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10  
11

12 UNITED STATES DISTRICT COURT  
13 CENTRAL DISTRICT OF CALIFORNIA  
14

15 The CALIFORNIA INSTITUTE OF  
TECHNOLOGY, a California  
16 corporation,

17 Plaintiff,

18 vs.

19 HUGHES COMMUNICATIONS,  
INC., a Delaware corporation,  
20 HUGHES NETWORK SYSTEMS,  
LLC, a Delaware limited liability  
21 company, DISH NETWORK  
CORPORATION, a Nevada  
22 corporation, DISH NETWORK L.L.C.,  
a Colorado limited liability company,  
23 and DISHNET SATELLITE  
BROADBAND L.L.C., a Colorado  
24 limited liability company,

25 Defendants.  
26  
27  
28

CASE NO. 2:15-CV-01108

**COMPLAINT FOR PATENT  
INFRINGEMENT**

**JURY TRIAL DEMANDED**

1 Plaintiff the California Institute of Technology (“Caltech” or “Plaintiff”), by  
2 and through its undersigned counsel, complains and alleges as follows against  
3 Hughes Communications, Inc., Hughes Network Systems, LLC, DISH Network  
4 Corporation, DISH Network L.L.C., and dishNET Satellite Broadband L.L.C.  
5 (collectively, “Defendants”):

6 **NATURE OF THE ACTION**

7 1. This is a civil action for patent infringement arising under the patent  
8 laws of the United States, 35 U.S.C. §§ 1 *et seq.*

9 2. Defendants have infringed and continue to infringe, contributed to and  
10 continue to contribute to the infringement of, and/or actively induced and continue  
11 to induce others to infringe Caltech’s U.S. Patent No. 7,116,710, U.S. Patent No.  
12 7,421,032, U.S. Patent No. 7,916,781, and U.S. Patent No. 8,284,833 (collectively,  
13 “the Asserted Patents”). Caltech is the legal owner by assignment of the Asserted  
14 Patents, which were duly and legally issued by the United States Patent and  
15 Trademark Office. Caltech seeks injunctive relief and monetary damages.

16 **THE PARTIES**

17 3. Caltech is a non-profit private university organized under the laws of  
18 the State of California, with its principal place of business at 1200 East California  
19 Boulevard, Pasadena, California 91125.

20 4. On information and belief, Hughes Communications, Inc. (“Hughes  
21 Communications”) is a corporation organized under the laws of the State of  
22 Delaware, with its principal place of business located at 11717 Exploration Lane,  
23 Germantown, Maryland 20876.

24 5. On information and belief, Hughes Network Systems, LLC (“Hughes  
25 Network”) is a limited liability company organized under the laws of the State of  
26 Delaware, with its principal place of business located at 11717 Exploration Lane,  
27 Germantown, Maryland 20876. On information and belief, Hughes Network is a  
28 wholly owned subsidiary of Hughes Communications. Hughes Communications

1 and Hughes Network, collectively, are referred to as “Hughes Defendants.”

2 6. On information and belief, DISH Network Corporation (“DISH Corp.”)  
3 is a corporation organized under the laws of the State of Nevada with its principal  
4 place of business located at 9601 South Meridian Boulevard, Englewood, Colorado  
5 80112.

6 7. On information and belief, DISH Network L.L.C. (“DISH L.L.C.”) is a  
7 limited liability company organized under the laws of the State of Colorado with its  
8 principal place of business located at 9601 South Meridian Boulevard, Englewood,  
9 Colorado 80112. On information and belief, DISH L.L.C. is a wholly owned  
10 subsidiary of DISH Corp.

11 8. On information and belief, dishNET Satellite Broadband L.L.C.  
12 (“dishNET”) is a limited liability company organized under the laws of the State of  
13 Colorado with its principal place of business located at 9601 South Meridian  
14 Boulevard, Englewood, Colorado 80112. On information and belief, dishNET is a  
15 wholly owned subsidiary of DISH Corp. On information and belief, dishNET and  
16 DISH L.L.C. are related entities. DISH Corp., DISH L.L.C., and dishNET,  
17 collectively, are referred to as “Dish Defendants.”

18 **JURISDICTION AND VENUE**

19 9. This Court has jurisdiction over the subject matter of this action under  
20 28 U.S.C. §§ 1331 and 1338(a).

21 10. Hughes Defendants are subject to this Court’s personal jurisdiction. On  
22 information and belief, Hughes Defendants regularly conduct business in the State  
23 of California, including in the Central District of California, and have committed  
24 acts of patent infringement and/or contributed to or induced acts of patent  
25 infringement by others in this District and elsewhere in California and the United  
26 States. As such, Hughes Defendants have purposefully availed themselves of the  
27 privilege of conducting business within this District; have established sufficient  
28 minimum contacts with this District such that they should reasonably and fairly

1 anticipate being haled into court in this District; have purposefully directed activities  
2 at residents of this State; and at least a portion of the patent infringement claims  
3 alleged herein arise out of or are related to one or more of the foregoing activities.

4 11. Dish Defendants are subject to this Court's personal jurisdiction. On  
5 information and belief, Dish Defendants regularly conduct business in the State of  
6 California, including in the Central District of California, maintain employees in this  
7 District and elsewhere in California, and have committed acts of patent infringement  
8 and/or contributed to or induced acts of patent infringement by others in this District  
9 and elsewhere in California and the United States. As such, Dish Defendants have  
10 purposefully availed themselves of the privilege of conducting business within this  
11 District; have established sufficient minimum contacts with this District such that  
12 they should reasonably and fairly anticipate being haled into court in this District;  
13 have purposefully directed activities at residents of this State; and at least a portion  
14 of the patent infringement claims alleged herein arise out of or are related to one or  
15 more of the foregoing activities.

16 12. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391  
17 and 1400 because Defendants regularly conduct business in this District, and certain  
18 of the acts complained of herein occurred in this District.

19 **CALTECH'S ASSERTED PATENTS**

20 13. On October 3, 2006, the United States Patent Office issued U.S. Patent  
21 No. 7,116,710, titled "Serial Concatenation of Interleaved Convolutional Codes  
22 Forming Turbo-Like Codes" (the "'710 patent"). A true and correct copy of the  
23 '710 patent is attached hereto as Exhibit A.

