

Date: September 14, 2015

Subject: Public and Redacted Version of Request for Confidential Treatment and Complementary Exhibits

FCC File Number: 1021-EX-ST-2015

To Whom It May Concern:

Google Inc. (Google), pursuant to 5 U.S.C. § 552 and Sections 0.457 and 0.459 of the Commission's Rules, 47 C.F.R. §§ 0.457, 0.459, hereby requests that certain information complementary to its above-referenced application for Special Temporary Authority (STA) be treated as confidential and not subject to public inspection. The designated information constitutes confidential and proprietary information that, if subject to public disclosure, would cause significant commercial, economic, and competitive harm. As described below, Google's request satisfies the standards for grant of such requests set forth in Sections 0.457 and 0.459 of the Commission's Rules.

In accordance with Section 0.459(b) and in support of this request, Google provides the following information:

1. Identification of the Information for Which Confidential Treatment is Sought:

Google's request for confidential treatment is limited to the following information that has been redacted from the STA and complementary exhibits. Google does not seek to withhold from public inspection information necessary for interference mitigation, including applicant name, contact information, test location, frequency, output power, effective radiated power, emission characteristics and modulation.

Google requests confidential treatment of the following underlined text from each of the exhibits in support of the application, all of which contain confidential and proprietary information regarding the proposed tests/experiments.

Exhibit A - Narrative Statement:

Google Inc. (Google), pursuant to Section 5.61 of the Federal Communications Commission's (FCC's or Commission's) Rules, 47 C.F.R. § 5.61, hereby requests a Special Temporary Authority (STA) to conduct experimental operations. The STA is sought for a period of 180 days. Consistent with the standards set forth in the rule, Google outlines below its need for the requested STA and the reasons that this request should be granted expeditiously.

Google's Project Wing involves the development of low-altitude small unmanned aerial systems (UAS). These UAS can help to solve many longstanding

challenges, such as rapidly delivering medical supplies to remote areas and inspecting hard-to-reach infrastructure without risk to human participants. The requested STA, including waiver of [REDACTED], is needed for demonstration and testing of [REDACTED], in a carefully controlled environment.

Testing under the STA will be limited to [REDACTED] transmitters [REDACTED]. [REDACTED]. [REDACTED]. [REDACTED].

The transmitters [REDACTED] are [REDACTED] that have been certified by the Commission for sale in the United States. Because the transmitters will [REDACTED], they will only operate on frequencies [REDACTED] at the proposed test area.¹ The transmitters will also operate at or below the power levels and with the emissions characteristics set forth in their respective equipment authorization grants.

Flight operations are being conducted pursuant to an [REDACTED], which is provided as Exhibit C. [REDACTED].

The proposed use of the transmitters conforms to applicable Commission rules in all respects but one: [REDACTED]. [REDACTED].² [REDACTED].³ [REDACTED]. [REDACTED].⁴

These concerns are not relevant to the operations proposed in this STA, as the Wing [REDACTED]. [REDACTED]. [REDACTED].

As reflected in Exhibit D, [REDACTED] providing service to the transmitters at issue in this STA (and to the surrounding areas) confirms that the proposed use does not pose any threat to [REDACTED]. Google does not propose to operate on frequencies [REDACTED].

The Commission is considering whether to [REDACTED].⁵ This proposal is grounded in the same concern as the current [REDACTED].⁶ For the same reasons discussed above, the [REDACTED] operations proposed here do not implicate that concern. Accordingly, Google seeks the requested authorization notwithstanding the possible future amendment of [REDACTED],⁷ or any other changes to the

¹ See Exhibit B for a complete list of frequencies that will be used by each transmitter.

² [REDACTED].

³ [REDACTED].

⁴ *Id.*

⁵ [REDACTED].

⁶ [REDACTED].

⁷ [REDACTED].

Commission's rules that otherwise would restrict or prohibit the proposed operations during the term of the STA.

