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13 **UNITED STATES DISTRICT COURT**  
14 **NORTHERN DISTRICT OF CALIFORNIA**  
15 **SAN FRANCISCO DIVISION**

16 FEDERAL TRADE COMMISSION, )  
17 Plaintiff, )  
18 v. )  
19 D-LINK CORPORATION )  
20 and )  
21 D-LINK SYSTEMS, INC., )  
22 corporations, )  
23 Defendants. )  
24

No. 3:17-CV-00039-JD

**COMPLAINT FOR  
PERMANENT INJUNCTION AND  
OTHER EQUITABLE RELIEF**

25  
26 1. Plaintiff, the Federal Trade Commission (“FTC”), for its Complaint, brings this  
27 action under Section 13(b) of the Federal Trade Commission Act (“FTC Act”), 15 U.S.C.

1 § 53(b), to obtain permanent injunctive relief and other equitable relief against Defendants for  
2 engaging in unfair or deceptive acts or practices in violation of Section 5(a) of the FTC Act, 15  
3 U.S.C. § 45(a), in connection with Defendants’ failure to take reasonable steps to secure the  
4 routers and Internet-protocol cameras they designed for, marketed, and sold to United States  
5 consumers.

6 **JURISDICTION AND VENUE**

7 2. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331, 1337(a),  
8 and 1345, and 15 U.S.C. §§ 45(a) and 53(b).

9 3. Venue in the Northern District of California is proper under 28 U.S.C. § 1391(b)  
10 and (c) and 15 U.S.C. § 53(b).

11 **PLAINTIFF**

12 4. The FTC is an independent agency of the United States Government created by  
13 statute. 15 U.S.C. §§ 41-58. The FTC enforces Section 5(a) of the FTC Act, 15 U.S.C. § 45(a),  
14 which prohibits unfair or deceptive acts or practices in or affecting commerce.

15 5. The FTC is authorized to initiate federal district court proceedings, by its own  
16 attorneys, to enjoin violations of the FTC Act and to secure such other equitable relief as may be  
17 appropriate in each case. 15 U.S.C. §§ 53(b), 56(a)(2)(A).

18 **DEFENDANTS**

19 6. Defendant D-Link Corporation (“D-Link”) is a Taiwanese corporation with its  
20 principal office or place of business at No. 289, Xinhua 3<sup>rd</sup> Rd., Neihu District, Taipei City,  
21 Taiwan 114. D-Link transacts or has transacted business in this district and throughout the  
22 United States. At all times material to this Complaint, acting alone or in concert with others, D-  
23 Link purposefully directed its activities to the United States by designing, developing, marketing,  
24 and manufacturing routers, Internet-protocol (“IP”) cameras, and related software and services,  
25 intended for use by consumers throughout the United States.

26 7. Defendant D-Link Systems, Inc., (“DLS”) is a California corporation with its  
27 principal office or place of business at 17595 Mt. Herrmann St., Fountain Valley, California

1 92708. DLS transacts or has transacted business in this district and throughout the United States.  
2 At all times material to this Complaint, acting alone or in concert with others, DLS has  
3 advertised, marketed, distributed, or sold routers, IP cameras, and related software and services,  
4 intended for use by consumers throughout the United States. The Chairman of DLS's Board of  
5 Directors has served as D-Link's Chief Executive Officer and the two entities have coordinated  
6 closely regarding the security of Defendants' routers and IP cameras.

7 8. The FTC's claims against D-Link and DLS arise from or relate to Defendants'  
8 acts or practices aimed at or taking place in the United States.

9 **COMMERCE**

10 9. At all times material to this Complaint, Defendants have maintained a substantial  
11 course of trade in or affecting commerce, as "commerce" is defined in Section 4 of the FTC Act,  
12 15 U.S.C. § 44.

13 **DEFENDANTS' BUSINESS PRACTICES**

14 10. D-Link is a hardware device manufacturer that designs, develops, markets, and  
15 manufactures networking devices, including devices with core functions that relate to security,  
16 such as consumer routers and IP cameras. D-Link designs, develops, and manufactures these  
17 products, their marketing materials, and related software and services for distribution or sale to  
18 United States consumers through its subsidiary, DLS. D-Link is responsible for providing  
19 ongoing support to DLS for its products, including by remediating any design, usability, and  
20 security issues in Defendants' routers and IP cameras. D-Link also conducts security testing  
21 of the software for Defendants' routers and IP cameras. When releasing new software for such  
22 routers and IP cameras, D-Link uses a digital signature issued in its name, known as a "private  
23 key," to sign the software, in order to assure entities, such as browsers and operating systems,  
24 that the software comes from an authentic or "trusted" source and is not malware.