24 14. On September 2, 2008, the United States Patent Office issued U.S.  
25 Patent No. 7,421,032, titled "Serial Concatenation of Interleaved Convolutional  
26 Codes Forming Turbo-Like Codes" (the "'032 patent"). A true and correct copy of  
27 the '032 patent is attached hereto as Exhibit B. The '032 patent is a continuation of  
28 the application that led to the '710 patent.

1           15.     On March 29, 2011, the United States Patent Office issued U.S. Patent  
2 No. 7,916,781, titled “Serial Concatenation of Interleaved Convolutional Codes  
3 Forming Turbo-Like Codes” (the “’781 patent”). A true and correct copy of the  
4 ’781 patent is attached hereto as Exhibit C. The ’781 patent is a continuation of the  
5 application that led to the ’032 patent, which is a continuation of the application that  
6 led to the ’710 patent.

7           16.     On October 9, 2012, the United States Patent Office issued U.S. Patent  
8 No. 8,284,833, titled “Serial Concatenation of Interleaved Convolutional Codes  
9 Forming Turbo-Like Codes” (the “’833 patent”). A true and correct copy of the  
10 ’833 patent is attached hereto as Exhibit D. The ’833 patent is a continuation of the  
11 application that led to the ’781 patent, which is a continuation of the application that  
12 led to the ’032 patent, which is a continuation of the application that led to the ’710  
13 patent.

14           17.     The Asserted Patents identify Hui Jin, Aamod Khandekar, and Robert  
15 J. McEliece as the inventors (the “Named Inventors”).

16           18.     Caltech is the owner of all right, title, and interest in and to each of the  
17 Asserted Patents with full and exclusive right to bring suit to enforce the Asserted  
18 Patents, including the right to recover for past damages and/or royalties.

19           19.     The Asserted Patents are valid and enforceable.

20                           **BACKGROUND TO THIS ACTION**

21           20.     The Asserted Patents disclose a seminal improvement to coding  
22 systems and methods used for digital satellite transmission. The Asserted Patents  
23 disclose an ensemble of codes called irregular repeat-accumulate (IRA) codes,  
24 which are specific types of low-density parity check (LDPC) codes. The IRA codes  
25 disclosed in the Asserted Patents enable a transmission rate close to the theoretical  
26 limit, while also providing the advantage of a low encoding complexity.

27           21.     In September 2000, the Named Inventors of the Asserted Patents  
28 published a paper regarding their invention, titled “Irregular Repeat-Accumulate

1 Codes” for the Second International Conference on Turbo Codes. (Exhibit E.) This  
2 paper has been widely cited by experts in the industry.

3 22. Experts recognize the importance and usefulness of the IRA codes  
4 disclosed in the September 2000 paper by the Named Inventors of the Asserted  
5 Patents. For example, a paper praising these IRA codes was published in August  
6 2004 by Aline Roumy, Souad Guemghar, Giuseppe Caire, and Sergio Verdú in the  
7 IEEE Transactions on Information Theory. This paper, titled “Design Methods for  
8 Irregular Repeat-Accumulate Codes,” states:

9 IRA codes are, in fact, special subclasses of both irregular  
10 LDPCs and irregular turbo codes. . . . IRA codes are an  
11 appealing choice because the encoder is extremely simple, their  
12 performance is quite competitive with that of turbo codes and  
13 LDPCs, and they can be decoded with a very-low-complexity  
14 iterative decoding scheme.

15 (Exhibit F, at 1.) This paper also notes that, four years after the September 2000  
16 paper, the Named Inventors were the only ones to propose a method to design IRA  
17 codes. (*Id.*)

18 23. Numerous satellite communications protocols utilize IRA codes. These  
19 protocols include: (1) the “Digital Video Broadcasting (DVB); Second generation  
20 framing structure, channel coding and modulation systems for Broadcasting,  
21 Interactive Services, News Gathering and other broadband satellite applications”  
22 (“DVB-S2”); (2) the “Internet Protocol over Satellite” standard TIA-1008-B (2012)  
23 (“IPoS”), and (3) on information and belief, other protocols utilized by Defendants’  
24 products and services, including enhanced or modified versions of the DVB-S2 and  
25 IPoS protocols.

26 24. The importance and usefulness of the IRA codes is manifest in their  
27 adoption as the proscribed channel coding method in the current DVB-S2 standard  
28 for digital satellite transmissions.

25. Experts in the industry recognize that the DVB-S2 standard uses the

1 IRA codes initially disclosed by the Named Inventors of the Asserted Patents. For  
2 example, a 2005 paper published by the highly regarded Institute of Electrical and  
3 Electronics Engineers (IEEE), titled “A Synthesizable IP Core for DVB-S2 LDPC  
4 Code Decoding,” and authored by Frank Kienle, Torben Brack, and Norbert Wehn  
5 recognizes:

6           The LDPC codes as defined in the DVB-S2 standard are IRA  
7 codes, thus the encoder realization is straight forward.  
8 Furthermore, the DVB-S2 code shows regularities which can be  
9 exploited for an efficient hardware realization.

9 (Exhibit G, at 1.)

10           26. Moreover, this paper provides credit to the September 2000 paper  
11 authored by the Named Inventors of the Asserted Patents for the origination of the  
12 IRA codes that are defined in the DVB-S2 standard. (*Id.* at 1 & n.8.)

13           27. Similarly, on information and belief, a 2007 paper titled “Factorizable  
14 Modulo  $M$  Parallel Architecture for DVB-S2 LDPC Decoding,” and published in the  
15 Proceedings of the 6th Conference on Telecommunications, recognizes that the  
16 DVB-S2 standard uses the IRA codes initially disclosed by the Named Inventors of  
17 the Asserted Patents. This paper, authored by Marco Gomes, Gabriel Falcão, Vitor  
18 Silva, Vitor Ferreira, Alexandre Sengo, and Miguel Falcão, states:

19           The new DVB-S2 [] standard adopted a special class of LDPC  
20 codes known by IRA codes [] as the main solution for the FEC  
21 system.