Absent the requested authorization, Google will be unable in its testing to take advantage of [REDACTED]. This would limit the value of the planned radio experimentation and hinder the development of a significant new use case for [REDACTED]. [REDACTED] could generate new business opportunities for communications service providers and remove barriers to the broader deployment of UAS.⁸ This technology could also support important safety advances, as Google and other companies work develop robust, redundant mobile communications for UAS.⁹

Exhibit B - Technical Information:

Applicant Name: Google Inc.
Applicant FRN: 0016069502

Legal Contact Details

Name of Contact	Aparna Sridhar
Contact Details	Counsel 25 Massachusetts Avenue NW, Ninth Floor Washington DC 20001

Technical Contact Details

Name of Contact	Jeremy Chalmer
Contact Details	1600 Amphitheatre Parkway Mountain View, CA 94043 jchalmer@google.com 650-253-9000

⁸ See Comments by the Association for Unmanned Vehicle Systems International, App. at 2-15 *Operation and Certification of Small Unmanned Aircraft Systems*, FAA-2015-0150 (May 6, 2015), <http://www.regulations.gov/#!documentDetail;D=FAA-2015-0150-4416>.

⁹ See Comments of Google Inc. *Operation and Certification of Small Unmanned Aircraft Systems at 10*, FAA-2015-0150, <http://www.regulations.gov/#!documentDetail;D=FAA-2015-0150-4529>.

Transmitter #1 Equipment and Station Details

Equipment	[REDACTED]
Number	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by a 10 km radius around: 37° 19' 26" N 120° 18' 39" W

Transmitter #1 Frequencies and Emissions Characteristics

Frequencies (MHz)	Modulation	Emission Designator	Maximum Bandwidth (MHz)¹⁰	Maximum Power Out (W)¹⁰	EIRP (dBW)
706.50-713.50	Digital	4M50G7D 4M50W7D	4.50	0.147	-8.3
824.20-835.00	Digital	244KGXW 240KG7W 4M15F9W 1M12G7D 1M13W7D 2M71G7D 2M71W7D 4M49G7D 4M49W7D	4.49	0.617	-2.1
845.00-846.50	Digital	244KGXW 240KG7W 1M12G7D 1M13W7D	1.13	0.617	-2.1
1710.70-1720.00	Digital	4M14F9W 1M12G7D 1M13W7D 2M72G7D 2M71W7D 4M50G7D 4M52W7D	4.52	0.415	-3.8
1730.00-1735.00	Digital	4M14F9W	4.52	0.415	-3.8

¹⁰ For each frequency range, maximum bandwidths and powers are listed. Individual emissions designators may indicate lower bandwidths and may be associated with lower power levels. As noted in Exhibit A, power levels and emissions characteristics will be consistent with the certification grant for the particular device being used.

		1M12G7D 1M13W7D 2M72G7D 2M71W7D 4M50G7D 4M52W7D			
1865.00-1885.00	Digital	242KGXW 245KG7W 4M15F9W 1M12G7D 1M12W7D 2M72G7D 2M72W7D 4M51G7D 4M50W7D 8M98G7D 9M00W7D 13M5G7D 13M4W7D 17M9G7D 17M9W7D	17.9	0.94	-0.3
1895.00-1909.80	Digital	242KGXW 245KG7W 4M15F9W 1M12G7D 1M12W7D 2M72G7D 2M72W7D 4M51G7D 4M50W7D 8M98G7D 9M00W7D	9.00	0.94	-0.3

Transmitter #2 Equipment and Station Details

Equipment	[REDACTED]
Number	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by a 10 km radius around: 37° 19' 26" N 120° 18' 39" W

