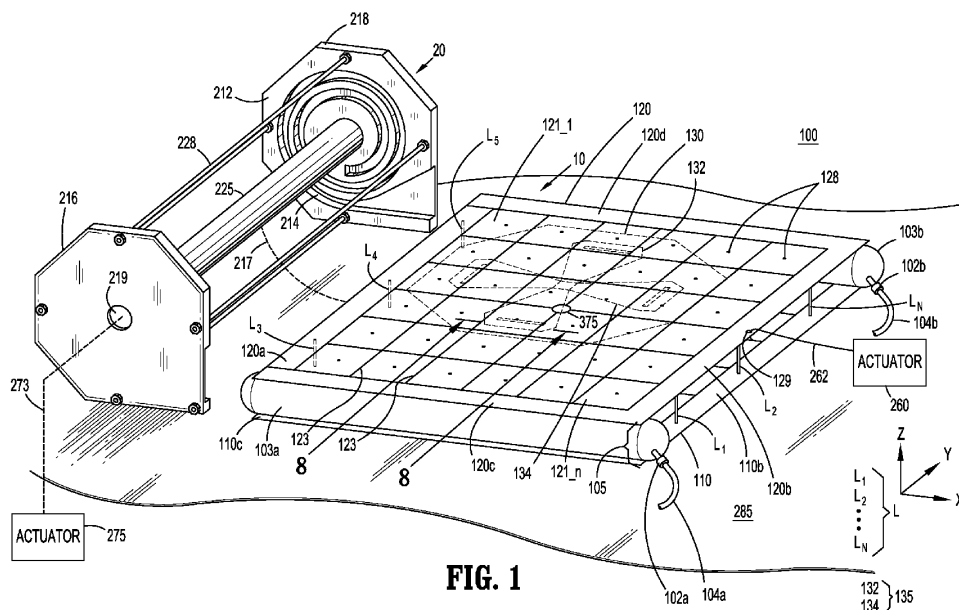


FIG. 1

(57) **Abstract:** An AMC antenna apparatus includes a ground plane and a flexible antenna element layer above the ground plane. The ground plane includes a conductive base surface, a plurality of flexible conductors, and a frequency selective surface (FSS) layer above the base surface, where the FSS layer includes a plurality of conductive patches separated from one another. Each of the flexible conductors electrically connects one of the conductive patches to the base surface. A latch mechanism is arranged between the base layer and the FSS layer. An inflatable bladder system between the base layer and the FSS layer is configured to receive a gas input during deployment of the antenna apparatus and inflate to produce force sufficient to cause the latch mechanism to transition from an unlatched state to a latched state in which the conductive base surface is fixedly separated from the FSS layer at a predetermined distance.

[Continued on next page]

(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, IT, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, 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))