22 (Exhibit H, at 1.)

23           28. Moreover, this paper also credits the September 2000 paper authored  
24 by the Named Inventors of the Asserted Patents for the origination of the IRA codes  
25 that are defined in the DVB-S2 standard. (*Id.* at 1 & n.8.)

26           29. As even further support, on information and belief, a 2006 industry  
27 paper published in the Journal of Communications Software and Systems, titled  
28 “Design of LDPC Codes: A Survey and New Results” and authored by Gianluigi

1 Liva, Shumei Song, Lan Lan, Yifei Zhang, Shu Lin, and William E. Ryan, confirms  
2 that the DVB-S2 standard uses the IRA codes, stating:

3           The ETSI DVB S2 [] standard for digital video broadcast  
4           specifies two IRA code families with block lengths 64800 and  
5           16200.

6 (Exhibit I, at 10-11.)

7           30. As such, products, methods, equipment, and/or services that are  
8           designed to provide channel coding in accordance with this standard and/or to  
9           decode signals coded in accordance with the standard will practice one or more  
10          claims of each of the Asserted Patents, because the standard embodies the  
11          inventions of the Asserted Patents by using IRA codes.

12          31. In addition, IRA codes can also be used in products, methods,  
13          equipment, and/or services that are not “compliant” with the DVB-S2 standard. For  
14          example, the IPoS standard uses not only the DVB-S2 standard (which it uses for  
15          outroute transmissions), but also supports LDPC codes for inroute transmissions.  
16          On information and belief, the LDPC codes used for inroute transmissions are IRA  
17          codes.

18          32. On information and belief, Hughes Defendants most recent fourth  
19          generation satellite broadband service, HughesNet® Gen4 satellite Internet services  
20          (“Gen4 services”) uses versions of both the DVB-S2 and IPoS standards. The Gen4  
21          services were enabled by the launch of the EchoStar XVII satellite, which utilizes  
22          what the Hughes Defendants call “JUPITER High-Throughput Technology.”  
23          According to Hughes Defendants, the satellite employs “an enhanced version of the  
24          IPoS/DVBS2 standard.”

25          33. On information and belief, in order to support and provide the Gen4  
26          services offering to consumers and enterprise markets, Hughes Defendants  
27          manufacture, use, import, offer for sale, or sell products, methods, equipment,  
28          and/or services that infringe the Asserted Patents by using IRA codes. For example,



1 Hughes Defendants provide two-way access to satellite broadband, including the  
2 internet, through gateway modulators that transmit to and receive from modems  
3 located at customer premises. On information and belief, these gateway modulators  
4 and modems encode signals according to an enhanced version of the DVB-S2 and  
5 IPoS standards and decode such signals.

6 34. On information and belief, Hughes provides the outroute portion of this  
7 service utilizing gateway hardware, software, and/or firmware which encode IRA  
8 codes and customer premises equipment, including, at least, the HT1000 and  
9 HT1100 modems, which can decode such IRA codes.

10 35. On information and belief, the encoding on the inroute or return link for  
11 this service is performed in accordance with a version of the IPoS standard. The  
12 IPoS standard for inroute communications supports the use of IRA codes with the  
13 same relevant structure as IRA codes used by the DVB-S2 standard, with the only  
14 difference being the IPoS standard uses shorter block lengths for encoding. On  
15 information and belief, Hughes Defendants provide the inroute service utilizing  
16 customer premises equipment, including, at least, the HT1000 and HT1100  
17 modems, which can encode such IRA codes, along with gateway hardware,  
18 software, and/or firmware which can decode such IRA codes.

19 36. On information and belief, Hughes Defendants use the broadband  
20 equipment, including without limitation the HT1000 and HT1100 modems, gateway  
21 hardware, software and/or firmware (“Gen4 products”), in accord with the DVB-S2  
22 and IPoS standards to encode and/or decode IRA codes signals, for testing,  
23 consulting, customer support, and the provision of internet access services, among  
24 other activities.

25 37. On information and belief, Hughes Defendants further sell or provide  
26 Gen4 products, including the HT1000 and HT1100 modems, to Dish Defendants,  
27 who, in turn sell the service, under the dishNet brand name to customers.

28 38. On information and belief, and according to public filings, DISH pays

1 Hughes Network a rate per dishNET subscriber on a monthly basis.

2 39. On information and belief, Dish Defendants purchase from Hughes  
3 Defendants certain Gen4 products, including without limitation the HT1000, and  
4 HT1100 modems, and offer for sale, sell, provide, and/or distribute this equipment  
5 and service to its customers. On information and belief, Dish Defendants use Gen4  
6 products, in accord with the DVB-S2 and IPoS standards to encode and/or decode  
7 IRA codes signals, for testing, consulting and/or support services, among other  
8 activities. On information and belief, the dishNET services are primarily bundled  
9 with other services offered by Dish Defendants.

10 **COUNT I**

11 **Infringement of the '710 Patent**

12 40. Plaintiff re-alleges and incorporates by reference the allegations of the  
13 preceding paragraphs of this Complaint as if fully set forth herein.

14 41. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
15 have infringed and are currently infringing, directly and/or through intermediaries,  
16 the '710 patent by making, using, selling, offering for sale, and/or importing into the  
17 United States, without authority, Gen4 products and services that practice one or  
18 more claims of the '710 patent. These products, methods, equipment, and/or  
19 services encode signals using IRA codes, including in accordance with the DVB-S2  
20 and IPoS standards and/or decode such signals. Defendants have infringed and are  
21 currently infringing literally and/or under the doctrine of equivalents.

22 42. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
23 have infringed and are continuing to infringe the '710 patent by contributing to  
24 and/or actively inducing the infringement by others of the '710 patent by making,  
25 using, selling, offering for sale, and/or importing into the United States, without  
26 authority the Gen4 products and services that practice one or more claims of the  
27 '710 patent.

28 43. Hughes Defendants have had actual knowledge of their infringement of

1 the '710 patent before the filing date of this Complaint through letters alleging such  
2 infringement, or at least have had actual knowledge of their infringement of the '710  
3 patent since no later than the filing date of this Complaint.