Transmitter #2 Frequencies and Emissions Characteristics

Frequencies (MHz)	Modulation	Emission Designator	Maximum Bandwidth (MHz)¹¹	Maximum Power Out (W)¹¹	EIRP (dBW)
706.50-713.50	Digital	4M47G7D 4M50D7W	4.50	0.282	-5.5
824.20-835.00	Digital	250KGXW 239KG7W 1M28F9W 1M07G7D 1M08D7W 4M16F9W	4.16	0.7112	-1.5
845.00-846.50	Digital	250KGXW 239KG7W 1M28F9W 1M07G7D 1M08D7W	1.28	0.7112	-1.5
1710.70-1720.00	Digital	4M15F9W 1M08G7D 1M11D7W	4.15	0.4966	-3.0
1730.00-1735.00	Digital	4M15F9W 1M08G7D 1M11D7W	4.15	0.4966	-3.0
1865.00-1885.00	Digital	251KGXW 245KG7W 1M29F9W 4M20F9W 1M07G7D 1M08D7W 17M7G7D 17M8D7W	17.8	1.5959	2.0
1895.00-1910.00	Digital	251KGXW 245KG7W 1M29F9W 4M20F9W 1M07G7D	4.20	1.5959	2.0

¹¹ For each frequency range, maximum bandwidths and powers are listed. Individual emissions designators may indicate lower bandwidths and may be associated with lower power levels. As noted in Exhibit A, power levels and emissions characteristics will be consistent with the certification grant for the particular device being used.

		1M08D7W			
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Transmitter #3 Equipment and Station Details

Equipment	[REDACTED]
Number	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by a 10 km radius around: 37° 19' 26" N 120° 18' 39" W

Transmitter #3 Antenna Information

Antenna	[REDACTED]
Type	Omnidirectional
Quantity	[REDACTED]
Gain	1.49 dBi to 2.93 dBi (frequency dependent)
Beam Width at Half-Power Point	120°
Orientation in Horizontal Plane	N/A
Orientation in Vertical Plane	N/A

Transmitter #3 Frequencies and Emissions Characteristics

Frequencies (MHz)	Modulation	Emission Designator	Maximum Bandwidth (MHz)¹²	Maximum Power Out (W)¹²	EIRP (dBW)
825.50-835.00	Digital	4M17F9W 2M90G7D 2M90W7D	4.17	0.199	-7.0
1865.00-1885.00	Digital	4M17F9W 13M6G7D 1M10W7D 18M1G7D 18M1W7D	18.1	0.1811	-7.4

¹² For each frequency range, maximum bandwidths and powers are listed. Individual emissions designators may indicate lower bandwidths and may be associated with lower power levels. As noted in Exhibit A, power levels and emissions characteristics will be consistent with the certification grant for the particular device being used.

1895.00-1909.30	Digital	4M17F9W 1M10W7D	4.1	0.1706	-7.7
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Exhibit C - Airworthiness Statement:

Google requests confidential treatment of Exhibit C in its entirety.

Exhibit D - Correspondence with Serving Mobile Carrier:

Google requests confidential treatment of Exhibit D in its entirety.

2. Identification of the Commission proceeding in which the information was submitted or a description of the circumstances giving rise to the submission.

The above-referenced Exhibits were submitted to the Commission in support of the STA. For additional information, please see File No. 1021-EX-ST-2015.

3. Explanation of the degree to which the information is commercial or financial or contains a trade secret or is privileged.

The information requested to be kept confidential has significant commercial value. The details of the STA tests/experiments may include trade secret information. The Commission has clarified that confidential treatment should be afforded to trade secrets.¹³ Google's tests/experiments and proprietary wireless applications using particular radio frequency equipment represent a "secret commercially valuable plan" within the meaning of a trade secret as recognized by the Commission.

In addition, agreements entered into between Google and the parties that provided equipment for testing or may provide analysis of test results require that confidential information of the parties be held in strict confidence, and that such information not be disclosed to any third party (with limited exceptions not applicable to this request). The manufacturer name and model number constitutes confidential trade secrets, technical information, and business information.

¹³ *Examination of Current Policy Concerning the Treatment of Confidential Information Submitted to the Commission*, Report and Order, GC Docket No. 96-55, at para. 3, (released Aug. 4, 1998) (defining "trade secrets" for purpose of Commission rules on confidential treatment).