25 11. DLS is a subsidiary of D-Link and is nearly 98% owned by D-Link and its  
26 holding company, D-Link Holding Company, Ltd. DLS provides marketing and after-sale  
27 services integral to D-Link's operations, including by marketing and acting as the sole  
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1 distributor of Defendants' routers and IP cameras throughout the United States. DLS also  
2 recommends to D-Link features that D-Link should include in products designed for the  
3 United States market. Among other services, DLS acts as the primary point-of-contact for  
4 problems that United States consumers have with Defendants' routers, IP cameras, or related  
5 software and services; conducts initial inquiries into the validity of security vulnerability  
6 reports for products sold in the United States; and transmits to D-Link any such reports that it  
7 believes may warrant software security updates from D-Link. DLS also assists in notifying  
8 United States consumers about the availability of security updates through means such as  
9 DLS's websites.

10 12. Defendants have provided software applications that enable users to access their  
11 routers and IP cameras from a mobile device ("mobile apps"), including a free "mydlink Lite"  
12 mobile app. Defendants designed the mydlink Lite app to require the user to enter a user name  
13 and password ("login credentials") the first occasion that a user employs the app on a particular  
14 mobile device. After that first occasion, the app stores the user's login credentials on that  
15 mobile device, keeping the user logged into the mobile app on that device.

#### 16 **DEFENDANTS' ROUTERS**

17 13. Defendants' routers, like other routers, operate to forward data packets along a  
18 network. In addition to routing network traffic, they typically play a key role in securing  
19 consumers' home networks, functioning as a hardware firewall for the local network, and  
20 acting as the first line of defense in protecting consumer devices on the local network, such as  
21 computers, smartphones, IP cameras, and other connected appliances, against malicious  
22 incoming traffic from the Internet.

#### 23 **DEFENDANTS' IP CAMERAS**

24 14. Defendants' IP cameras, akin to many such IP cameras, play a key security role  
25 for consumers, by enabling consumers to monitor private areas of their homes or businesses, to  
26 detect any events that may place the property or its occupants at risk. In many instances,  
27 Defendants offer them as a means to monitor the security of a home while consumers are away,

1 or to monitor activities within the household, including the activities of young children, while a  
2 consumer is at home. Consumers seeking to monitor the security of their homes or the safety  
3 of young children may access live video and audio feeds (“live feeds”) from their cameras over  
4 the Internet, using a mobile device or other computer.

5 **DEFENDANTS’ SECURITY FAILURES**

6 15. Defendants have failed to take reasonable steps to protect their routers and IP  
7 cameras from widely known and reasonably foreseeable risks of unauthorized access, including  
8 by failing to protect against flaws which the Open Web Application Security Project has ranked  
9 among the most critical and widespread web application vulnerabilities since at least 2007.

10 Among other things:

- 11 a. Defendants repeatedly have failed to take reasonable software testing and  
12 remediation measures to protect their routers and IP cameras against well-  
13 known and easily preventable software security flaws, such as “hard-coded”  
14 user credentials and other backdoors, and command injection flaws, which  
15 would allow remote attackers to gain control of consumers’ devices;
- 16 b. Defendant D-Link has failed to take reasonable steps to maintain the  
17 confidentiality of the private key that Defendant D-Link used to sign  
18 Defendants’ software, including by failing to adequately restrict, monitor, and  
19 oversee handling of the key, resulting in the exposure of the private key on a  
20 public website for approximately six months; and
- 21 c. Defendants have failed to use free software, available since at least 2008, to  
22 secure users’ mobile app login credentials, and instead have stored those  
23 credentials in clear, readable text on a user’s mobile device.

24 **THOUSANDS OF CONSUMERS AT RISK**

25 16. As a result of Defendants’ failures, thousands of Defendants’ routers and  
26 cameras have been vulnerable to attacks that subject consumers’ sensitive personal  
27 information and local networks to a significant risk of unauthorized access. In fact, the press

1 has reported that Defendants' routers and cameras have been vulnerable to a range of such  
2 attacks and have been compromised by attackers, including by being made part of large scale  
3 networks of computers infected by malicious software, known as "botnets."

