

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT2762284

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	SECURITY AGREEMENT

**CONVEYING PARTY DATA**

Name	Execution Date
HUGHES NETWORK SYSTEMS LLC	02/20/2014

**RECEIVING PARTY DATA**

<b>Name:</b>	WELLS FARGO BANK, NATIONAL ASSOCIATION, AS COLLATERAL AGENT
<b>Street Address:</b>	625 MARQUETTE AVE, 11TH FLOOR
<b>City:</b>	MINNEAPOLIS
<b>State/Country:</b>	MINNESOTA
<b>Postal Code:</b>	55470

**PROPERTY NUMBERS Total: 45**

Property Type	Number
Patent Number:	8619974
Patent Number:	8601344
Patent Number:	8594587
Patent Number:	8594230
Patent Number:	8576767
Patent Number:	8553801
Patent Number:	8527833
Patent Number:	8559357
Patent Number:	8542667
Application Number:	14034546
Application Number:	14034491
Application Number:	14030757
Application Number:	13962883
Application Number:	13955862
Application Number:	13916354
Application Number:	13902513
Application Number:	13900501
Application Number:	13864213
Application Number:	13860509
Application Number:	13791949

**PATENT**

Property Type	Number
Application Number:	13538119
Application Number:	13536610
Application Number:	13536604
Application Number:	13536600
Application Number:	13528440
Application Number:	13526275
Application Number:	13482686
Application Number:	13479094
Application Number:	13478744
Application Number:	13459869
Application Number:	13459727
Application Number:	13453692
Application Number:	13422534
Application Number:	13407495
Application Number:	13403532
Application Number:	13400959
Application Number:	13398776
Application Number:	13398763
Application Number:	13327316
Application Number:	13306279
Application Number:	13306269
Application Number:	13306251
Application Number:	13306200
Application Number:	13222834
Application Number:	12894380

**CORRESPONDENCE DATA**

**Fax Number:**

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.*

**Phone:** 303 7064506

**Email:** max.gratton@echostar.com

**Correspondent Name:** MAX GRATTON

**Address Line 1:** 100 INVERNESS TERRACE EAST

**Address Line 4:** ENGLEWOOD, COLORADO 80112

**NAME OF SUBMITTER:** MAX S GRATTON (REG NO. 56,541)

**SIGNATURE:** /Max S Gratton/

**DATE SIGNED:** 03/11/2014

**Total Attachments: 6**

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**PATENT**

**REEL: 032404 FRAME: 0095**

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## Patent Security Agreement

**Patent Security Agreement**, dated as of February 20, 2014, by Hughes Network Systems, LLC, a Colorado limited liability company ("Pledgor"), in favor of Wells Fargo Bank, National Association, in its capacity as collateral agent pursuant to the Indenture (in such capacity, the "Collateral Agent").

### WITNESSETH:

WHEREAS, the Pledgor is party to a Security Agreement dated as of June 8, 2011 (as amended, amended and restated, supplemented or otherwise modified from time to time, the "Security Agreement") in favor of the Collateral Agent pursuant to which the Pledgor is required to execute and deliver this Patent Security Agreement;

NOW, THEREFORE, in consideration of the premises and to induce the Collateral Agent, for the benefit of the Secured Parties, to enter into the Indenture, the Pledgor hereby agrees with the Collateral Agent as follows:

SECTION 1. Defined Terms. Unless otherwise defined herein, terms defined in the Security Agreement and used herein have the meaning given to them in the Security Agreement.

SECTION 2. Grant of Security Interest in Patent Collateral. The Pledgor hereby pledges and grants to the Collateral Agent for the benefit of the Secured Parties a lien on and security interest in and to all of its right, title and interest in, to and under all the following Pledged Collateral of the Pledgor:

- (a) Patents of the Pledgor listed on Schedule I attached hereto; and
- (b) all Proceeds of any and all of the foregoing (other than Excluded Property).

SECTION 3. Security Agreement. The security interest granted pursuant to this Patent Security Agreement is granted pursuant to the security interest granted to the Collateral Agent under the Security Agreement and the Pledgor hereby acknowledges and affirms that the rights and remedies of the Collateral Agent with respect to the security interest in the Patents made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein. In the event that any provision of this Patent Security Agreement is deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall control unless the Collateral Agent shall otherwise determine.

SECTION 4. Termination. Upon the payment in full of the Secured Obligations and termination of the Security Agreement, the Collateral Agent shall execute, acknowledge, and deliver to the Pledgor an instrument in writing in recordable form releasing the collateral pledge, grant, assignment, lien and security interest in the Patents under this Patent Security Agreement.

SECTION 5. Counterparts. This Patent Security Agreement may be executed in any number of counterparts, all of which shall constitute one and the same instrument, and any party hereto may execute this Patent Security Agreement by signing and delivering one or more counterparts.