4 44. On information and belief, Dish Defendants have had actual  
5 knowledge of their infringement of the '710 patent before the filing date of this  
6 Complaint based on their marketing, sale, and distribution, among other activities,  
7 of Gen4 products and services and their relationship with Hughes Defendants.  
8 Dish Defendants at least have had actual knowledge of their infringement of the  
9 '710 patent since no later than the filing date of this Complaint.

10 45. Notwithstanding Defendants' actual notice of infringement,  
11 Defendants have continued, directly and/or through intermediaries, to manufacture,  
12 use, import, offer for sale, or sell the Gen4 products and services with knowledge  
13 of or willful blindness to the fact that their actions will induce others, including but  
14 not limited to their customers; partners, including other Defendants; and/or end  
15 users, to infringe the '710 patent. Defendants have induced and continue to induce  
16 others to infringe the '710 patent in violation of 35 U.S.C. § 271 by encouraging  
17 and facilitating others to perform actions that Defendants know to be acts of  
18 infringement of the '710 patent with intent that those performing the acts infringe  
19 the '710 patent. Upon information and belief, Defendants, directly and/or through  
20 intermediaries, advertise and distribute the Gen4 products and services, publish  
21 instruction materials, specifications and/or promotional literature describing the  
22 operation of the Gen 4 products and services, and/or offer training and/or  
23 consulting services regarding the Gen 4 products and services to their customers;  
24 partners, including other Defendants; and/or end users. At least consumers;  
25 partners, including other Defendants; and/or end users of these Gen 4 products and  
26 services then directly or jointly infringe the '710 patent by making, using, selling,  
27 offering for sale, and/or importing into the United States, without authority, the  
28 Gen 4 products and services.

1           46. Upon information and belief, Defendants know that the Gen 4 products  
2 and services are especially made or especially adapted for use in the infringement of  
3 the '710 patent. The infringing components of these products are not staple articles  
4 or commodities of commerce suitable for substantial non-infringing use, and the  
5 infringing components of these products are a material part of the invention of the  
6 '710 patent. Accordingly, in violation of 35 U.S.C. § 271, Defendants are also  
7 contributing, directly and/or through intermediaries, to the direct infringement of the  
8 '710 patent by at least the customers, partners, and/or end users of these Gen 4  
9 products and services. The customers, partners, and/or end users of these Gen 4  
10 products and services directly infringe the '710 patent by making, using, selling,  
11 offering for sale, and/or importing into the United States, without authority, the Gen  
12 4 products and services.

13           47. As but one example of Hughes Defendants' contributory and/or  
14 induced infringement, Hughes Defendants explicitly encourage their customers to  
15 practice the methods disclosed and claimed in the '710 patent by using the Gen 4  
16 products and services. Hughes Defendants provide user guides to their customers  
17 for the Gen4 products and services, including the HT1000 and HT1100 modems.  
18 (*See* Exhibits J, K.) On information and belief, through materials such as these, the  
19 Hughes Defendants actively encourage their consumers, partners, and/or end users  
20 to infringe the '710 patent through at least the HT1000 and HT1100 products,  
21 knowing those acts to be infringement of the '710 patent with intent that those  
22 performing the acts infringe the '710 patent.

23           48. As but two examples of Dish Defendants' contributory and/or induced  
24 infringement, Dish Defendants explicitly encourage their customers to practice the  
25 methods disclosed and claimed in the '710 patent by using the Gen4 products and  
26 systems; and explicitly encourage Hughes Defendants to practice methods, and  
27 manufacture and sell products, which infringe one or more claims of the '710 patent  
28 through their promotion of use of the Hughes service to enable internet access for

1 certain customers who purchase the dishNet service to access the Internet.  
2 According to Dish Defendants' 2012 Annual Report (10-K), Dish Defendants lease  
3 to dishNET satellite internet subscribers the customer premise equipment. On  
4 information and belief, this equipment includes the HT1000 and HT1100 products.  
5 On information and belief, through providing this equipment, Dish Defendants  
6 actively encourage their consumers and end users to infringe the '710 patent through  
7 at least use of the equipment, knowing those acts to be infringement of the '710  
8 patent with intent that those performing the acts infringe the '710 patent.

9 49. Defendants are not licensed or otherwise authorized to practice,  
10 contributorily practice and/or induce third parties to practice the claims of the '710  
11 patent.

12 50. By reason of Defendants' infringing activities, Caltech has suffered,  
13 and will continue to suffer, substantial damages.

14 51. Caltech is entitled to recover from Defendants the damages sustained as  
15 a result of Defendants' wrongful acts in an amount subject to proof at trial.

16 52. Defendants' continuing acts of infringement are irreparably harming  
17 and causing damage to Caltech, for which Caltech has no adequate remedy at law,  
18 and will continue to suffer such irreparable injury unless Defendants' continuing  
19 acts of infringement are enjoined by the Court. The hardships that an injunction  
20 would impose are less than those faced by Caltech should an injunction not issue.  
21 The public interest would be served by issuance of an injunction. Thus, Caltech is  
22 entitled to a preliminary and a permanent injunction against further infringement.

23 53. Hughes Defendants' infringement of the '710 patent has been and  
24 continues to be willful and deliberate, justifying a trebling of damages under 35  
25 U.S.C. § 284. Among other facts, Hughes Defendants have had knowledge of their  
26 infringement of the '710 patent before the filing date of this Complaint through  
27 letters alleging such infringement. Upon information and belief, Hughes  
28 Defendants' accused actions continued despite an objectively high likelihood that

1 they constituted infringement of the '710 patent. Hughes Defendants either knew or  
2 should have known about their risk of infringing the '710 patent. Hughes  
3 Defendants' conduct despite this knowledge was made with both objective and  
4 subjective reckless disregard for the infringing nature of their activities as  
5 demonstrated by Hughes Defendants' knowledge regarding the claims of the '710  
6 patent.

7 54. Defendants' infringement of the '710 patent is exceptional and entitles  
8 Caltech to attorneys' fees and costs incurred in prosecuting this action under 35  
9 U.S.C. § 285.