4. Explanation of the degree to which the information concerns a service that is competitive.

The services and technologies that are the subject of this STA have not yet been fully developed but are expected to lead to material developments in markets subject to competition from multiple U.S. and non-U.S. third parties.

5. Explanation of how disclosure of the information could result in substantial competitive harm.

The technology under development is highly sensitive and confidential in nature. The release of such information would provide valuable insight into Google's technology innovations and potential business plans and strategies. Public disclosure would jeopardize the value of the technology under examination by enabling others to utilize Google's information to develop similar products in a similar time frame.

6. Identification of any measures taken by the requesting party to prevent unauthorized disclosure.

Google has taken steps to keep confidential the information set forth in the confidential exhibits by limiting the number of people involved in the tests/experiments to only those on a "need to know" basis, and by requiring that any third parties involved in the preliminary analysis execute robust nondisclosure agreements.

7. Identification of whether the information is available to the public and the extent of any previous disclosures of the information to any third parties.

The information contained in the confidential exhibits is not available to the public, and has only been disclosed to third parties pursuant to the restrictive safeguards.

Google voluntarily provides the information to the Commission at this time with the expectation that it will be treated confidentially in accordance with the Commission's rules. See *Critical Mass Energy Project v. Nuclear Regulatory Comm'n*, 975 F.2d 871, 879 (D.C. Cir. 1992) (commercial information provided on a voluntary basis "is 'confidential' for the purpose of Freedom of Information Act (FOIA) Exemption 4 if it is of a kind that would customarily not be released to the public by the person from whom it was obtained.")

8. Justification of the requested period of confidentiality.

Google expects that confidential treatment will be necessary for the length of the proposed experiment and thereafter in order to protect its evolving business and technology strategies.

9. Any other information that would be useful in assessing whether this request should be submitted.

The information subject to this request for confidentiality should not be made available for public disclosure at any time. There is nothing material that public review of this information would add to the Commission's analysis of Google's request for an experimental authorization.

Moreover, public disclosure of the sensitive information in the confidential exhibits to the STA after the Commission has ruled on the Request for Confidentiality is not necessary for the Commission to fulfill its regulatory responsibilities.

Consistent with 47 C.F.R. § 0.459(d)(l), Google requests notification if release of the information subject to this request is requested pursuant to the FOIA or otherwise, so that Google may have an opportunity to oppose grant of any such request.

Sincerely yours,



Aparna Sridhar

EXHIBIT A - NARRATIVE STATEMENT

Google Inc. (Google), pursuant to Section 5.61 of the Federal Communications Commission's (FCC's or Commission's) Rules, 47 C.F.R. § 5.61, hereby requests a Special Temporary Authority (STA) to conduct experimental operations. The STA is sought for a period of 180 days. Consistent with the standards set forth in the rule, Google outlines below its need for the requested STA and the reasons that this request should be granted expeditiously.

Google's Project Wing involves the development of low-altitude small unmanned aerial systems (UAS). These UAS can help to solve many longstanding challenges, such as rapidly delivering medical supplies to remote areas and inspecting hard-to-reach infrastructure without risk to human participants. The requested STA, including waiver of [REDACTED], is needed for demonstration and testing of [REDACTED], in a carefully controlled environment.

Testing under the STA will be limited to [REDACTED] transmitters [REDACTED]. [REDACTED]. [REDACTED]. [REDACTED].

The transmitters [REDACTED] are [REDACTED] that have been certified by the Commission for sale in the United States. Because the transmitters will [REDACTED], they will only operate on frequencies [REDACTED] at the proposed test area.¹ The transmitters will also operate at or below the power levels and with the emissions characteristics set forth in their respective equipment authorization grants.

Flight operations are being conducted pursuant to an [REDACTED], which is provided as Exhibit C. [REDACTED].