SECTION 6. Governing Law. This Patent Security Agreement and the transactions contemplated hereby, and all disputes between the parties under or relating to this Patent Security Agreement or the facts or circumstances leading to its execution, whether in contract, tort or otherwise, shall be construed in accordance with and governed by the laws (including statutes of limitation) of the State of New York, without regard to conflicts of law principles that would require the application of the laws of another jurisdiction.

[signature page follows]

IN WITNESS WHEREOF, the Pledgor and the Collateral Agent have caused this Patent Security Agreement to be duly executed and delivered by their duly authorized officer as of the date first set forth above.

**HUGHES NETWORK SYSTEMS, LLC,**  
as Pledgor

By: 

Name: Cleo V. Belmonte

Title: Assistant Secretary

**WELLS FARGO BANK, NATIONAL  
ASSOCIATION,**  
as Collateral Agent

By: 

Name:

**Richard Prokoach  
Vice President**

Title:

**SCHEDULE I**  
to  
**PATENT SECURITY AGREEMENT**  
**PATENT REGISTRATIONS AND PATENT APPLICATIONS**

**United States Patent Registrations:**

<b>Owner</b>	<b>Registration Number</b>	<b>Name</b>
Hughes Network Systems, LLC	8,619,974	METHOD AND SYSTEM FOR PROVIDING SPREAD SCRAMBLED CODED MULTIPLE ACCESS (SSCMA)
Hughes Network Systems, LLC	8,601,344	METHOD AND APPARATUS FOR PARAMETERIZED INTERLEAVER DESIGN PROCESS
Hughes Network Systems, LLC	8,594,587	METHOD AND APPARATUS FOR INTEGRATED WAVEGUIDE TRANSMIT-RECEIVE ISOLATION, FILTERING, AND CIRCULAR POLARIZATION
Hughes Network Systems, LLC	8,594,230	SYSTEM AND METHOD FOR CONSTRUCTING UNIQUE WORD SETS FOR EFFICIENT DETECTION USING ORTHOGONAL FUNCTIONS
Hughes Network Systems, LLC	8,576,767	METHOD AND SYSTEM FOR PROVIDING A SATELLITE INTERFACE TO SUPPORT MOBILE COMMUNICATION SERVICES
Hughes Network Systems, LLC	8,553,801	SYSTEM AND METHOD FOR DYNAMIC OUTPUT BACK-OFF
Hughes Network Systems, LLC	8,527,833	METHOD AND APPARATUS FOR A PARAMETERIZED INTERLEAVER DESIGN PROCESS
Hughes Network Systems, LLC	8,559,357	METHOD AND APPARATUS FOR A TRIPLE USE SATELLITE SYSTEM
Hughes Network Systems, LLC	8,542,667	HIGH CAPACITY SATELLITE COMMUNICATIONS SYSTEM

**United States Patent Applications:**

<b>Owner</b>	<b>Registration Number</b>	<b>Name</b>
Hughes Network Systems, LLC	14/034,546	METHOD AND SYSTEM FOR PROVIDING A SATELLITE INTERFACE TO SUPPORT MOBILE COMMUNICATION SERVICES
Hughes Network Systems, LLC	14/034,491	SYSTEM AND METHOD FOR ENHANCED PAGING AND QUALITY OF SERVICE ESTABLISHMENT IN MOBILE SATELLITE SYSTEMS
Hughes Network Systems, LLC	14/030,757	HIGH CAPACITY SATELLITE COMMUNICATIONS SYSTEM
Hughes Network Systems, LLC	13/962,883	SYSTEM AND METHOD FOR PROVIDING IMPROVED QUALITY OF SERVICE OVER BROADBAND NETWORKS
Hughes Network Systems, LLC	13/955,862	METHOD AND APPARATUS FOR A PARAMETERIZED INTERLEAVER DESIGN PROCESS
Hughes Network Systems, LLC	13/916,354	SYSTEM AND METHOD FOR ITERATIVE NONLINEAR COMPENSATION FOR INTERMODULATION DISTORTION IN MULTICARRIER COMMUNICATION SYSTEMS