10 **COUNT II**

11 **Infringement of the '032 Patent**

12 55. Plaintiff re-alleges and incorporates by reference the allegations of the  
13 preceding paragraphs of this Complaint as if fully set forth herein.

14 56. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
15 have infringed and are currently infringing, directly and/or through intermediaries,  
16 the '032 patent by making, using, selling, offering for sale, and/or importing into the  
17 United States, without authority, Gen4 products and services that practice one or  
18 more claims of the '032 patent. These products, methods, equipment, and/or  
19 services encode signals using IRA codes, including in accordance with the DVB-S2  
20 and IPoS standards and/or decode such signals. Defendants have infringed and are  
21 currently infringing literally and/or under the doctrine of equivalents.

22 57. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
23 have infringed and are continuing to infringe the '032 patent by contributing to  
24 and/or actively inducing the infringement by others of the '032 patent by making,  
25 using, selling, offering for sale, and/or importing into the United States, without  
26 authority the Gen4 products and services that practice one or more claims of the  
27 '032 patent.

28 58. Hughes Defendants have had actual knowledge of their infringement of

1 the '032 patent before the filing date of this Complaint through letters alleging such  
2 infringement, or at least have had actual knowledge of their infringement of the '032  
3 patent since no later than the filing date of this Complaint.

4 59. On information and belief, Dish Defendants have had actual  
5 knowledge of their infringement of the '032 patent before the filing date of this  
6 Complaint based on their marketing, sale, and distribution, among other activities,  
7 of Gen4 products and services and their relationship with Hughes Defendants.  
8 Dish Defendants at least have had actual knowledge of their infringement of the  
9 '032 patent since no later than the filing date of this Complaint.

10 60. Notwithstanding Defendants' actual notice of infringement,  
11 Defendants have continued, directly and/or through intermediaries, to manufacture,  
12 use, import, offer for sale, or sell the Gen4 products and services with knowledge  
13 of or willful blindness to the fact that their actions will induce others, including but  
14 not limited to their customers; partners, including other Defendants; and/or end  
15 users, to infringe the '032 patent. Defendants have induced and continue to induce  
16 others to infringe the '032 patent in violation of 35 U.S.C. § 271 by encouraging  
17 and facilitating others to perform actions that Defendants know to be acts of  
18 infringement of the '032 patent with intent that those performing the acts infringe  
19 the '032 patent. Upon information and belief, Defendants, directly and/or through  
20 intermediaries, advertise and distribute the Gen4 products and services, publish  
21 instruction materials, specifications and/or promotional literature describing the  
22 operation of the Gen 4 products and services, and/or offer training and/or  
23 consulting services regarding the Gen 4 products and services to their customers;  
24 partners, including other Defendants; and/or end users. At least consumers;  
25 partners, including other Defendants; and/or end users of these Gen 4 products and  
26 services then directly or jointly infringe the '032 patent by making, using, selling,  
27 offering for sale, and/or importing into the United States, without authority, the  
28 Gen 4 products and services.

1           61. Upon information and belief, Defendants know that the Gen 4 products  
2 and services are especially made or especially adapted for use in the infringement of  
3 the '032 patent. The infringing components of these products are not staple articles  
4 or commodities of commerce suitable for substantial non-infringing use, and the  
5 infringing components of these products are a material part of the invention of the  
6 '032 patent. Accordingly, in violation of 35 U.S.C. § 271, Defendants are also  
7 contributing, directly and/or through intermediaries, to the direct infringement of the  
8 '032 patent by at least the customers, partners, and/or end users of these Gen 4  
9 products and services. The customers, partners, and/or end users of these Gen 4  
10 products and services directly infringe the '032 patent by making, using, selling,  
11 offering for sale, and/or importing into the United States, without authority, the Gen  
12 4 products and services.

13           62. As but one example of Hughes Defendants' contributory and/or  
14 induced infringement, Hughes Defendants explicitly encourage their customers to  
15 practice the methods disclosed and claimed in the '032 patent by using the Gen 4  
16 products and services. Hughes Defendants provide user guides to their customers  
17 for the Gen4 products and services, including the HT1000 and HT1100 modems.  
18 (*See Exhibits J, K.*) On information and belief, through materials such as these, the  
19 Hughes Defendants actively encourage their consumers, partners, and/or end users  
20 to infringe the '032 patent through at least the HT1000 and HT1100 products,  
21 knowing those acts to be infringement of the '032 patent with intent that those  
22 performing the acts infringe the '032 patent.

23           63. As but two examples of Dish Defendants' contributory and/or induced  
24 infringement, Dish Defendants explicitly encourage their customers to practice the  
25 methods disclosed and claimed in the '032 patent by using the Gen4 products and  
26 systems; and explicitly encourage Hughes Defendants to practice methods, and  
27 manufacture and sell, products which infringe one or more claims of the '032 patent  
28 through their promotion of use of the Hughes service to enable internet access for



1 certain customers who purchase the dishNet service to access the Internet.  
2 According to Dish Defendants' 2012 Annual Report (10-K), Dish Defendants lease  
3 to dishNET satellite internet subscribers the customer premise equipment. On  
4 information and belief, this equipment includes the HT1000 and HT1100 products.  
5 On information and belief, through providing this equipment, Dish Defendants  
6 actively encourage their consumers and end users to infringe the '032 patent through  
7 at least use of the equipment, knowing those acts to be infringement of the '032  
8 patent with intent that those performing the acts infringe the '032 patent.

9 64. Defendants are not licensed or otherwise authorized to practice,  
10 contributorily practice and/or induce third parties to practice the claims of the '032  
11 patent.

12 65. By reason of Defendants' infringing activities, Caltech has suffered,  
13 and will continue to suffer, substantial damages.

14 66. Caltech is entitled to recover from Defendants the damages sustained as  
15 a result of Defendants' wrongful acts in an amount subject to proof at trial.