The proposed use of the transmitters conforms to applicable Commission rules in all respects but one: [REDACTED]. [REDACTED].² [REDACTED].³ [REDACTED]. [REDACTED].⁴

These concerns are not relevant to the operations proposed in this STA, as the Wing [REDACTED]. [REDACTED]. [REDACTED].

As reflected in Exhibit D, [REDACTED] providing service to the transmitters at issue in this STA (and to the surrounding areas) confirms that the proposed use does not pose any threat to [REDACTED]. Google does not propose to operate on frequencies [REDACTED].

¹ See Exhibit B for a complete list of frequencies that will be used by each transmitter.

² [REDACTED].

³ [REDACTED].

⁴ *Id.*

The Commission is considering whether to [REDACTED].⁵ This proposal is grounded in the same concern as the current [REDACTED].⁶ For the same reasons discussed above, the [REDACTED] operations proposed here do not implicate that concern. Accordingly, Google seeks the requested authorization notwithstanding the possible future amendment of [REDACTED],⁷ or any other changes to the Commission's rules that otherwise would restrict or prohibit the proposed operations during the term of the STA.

Absent the requested authorization, Google will be unable in its testing to take advantage of [REDACTED]. This would limit the value of the planned radio experimentation and hinder the development of a significant new use case for [REDACTED]. [REDACTED] could generate new business opportunities for communications service providers and remove barriers to the broader deployment of UAS.⁸ This technology could also support important safety advances, as Google and other companies work develop robust, redundant mobile communications for UAS.⁹

⁵ [REDACTED].

⁶ [REDACTED].

⁷ [REDACTED].

⁸ See Comments by the Association for Unmanned Vehicle Systems International, App. at 2-15 *Operation and Certification of Small Unmanned Aircraft Systems*, FAA-2015-0150 (May 6, 2015), <http://www.regulations.gov/#!documentDetail;D=FAA-2015-0150-4416>.

⁹ See Comments of Google Inc. *Operation and Certification of Small Unmanned Aircraft Systems at 10*, FAA-2015-0150, <http://www.regulations.gov/#!documentDetail;D=FAA-2015-0150-4529>.

EXHIBIT B - TECHNICAL INFORMATION

Applicant Name: Google Inc.
Applicant FRN: 0016069502

Legal Contact Details

Name of Contact	Aparna Sridhar
Contact Details	Counsel 25 Massachusetts Avenue NW, Ninth Floor Washington DC 20001

Technical Contact Details

Name of Contact	Jeremy Chalmer
Contact Details	1600 Amphitheatre Parkway Mountain View, CA 94043 jchalmer@google.com 650-253-9000

Transmitter #1 Equipment and Station Details

Equipment	[REDACTED]
Number	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by a 10 km radius around: • 37° 19' 26" N 120° 18' 39" W

Transmitter #1 Frequencies and Emissions Characteristics

Frequencies (MHz)	Modulation	Emission Designator	Maximum Bandwidth (MHz)¹	Maximum Power Out (W)¹	EIRP (dBW)
706.50-713.50	Digital	4M50G7D 4M50W7D	4.50	0.147	-8.3
824.20-835.00	Digital	244KGXW 240KG7W 4M15F9W 1M12G7D 1M13W7D 2M71G7D 2M71W7D 4M49G7D 4M49W7D	4.49	0.617	-2.1
845.00-846.50	Digital	244KGXW 240KG7W 1M12G7D 1M13W7D	1.13	0.617	-2.1
1710.70-1720.00	Digital	4M14F9W 1M12G7D 1M13W7D 2M72G7D 2M71W7D 4M50G7D 4M52W7D	4.52	0.415	-3.8
1730.00-1735.00	Digital	4M14F9W 1M12G7D 1M13W7D 2M72G7D 2M71W7D 4M50G7D 4M52W7D	4.52	0.415	-3.8
1865.00-1885.00	Digital	242KGXW 245KG7W 4M15F9W 1M12G7D	17.9	0.94	-0.3

¹ For each frequency range, maximum bandwidths and powers are listed. Individual emissions designators may indicate lower bandwidths and may be associated with lower power levels. As noted in Exhibit A, power levels and emissions characteristics will be consistent with the certification grant for the particular device being used.