4 17. The risk that attackers would exploit these vulnerabilities to harm consumers was  
5 significant. In many instances, remote attackers could take simple steps, using widely available  
6 tools, to locate and exploit Defendants' devices, which were widely known to be vulnerable. For  
7 example, remote attackers could search for vulnerable devices over the Internet and obtain their  
8 IP addresses using readily available tools, such as a popular search engine that can locate devices  
9 running particular software versions or operating in particular locations. Alternatively, attackers  
10 could use readily accessible scanning tools to identify vulnerable devices operating in particular  
11 areas or on particular networks. In many instances, an attacker could then take simple steps to  
12 exploit vulnerabilities in Defendants' routers and IP cameras, impacting not only consumers who  
13 purchased these devices, but also other consumers, who access the Internet in public or private  
14 locations served by the routers or who visit locations under the IP cameras' surveillance.

15 18. By creating these vulnerabilities, Defendants put consumers at significant risk of  
16 harm in a variety of ways. An attacker could compromise a consumer's router, thereby obtaining  
17 unauthorized access to consumers' sensitive personal information. For example, using a  
18 compromised router, an attacker could re-direct consumers seeking a legitimate financial site to a  
19 spoofed website, where they would unwittingly provide the attacker with sensitive financial  
20 account information. Alternatively, using a compromised router, an attacker could obtain  
21 consumers' tax returns or other files stored on the router's attached storage device or could use  
22 the router to attack other devices on the local network, such as computers, smartphones, IP  
23 cameras, or connected appliances. Similarly, by exploiting the vulnerabilities described in  
24 Paragraph 15, an attacker could compromise a consumer's IP camera, thereby monitoring  
25 consumers' whereabouts to target them for theft or other criminal activity or to observe and  
26 record over the Internet their personal activities and conversations or those of their young  
27 children. In many instances, attackers could carry out such exploits covertly, such that

1 consumers would have no reason to know that an attack was ongoing. Finally, during the time  
2 Defendant D-Link's private key was available on a public website, consumers seeking to  
3 download legitimate software from Defendants were at significant risk of downloading malware,  
4 signed by malicious actors using D-Link's private key.

#### 5 **DEFENDANTS' SECURITY STATEMENTS**

6 19. Defendants have disseminated or caused to be disseminated to consumers  
7 statements regarding the security of their products, including their routers and IP cameras.

#### 8 **SECURITY EVENT RESPONSE POLICY**

9 20. From approximately December 2013 until early September 2015, after highly-  
10 publicized security flaws were found to affect many of its products, Defendant DLS posted a  
11 Security Event Response Policy on its product support webpage,  
12 <http://support.dlink.com/securityadvisories.aspx>, in the general form of Exhibit 1. Within  
13 its Security Event Response Policy, under a bolded heading "D-Link's commitment to Product  
14 Security," Defendant DLS stated:

15 D-Link prohibits at all times, including during product development by D-Link or its  
16 affiliates, any intentional product features or behaviors which allow unauthorized access  
17 to the device or network, including but not limited to undocumented account  
18 credentials, covert communication channels, 'backdoors' or undocumented traffic  
19 diversion. All such features and behaviors are considered serious and will be given the  
20 highest priority.

#### 21 **PROMOTIONAL CLAIMS**

22 21. Defendants highlight their routers' security features in a wide range of materials  
23 available on Defendant DLS's website, including user manuals and promotional brochures,  
24 which describe these features alongside language that specifically references the device's  
25 "security". Such materials include, but are not limited to, brochures in the general form of  
26 Exhibits 2-5, which state:

1 a. Under a bolded, italicized, all-capitalized heading, “***EASY TO SECURE***,” that  
2 the router:

3 supports the latest wireless security features to help prevent unauthorized  
4 access, be it from over a wireless network or from the Internet. Support for  
5 WPA™ and WPA2™ standards ensure that you will be able to use the best  
6 possible encryption, regardless of your client devices. In addition [the router]  
7 utilizes dual active firewalls (SPI and NAT) to prevent potential attacks from  
8 across the Internet.

9 Delivering great wireless performance, network security and coverage [the  
10 router] is ideal for upgrading your existing wireless network. (See PX 2).

11 b. Under a bolded, italicized, all-capitalized heading, “***ADVANCED NETWORK***  
12 ***SECURITY***,” that the router:

13 ensures a secure Wi-Fi network through the use of WPA/WPA2 wireless  
14 encryption. Simply press the WPS button to quickly establish a secure  
15 connection to new devices. The [router] also utilizes dual-active firewalls  
16 (SPI and NAT) to prevent potential attacks and intrusions from across the  
17 Internet. (See PX 3).