16 67. Defendants' continuing acts of infringement are irreparably harming  
17 and causing damage to Caltech, for which Caltech has no adequate remedy at law,  
18 and will continue to suffer such irreparable injury unless Defendants' continuing  
19 acts of infringement are enjoined by the Court. The hardships that an injunction  
20 would impose are less than those faced by Caltech should an injunction not issue.  
21 The public interest would be served by issuance of an injunction. Thus, Caltech is  
22 entitled to a preliminary and a permanent injunction against further infringement.

23 68. Hughes Defendants' infringement of the '032 patent has been and  
24 continues to be willful and deliberate, justifying a trebling of damages under 35  
25 U.S.C. § 284. Among other facts, Hughes Defendants have had knowledge of their  
26 infringement of the '032 patent before the filing date of this Complaint through  
27 letters alleging such infringement. Upon information and belief, Hughes  
28 Defendants' accused actions continued despite an objectively high likelihood that

1 they constituted infringement of the '032 patent. Hughes Defendants either knew or  
2 should have known about their risk of infringing the '032 patent. Hughes  
3 Defendants' conduct despite this knowledge was made with both objective and  
4 subjective reckless disregard for the infringing nature of their activities as  
5 demonstrated by Hughes Defendants' knowledge regarding the claims of the '032  
6 patent.

7 69. Defendants' infringement of the '032 patent is exceptional and entitles  
8 Caltech to attorneys' fees and costs incurred in prosecuting this action under 35  
9 U.S.C. § 285.

10 **COUNT III**

11 **Infringement of the '781 Patent**

12 70. Plaintiff re-alleges and incorporates by reference the allegations of the  
13 preceding paragraphs of this Complaint as if fully set forth herein.

14 71. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
15 have infringed and are currently infringing, directly and/or through intermediaries,  
16 the '781 patent by making, using, selling, offering for sale, and/or importing into the  
17 United States, without authority, Gen4 products and services that practice one or  
18 more claims of the '781 patent. These products, methods, equipment, and/or  
19 services encode signals using IRA codes, including in accordance with the DVB-S2  
20 and IPoS standards and/or decode such signals. Defendants have infringed and are  
21 currently infringing literally and/or under the doctrine of equivalents.

22 72. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
23 have infringed and are continuing to infringe the '781 patent by contributing to  
24 and/or actively inducing the infringement by others of the '781 patent by making,  
25 using, selling, offering for sale, and/or importing into the United States, without  
26 authority the Gen4 products and services that practice one or more claims of the  
27 '781 patent.

28 73. Hughes Defendants have had actual knowledge of their infringement of

1 the '781 patent before the filing date of this Complaint through letters alleging such  
2 infringement, or at least have had actual knowledge of their infringement of the '781  
3 patent since no later than the filing date of this Complaint.

4 74. On information and belief, Dish Defendants have had actual  
5 knowledge of their infringement of the '781 patent before the filing date of this  
6 Complaint based on their marketing, sale, and distribution, among other activities,  
7 of Gen4 products and services and their relationship with Hughes Defendants.  
8 Dish Defendants at least have had actual knowledge of their infringement of the  
9 '781 patent since no later than the filing date of this Complaint.

10 75. Notwithstanding Defendants' actual notice of infringement,  
11 Defendants have continued, directly and/or through intermediaries, to manufacture,  
12 use, import, offer for sale, or sell the Gen4 products and services with knowledge  
13 of or willful blindness to the fact that their actions will induce others, including but  
14 not limited to their customers; partners, including other Defendants; and/or end  
15 users, to infringe the '781 patent. Defendants have induced and continue to induce  
16 others to infringe the '781 patent in violation of 35 U.S.C. § 271 by encouraging  
17 and facilitating others to perform actions that Defendants know to be acts of  
18 infringement of the '781 patent with intent that those performing the acts infringe  
19 the '781 patent. Upon information and belief, Defendants, directly and/or through  
20 intermediaries, advertise and distribute the Gen4 products and services, publish  
21 instruction materials, specifications and/or promotional literature describing the  
22 operation of the Gen 4 products and services, and/or offer training and/or  
23 consulting services regarding the Gen 4 products and services to their customers;  
24 partners, including other Defendants; and/or end users. At least consumers;  
25 partners, including other Defendants; and/or end users of these Gen 4 products and  
26 services then directly or jointly infringe the '781 patent by making, using, selling,  
27 offering for sale, and/or importing into the United States, without authority, the  
28 Gen 4 products and services.

1           76. Upon information and belief, Defendants know that the Gen 4 products  
2 and services are especially made or especially adapted for use in the infringement of  
3 the '781 patent. The infringing components of these products are not staple articles  
4 or commodities of commerce suitable for substantial non-infringing use, and the  
5 infringing components of these products are a material part of the invention of the  
6 '781 patent. Accordingly, in violation of 35 U.S.C. § 271, Defendants are also  
7 contributing, directly and/or through intermediaries, to the direct infringement of the  
8 '781 patent by at least the customers, partners, and/or end users of these Gen 4  
9 products and services. The customers, partners, and/or end users of these Gen 4  
10 products and services directly infringe the '781 patent by making, using, selling,  
11 offering for sale, and/or importing into the United States, without authority, the Gen  
12 4 products and services.

13           77. As but one example of Hughes Defendants' contributory and/or  
14 induced infringement, Hughes Defendants explicitly encourage their customers to  
15 practice the methods disclosed and claimed in the '781 patent by using the Gen 4  
16 products and services. Hughes Defendants provide user guides to their customers  
17 for the Gen4 products and services, including the HT1000 and HT1100 modems.  
18 (*See Exhibits J, K.*) On information and belief, through materials such as these, the  
19 Hughes Defendants actively encourage their consumers, partners, and/or end users  
20 to infringe the '781 patent through at least the HT1000 and HT1100 products,  
21 knowing those acts to be infringement of the '781 patent with intent that those  
22 performing the acts infringe the '781 patent.