		1M12W7D 2M72G7D 2M72W7D 4M51G7D 4M50W7D 8M98G7D 9M00W7D 13M5G7D 13M4W7D 17M9G7D 17M9W7D			
1895.00-1909.80	Digital	242KGXW 245KG7W 4M15F9W 1M12G7D 1M12W7D 2M72G7D 2M72W7D 4M51G7D 4M50W7D 8M98G7D 9M00W7D	9.00	0.94	-0.3

Transmitter #2 Equipment and Station Details

Equipment	[REDACTED]
Number	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by a 10 km radius around: 37° 19' 26" N 120° 18' 39" W

Transmitter #2 Frequencies and Emissions Characteristics

Frequencies (MHz)	Modulation	Emission Designator	Maximum Bandwidth (MHz)²	Maximum Power Out (W)²	EIRP (dBW)
706.50-713.50	Digital	4M47G7D 4M50D7W	4.50	0.282	-5.5
824.20-835.00	Digital	250KGXW 239KG7W 1M28F9W 1M07G7D 1M08D7W 4M16F9W	4.16	0.7112	-1.5
845.00-846.50	Digital	250KGXW 239KG7W 1M28F9W 1M07G7D 1M08D7W	1.28	0.7112	-1.5
1710.70-1720.00	Digital	4M15F9W 1M08G7D 1M11D7W	4.15	0.4966	-3.0
1730.00-1735.00	Digital	4M15F9W 1M08G7D 1M11D7W	4.15	0.4966	-3.0
1865.00-1885.00	Digital	251KGXW 245KG7W 1M29F9W 4M20F9W 1M07G7D 1M08D7W 17M7G7D 17M8D7W	17.8	1.5959	2.0
1895.00-1910.00	Digital	251KGXW 245KG7W 1M29F9W 4M20F9W 1M07G7D	4.20	1.5959	2.0

² For each frequency range, maximum bandwidths and powers are listed. Individual emissions designators may indicate lower bandwidths and may be associated with lower power levels. As noted in Exhibit A, power levels and emissions characteristics will be consistent with the certification grant for the particular device being used.

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Transmitter #3 Equipment and Station Details

Equipment	[REDACTED]
Number	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by a 10 km radius around: • 37° 19' 26" N 120° 18' 39" W

Transmitter #3 Antenna Information

Antenna	[REDACTED]
Type	Omnidirectional
Quantity	[REDACTED]
Gain	1.49 dBi to 2.93 dBi (frequency dependent)
Beam Width at Half-Power Point	120°
Orientation in Horizontal Plane	N/A
Orientation in Vertical Plane	N/A

Transmitter #3 Frequencies and Emissions Characteristics

Frequencies (MHz)	Modulation	Emission Designator	Maximum Bandwidth (MHz)³	Maximum Power Out (W)³	EIRP (dBW)
825.50-835.00	Digital	4M17F9W 2M90G7D 2M90W7D	4.17	0.199	-7.0
1865.00-1885.00	Digital	4M17F9W 13M6G7D 1M10W7D 18M1G7D 18M1W7D	18.1	0.1811	-7.4

³ For each frequency range, maximum bandwidths and powers are listed. Individual emissions designators may indicate lower bandwidths and may be associated with lower power levels. As noted in Exhibit A, power levels and emissions characteristics will be consistent with the certification grant for the particular device being used.

PUBLIC REDACTED VERSION

Google Inc.
File No. 1021-EX-ST-2015

1895.00-1909.30	Digital	4M17F9W 1M10W7D	4.1	0.1706	-7.7
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EXHIBIT C - [REDACTED]

[REDACTED]

EXHIBIT D - CORRESPONDENCE WITH [REDACTED]

[REDACTED]