18 c. Under a bolded heading, “**Advanced Network Security**,” that the router:

19 supports the latest wireless security features to help prevent unauthorized  
20 access, be it from over a wireless network or from the Internet. Support for  
21 WPA™ and WPA2™ standards ensure that you will be able to use the best  
22 possible encryption method. In addition, this [router] utilizes Stateful Packet  
23 Inspection Firewalls (SPI) to help prevent potential attacks from across the  
24 Internet. (See PX 4).

25 d. Under a heading “128-bit Security Encryption,” that the router:

26 protects your network with 128-bit AES data security encryption – the same  
27 technology used in E-commerce or online banking. Create your own network  
28



1 name and password or put it at the tip of your fingers with ‘Push Button  
2 Security’ standard on every Amplifi device. With hassle-free plug and play  
3 installation, and advanced Wi-Fi protected setup, the [router] is not only one  
4 of the fastest routers available, its [sic] also one of the safest. (See PX 5).

5 22. Defendants highlight the security of their IP cameras in a wide range of  
6 materials available on Defendant DLS’s website, including user manuals and promotional  
7 brochures, which describe these features alongside language that specifically references the  
8 device’s “security”. Such materials include, but are not limited to, brochures in the general  
9 form of Exhibit 6, which display the word “SECURITY” in large, capital letters, in a vividly-  
10 colored footer across the bottom of each page. (See PX 6). In addition, Defendants have  
11 designed their IP camera packaging, including in the general form of Exhibit 7, to display  
12 security-related terms. Such terms include the words “secure connection,” next to a lock icon,  
13 among the product features listed on the side of the box (see PX 7).

#### 14 **INTERACTIVE SECURITY FEATURES**

15 23. Defendants’ routers offer numerous security features that Defendants present  
16 alongside instructions that specifically reference the device’s “security”. In particular, in many  
17 instances, to begin using the router, users must access a graphical user interface (hereinafter,  
18 “Defendants’ router GUI”), in the general form of Exhibits 8 and 9, which includes  
19 instructions, such as:

- 20 a. “To secure your new networking device, please set and verify a password  
21 below” (see PX 8); and  
22 b. “It is highly recommended that you create a password to keep your router  
23 secure.” (See PX 9).

24 24. Defendants’ IP cameras offer numerous security features that Defendants  
25 present alongside language that specifically references the device’s “security”. In particular, to  
26 begin using the camera, in many instances, users must access a GUI (hereinafter “Defendants’  
27 IP camera GUI”), in the general form of Exhibits 10 and 11, which include language, such as:

- 1 a. instructions to “Set up an Admin ID and Password” or “enter a password” in
- 2 order “to secure your camera” (*see* PX 10); and
- 3 b. security-related banners, including, but not limited to, the words “SECURICAM
- 4 Network,” alongside a lock icon, across the top of the GUI (*see* PX 11).

5 **D-LINK DIRECTS ITS PRACTICES TO U.S. CONSUMERS**

6 25. D-Link controls decisions about which products and features Defendants will  
7 offer to United States consumers. Upon deciding to design and develop a new product for sale in  
8 the United States, D-Link is responsible for writing the “Product Requirements Document,”  
9 which sets forth the functions and features that the product will possess, including any security  
10 features. D-Link also controls decisions about whether to conduct security testing and review of  
11 these products and their related software, before offering them to U.S. consumers. Further, to the  
12 extent that D-Link decides to conduct security review and testing of a product before offering it  
13 to United States consumers, D-Link is responsible for conducting or procuring such review and  
14 testing and for determining whether the results warrant revisions to the product. Once a new  
15 product is launched in the United States, D-Link is responsible for providing ongoing support to  
16 DLS for the product, including by determining whether to remediate any design, usability, and  
17 security issues that are reported in Defendants’ routers and IP cameras. For example, if a  
18 security vulnerability is reported in Defendants’ routers or IP cameras and related software, D-  
19 Link is responsible for determining whether a security update is warranted to address the  
20 vulnerability and, if so, for developing the update. When D-Link develops new products for  
21 United States consumers, DLS may request that D-Link include certain features in the products,  
22 but DLS does not participate in drafting the Product Requirements Documents or in designing  
23 and testing any security features these products may have.

24 **VIOLATIONS OF THE FTC ACT**

25 26. Section 5(a) of the FTC Act, 15 U.S.C. § 45(a), prohibits “unfair or deceptive acts  
26 or practices in or affecting commerce.”







1           B.       Award Plaintiff the costs of bringing this action, as well as such other and  
2 additional relief as the Court may determine to be just and proper.

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Respectfully submitted,

DAVID SHONKA  
Acting General Counsel

Dated: January 5, 2017

/s/ Cathlin Tully  
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