23           78. As but two examples of Dish Defendants' contributory and/or induced  
24 infringement, Dish Defendants explicitly encourage their customers to practice the  
25 methods disclosed and claimed in the '781 patent by using the Gen4 products and  
26 systems; and explicitly encourage Hughes Defendants to practice methods, and  
27 manufacture and sell products, which infringe one or more claims of the '781 patent  
28 through their promotion of use of the Hughes service to enable internet access for

1 certain customers who purchase the dishNet service to access the Internet.  
2 According to Dish Defendants' 2012 Annual Report (10-K), Dish Defendants lease  
3 to dishNET satellite internet subscribers the customer premise equipment. On  
4 information and belief, this equipment includes the HT1000 and HT1100 products.  
5 On information and belief, through providing this equipment, Dish Defendants  
6 actively encourage their consumers and end users to infringe the '781 patent through  
7 at least use of the equipment, knowing those acts to be infringement of the '781  
8 patent with intent that those performing the acts infringe the '781 patent.

9 79. Defendants are not licensed or otherwise authorized to practice,  
10 contributorily practice and/or induce third parties to practice the claims of the '781  
11 patent.

12 80. By reason of Defendants' infringing activities, Caltech has suffered,  
13 and will continue to suffer, substantial damages.

14 81. Caltech is entitled to recover from Defendants the damages sustained as  
15 a result of Defendants' wrongful acts in an amount subject to proof at trial.

16 82. Defendants' continuing acts of infringement are irreparably harming  
17 and causing damage to Caltech, for which Caltech has no adequate remedy at law,  
18 and will continue to suffer such irreparable injury unless Defendants' continuing  
19 acts of infringement are enjoined by the Court. The hardships that an injunction  
20 would impose are less than those faced by Caltech should an injunction not issue.  
21 The public interest would be served by issuance of an injunction. Thus, Caltech is  
22 entitled to a preliminary and a permanent injunction against further infringement.

23 83. Hughes Defendants' infringement of the '781 patent has been and  
24 continues to be willful and deliberate, justifying a trebling of damages under 35  
25 U.S.C. § 284. Among other facts, on information and belief, Hughes Defendants  
26 have had knowledge of their infringement of the '781 patent, the subject matter of  
27 the '781 patent, and/or the invention of the '781 patent before the filing date of this  
28 Complaint. Upon information and belief, Hughes Defendants' accused actions

1 continued despite an objectively high likelihood that they constituted infringement  
2 of the '781 patent. Hughes Defendants either knew or should have known about  
3 their risk of infringing the '781 patent. Hughes Defendants' conduct despite this  
4 knowledge was made with both objective and subjective reckless disregard for the  
5 infringing nature of their activities as demonstrated by Hughes Defendants'  
6 knowledge regarding the claims of the '781 patent.

7 84. Defendants' infringement of the '781 patent is exceptional and entitles  
8 Caltech to attorneys' fees and costs incurred in prosecuting this action under 35  
9 U.S.C. § 285.

10 **COUNT IV**

11 **Infringement of the '833 Patent**

12 85. Plaintiff re-alleges and incorporates by reference the allegations of the  
13 preceding paragraphs of this Complaint as if fully set forth herein.

14 86. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
15 have infringed and are currently infringing, directly and/or through intermediaries,  
16 the '833 patent by making, using, selling, offering for sale, and/or importing into the  
17 United States, without authority, Gen4 products and services that practice one or  
18 more claims of the '833 patent. These products, methods, equipment, and/or  
19 services encode signals using IRA codes, including in accordance with the DVB-S2  
20 and IPoS standards and/or decode such signals. Defendants have infringed and are  
21 currently infringing literally and/or under the doctrine of equivalents.

22 87. On information and belief, in violation of 35 U.S.C. § 271, Defendants  
23 have infringed and are continuing to infringe the '833 patent by contributing to  
24 and/or actively inducing the infringement by others of the '833 patent by making,  
25 using, selling, offering for sale, and/or importing into the United States, without  
26 authority the Gen4 products and services that practice one or more claims of the  
27 '833 patent.

28 88. Hughes Defendants have had actual knowledge of their infringement of

1 the '833 patent before the filing date of this Complaint through letters alleging such  
2 infringement, or at least have had actual knowledge of their infringement of the '833  
3 patent since no later than the filing date of this Complaint.

4 89. On information and belief, Dish Defendants have had actual  
5 knowledge of their infringement of the '833 patent before the filing date of this  
6 Complaint based on their marketing, sale, and distribution, among other activities,  
7 of Gen4 products and services and their relationship with Hughes Defendants.  
8 Dish Defendants at least have had actual knowledge of their infringement of the  
9 '833 patent since no later than the filing date of this Complaint.

10 90. Notwithstanding Defendants' actual notice of infringement,  
11 Defendants have continued, directly and/or through intermediaries, to manufacture,  
12 use, import, offer for sale, or sell the Gen4 products and services with knowledge  
13 of or willful blindness to the fact that their actions will induce others, including but  
14 not limited to their customers; partners, including other Defendants; and/or end  
15 users, to infringe the '833 patent. Defendants have induced and continue to induce  
16 others to infringe the '833 patent in violation of 35 U.S.C. § 271 by encouraging  
17 and facilitating others to perform actions that Defendants know to be acts of  
18 infringement of the '833 patent with intent that those performing the acts infringe  
19 the '833 patent. Upon information and belief, Defendants, directly and/or through  
20 intermediaries, advertise and distribute the Gen4 products and services, publish  
21 instruction materials, specifications and/or promotional literature describing the  
22 operation of the Gen 4 products and services, and/or offer training and/or  
23 consulting services regarding the Gen 4 products and services to their customers;  
24 partners, including other Defendants; and/or end users. At least consumers;  
25 partners, including other Defendants; and/or end users of these Gen 4 products and  
26 services then directly or jointly infringe the '833 patent by making, using, selling,  
27 offering for sale, and/or importing into the United States, without authority, the  
28 Gen 4 products and services.

1           91. Upon information and belief, Defendants know that the Gen 4 products  
2 and services are especially made or especially adapted for use in the infringement of  
3 the '833 patent. The infringing components of these products are not staple articles  
4 or commodities of commerce suitable for substantial non-infringing use, and the  
5 infringing components of these products are a material part of the invention of the  
6 '833 patent. Accordingly, in violation of 35 U.S.C. § 271, Defendants are also  
7 contributing, directly and/or through intermediaries, to the direct infringement of the  
8 '833 patent by at least the customers, partners, and/or end users of these Gen 4  
9 products and services. The customers, partners, and/or end users of these Gen 4  
10 products and services directly infringe the '833 patent by making, using, selling,  
11 offering for sale, and/or importing into the United States, without authority, the Gen  
12 4 products and services.