Hughes Network Systems, LLC	13/902,513	SYSTEM AND METHOD FOR EFFICIENT USE OF RADIO RESOURCES FOR PUSH-TO-TALK SERVICES IN MOBILE WIRELESS COMMUNICATIONS SYSTEMS
Hughes Network Systems, LLC	13/900,501	SYSTEM AND METHOD FOR EFFICIENT USE OF RADIO RESOURCES IN MULTICAST SERVICES IN MOBILE WIRELESS COMMUNICATIONS SYSTEMS
Hughes Network Systems, LLC	13/864,213	SYSTEM ARCHITECTURE FOR HIGH DENSITY SATELLITE CAPACITY FOOTPRINT WITH FLEXIBLE ANTENNA SIGNAL ROUTING CAPABILITIES
Hughes Network Systems, LLC	13/860,509	SYSTEM AND METHOD FOR CORRELATING RECEIVED SIGNAL OVER TIME AND FREQUENCY
Hughes Network Systems, LLC	13/791,949	METHOD AND SYSTEM FOR PROVIDING LOW DENSITY PARITY CHECK (LDPC) CODING FOR SCRAMBLED CODED MULTIPLE ACCESS (SCMA)
Hughes Network Systems, LLC	13/538,119	FRAME TIMING SYNCRHONIZATION IN A GEOSTATIONARY SATELLITE SYSTEM
Hughes Network Systems, LLC	13/536,610	TERMINAL DIAGNOSIS SELF CORRECTION METHOD AND SYSTEM
Hughes Network Systems, LLC	13/536,604	PEER GROUP DIAGNOSIS DETECTION METHOD AND SYSTEM
Hughes Network Systems, LLC	13/536,600	PROBLEM SIGNATURE TERMINAL DIAGNOSIS METHOD AND SYSTEM
Hughes Network Systems, LLC	13/528,440	ANTENNA FEEDHORN WITH ONE-PIECE FEEDCAP
Hughes Network Systems, LLC	13/526,275	SYSTEM AND METHOD FOR COOKIE-BASED BROWSER IDENTIFICATION AND TRACKING
Hughes Network Systems, LLC	13/482,686	METHOD AND APPARATUS FOR SYNCHRONIZATION OF DATA AND ERROR SAMPLES IN A COMMUNICATIONS SYSTEM
Hughes Network Systems, LLC	13/479,094	FRAME TIMING SYNCRHONIZATION IN A GEOSTATIONARY SATELLITE SYSTEM
Hughes Network Systems, LLC	13/478,744	METHOD AND APPARATUS FOR PARALLEL DEMODULATION OF HIGH SYMBOL RATE DATA STREAMS IN A COMMUNICATIONS SYSTEM
Hughes Network Systems, LLC	13/459,869	METHOD AND APPARATUS FOR DYNAMIC ASSOCIATION OF TERMINAL NODES WITH AGGREGATION NODES AND LOAD BALANCING
Hughes Network Systems, LLC	13/459,727	METHOD AND APPARATUS FOR DYNAMIC LOAD BALANCING OF COMMUNICATIONS CHANNELS FOR CONTROLLING TRAFFIC LOAD IN A COMMUNICATIONS SYSTEM
Hughes Network Systems, LLC	13/453,692	METHOD AND APPARATUS FOR LOAD BALANCING ON A PRIORITY LEVEL BASIS OVER SHARED COMMUNICATIONS CHANNELS OF A COMMUNICATIONS SYSTEM
Hughes Network Systems, LLC	13/422,534	METHOD AND APPARATUS FOR WIRELESS DATA TRANSMISSION SUBJECT TO PERIODIC SIGNAL BLOCKAGES
Hughes Network Systems, LLC	13/407,495	SYSTEM AND METHOD FOR EFFICIENT FREQUENCY ESTIMATION IN BURST-MODE COMMUNICATION
Hughes Network Systems, LLC	13/403,532	METHOD FOR ITERATIVE ESTIMATION OF GLOBAL PARAMETERS
Hughes Network Systems, LLC	13/400,959	APPARATUS AND METHOD FOR PHASE LOCKED LOOP BANDWIDTH EXPANSION
Hughes Network Systems, LLC	13/398,776	SYSTEM AND METHOD FOR ESTIMATING TERMINAL POSITION BASED ON NON-GEOSTATIONARY COMMUNICATION SATELLITE SIGNALS
Hughes Network Systems, LLC	13/398,763	SYSTEM AND METHOD FOR ENHANCED PAGING AND QUALITY OF SERVICE ESTABLISHMENT IN MOBILE SATELLITE SYSTEMS



Hughes Network Systems, LLC	13/327,316	METHOD AND APPARATUS FOR IMPROVED HIGH ORDER MODULATION
Hughes Network Systems, LLC	13/306,279	COMPUTER NETWORKING SYSTEM AND METHOD WITH JAVASCRIPT INJECTION FOR WEB PAGE RESPONSE TIME DETERMINATION
Hughes Network Systems, LLC	13/306,269	COMPUTER NETWORKING SYSTEM AND METHOD WITH PRE-FETCHING USING BROWSER SPECIFICS AND COOKIE INFORMATION
Hughes Network Systems, LLC	13/306,251	COMPUTER NETWORKING SYSTEM AND METHOD WITH JAVASCRIPT EXECUTION FOR PRE-FETCHING CONTENT FROM DYNAMICALLY-GENERATED URL AND JAVASCRIPT INJECTION TO MODIFY DATE OR RANDOM NUMBER CALCULATION
Hughes Network Systems, LLC	13/306,200	COMPUTER NETWORKING SYSTEM AND METHOD WITH JAVASCRIPT EXECUTION FOR PRE-FETCHING CONTENT FROM DYNAMICALLY-GENERATED URL
Hughes Network Systems, LLC	13/222,834	SYSTEM AND METHOD FOR MAINTAINING DATA CONNECTIVITY OVER A SATELLITE LINK
Hughes Network Systems, LLC	12/894,380	PHASE PULSE SYSTEM AND METHOD FOR BANDWIDTH AND ENERGY EFFICIENT CONTINUOUS PHASE MODULATION