13           92. As but two examples of Hughes Defendants' contributory and/or  
14 induced infringement, Hughes Defendants explicitly encourage their customers to  
15 practice the methods disclosed and claimed in the '833 patent by using the Gen 4  
16 products and services; and explicitly encourage Hughes Defendants to practice  
17 methods, and manufacture and sell products, which infringe one or more claims of  
18 the '833 patent through their promotion of use of the Hughes service to enable  
19 internet access for certain customers who purchase the dishNet service to access the  
20 Internet. Hughes Defendants provide user guides to their customers for the Gen4  
21 products and services, including the HT1000 and HT1100 modems. (*See* Exhibits J,  
22 K.) On information and belief, through materials such as these, the Hughes  
23 Defendants actively encourage their consumers, partners, and/or end users to  
24 infringe the '833 patent through at least the HT1000 and HT1100 products, knowing  
25 those acts to be infringement of the '833 patent with intent that those performing the  
26 acts infringe the '833 patent.

27           93. As but one example of Dish Defendants' contributory and/or induced  
28 infringement, Dish Defendants explicitly encourage their customers to practice the



1 methods disclosed and claimed in the '833 patent by using the Gen4 products and  
2 systems. According to Dish Defendants' 2012 Annual Report (10-K), Dish  
3 Defendants lease to dishNET satellite internet subscribers the customer premise  
4 equipment. On information and belief, this equipment includes the HT1000 and  
5 HT1100 products. On information and belief, through providing this equipment,  
6 Dish Defendants actively encourage their consumers and end users to infringe the  
7 '833 patent through at least use of the equipment, knowing those acts to be  
8 infringement of the '833 patent with intent that those performing the acts infringe  
9 the '833 patent.

10 94. Defendants are not licensed or otherwise authorized to practice,  
11 contributorily practice and/or induce third parties to practice the claims of the '833  
12 patent.

13 95. By reason of Defendants' infringing activities, Caltech has suffered,  
14 and will continue to suffer, substantial damages.

15 96. Caltech is entitled to recover from Defendants the damages sustained as  
16 a result of Defendants' wrongful acts in an amount subject to proof at trial.

17 97. Defendants' continuing acts of infringement are irreparably harming  
18 and causing damage to Caltech, for which Caltech has no adequate remedy at law,  
19 and will continue to suffer such irreparable injury unless Defendants' continuing  
20 acts of infringement are enjoined by the Court. The hardships that an injunction  
21 would impose are less than those faced by Caltech should an injunction not issue.  
22 The public interest would be served by issuance of an injunction. Thus, Caltech is  
23 entitled to a preliminary and a permanent injunction against further infringement.

24 98. Hughes Defendants' infringement of the '833 patent has been and  
25 continues to be willful and deliberate, justifying a trebling of damages under 35  
26 U.S.C. § 284. Among other facts, on information and belief, Hughes Defendants  
27 have had knowledge of their infringement of the '833 patent, the subject matter of  
28 the '833 patent, and/or the invention of the '833 patent before the filing date of this

1 Complaint. Upon information and belief, Hughes Defendants' accused actions  
2 continued despite an objectively high likelihood that they constituted infringement  
3 of the '833 patent. Hughes Defendants either knew or should have known about  
4 their risk of infringing the '833 patent. Hughes Defendants' conduct despite this  
5 knowledge was made with both objective and subjective reckless disregard for the  
6 infringing nature of their activities as demonstrated by Hughes Defendants'  
7 knowledge regarding the claims of the '833 patent.

8 99. Defendants' infringement of the '833 patent is exceptional and entitles  
9 Caltech to attorneys' fees and costs incurred in prosecuting this action under 35  
10 U.S.C. § 285.

11 **PRAYER FOR RELIEF**

12 WHEREFORE, Plaintiff respectfully prays for the following relief:

13 (a) A judgment that Defendants have infringed each and every one of the  
14 Asserted Patents;

15 (b) A preliminary and permanent injunction against Defendants, its  
16 respective officers, agents, servants, employees, attorneys, parent and subsidiary  
17 corporations, assigns and successors in interest, and those persons in active concert  
18 or participation with them, enjoining them from infringement, inducement of  
19 infringement, and contributory infringement of each and every one of the Asserted  
20 Patents, including but not limited to an injunction against making, using, selling,  
21 and/or offering for sale within the United States, and/or importing into the United  
22 States, any products, methods, equipment and/or services that infringe the Asserted  
23 Patents;

24 (c) Damages adequate to compensate Caltech for Defendants' infringement  
25 of the Asserted Patents pursuant to 35 U.S.C. § 284;

26 (d) Prejudgment interest;

27 (e) Post-judgment interest;

28 (f) A judgment holding Hughes Defendants' infringement of the Asserted

1 Patents to be willful, and a trebling of damages pursuant to 35 U.S.C. § 284;

2 (g) A declaration that this Action is exceptional pursuant to 35 U.S.C.  
3 § 285, and an award to Caltech of its attorneys' fees, costs and expenses incurred in  
4 connection with this Action; and

5 (h) Such other relief as the Court deems just and equitable.  
6  
7

8 DATED: February 17, 2015

Respectfully submitted,

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QUINN EMANUEL URQUHART &  
SULLIVAN, LLP

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By /s/ James R. Asperger

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James R. Asperger

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*Attorneys for Plaintiff California Institute  
of Technology*

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**DEMAND FOR JURY TRIAL**

Pursuant to Rule 38 of the Federal Rules of Civil Procedure and Local Rule 38-1 of this Court, Plaintiff hereby demands a trial by jury as to all issues so triable.

DATED: February 17, 2015

Respectfully submitted,

QUINN EMANUEL URQUHART &  
SULLIVAN, LLP

By  /s/ James R. Asperger  
James R. Asperger  
*Attorneys for Plaintiff California Institute  
of Technology*