

Date: September 12, 2014
Subject: Public and Redacted Version of Request for Confidential Treatment and Complementary Exhibits
FCC File Number: 0814-EX-ST-2014

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 Application") 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 Application and complementary exhibits:

Application:

Manufacturer	Model No.	Units
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Google does not seek to withhold from public inspection information in the STA Application necessary for interference mitigation, including applicant name, contact information, test location, frequency, output power, effective radiated power, emission characteristics and modulation.

Exhibit A - STA Application Justification:

Google requests confidential treatment of the following underlined text from Exhibit A that contains confidential and proprietary information regarding the proposed tests/experiments:

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 Special Temporary Authority (“STA”) to conduct demonstrations of experimental transmitters. The STA is sought for a period of 180 days beginning on October 6, 2014. Consistent with the standards set forth in Rule 5.61, Google outlines below its need for the requested STA and the reasons that the STA should be granted expeditiously.

Google recently acquired Titan Aerospace, a firm that specializes in developing solar and electric unmanned aerial systems (“UAS”) for high altitude, long endurance flights. These systems may eventually be used to provide Internet connections in remote areas or help monitor environmental damage, such as oil spills or deforestation. The STA is needed for demonstration and testing of [REDACTED] in a carefully controlled environment.

Testing under this STA will be limited to [REDACTED]. [REDACTED] will transmit at frequencies between 910.0000 MHz and 927.0000 MHz. [REDACTED] will transmit at frequencies between 2400.0000 MHz and 2414.0000 MHz. Google plans to test these radios in conjunction with equipment including [REDACTED].¹ [REDACTED].

[REDACTED]

The frequencies in the 900 MHz band will be used for [REDACTED]. [REDACTED]. [REDACTED] utilizing the 2400-2414 MHz band will be used for [REDACTED]. [REDACTED].

As explained below, grant of this experimental STA will not adversely impact any authorized user of RF spectrum.

Operations in the 2400 MHz Band: Google’s 2.4 GHz equipment will follow the FCC’s rules for unlicensed operation in the 2400-2483 MHz band² in all aspects but one: the radio does not frequency hop as required by the rules.³ Rather, it will operate only on the spectrum between 2400-2414 MHz and there are no licensed operations in the State of New Mexico in these frequencies. Furthermore, any potential interference to unlicensed devices will be mitigated by the following factors: (1) Google will operate only between 2400 MHz and 2414 MHz and unlicensed devices that rely on the 2400 MHz

¹ [REDACTED].

² See 47 C.F.R., Part 15.

³ See 47 C.F.R. § 15.247.

band will have unaffected access to the spectrum between 2414 MHz and 2483.5 MHz; (2) [REDACTED]. [REDACTED].

Operations in the 900 MHz Band: Similarly, operation of Google's 900 MHz equipment will not cause harmful interference to users in the frequencies between 910 MHz and 927 MHz. Google has conducted a search of licensees in this frequency range throughout New Mexico and concluded that neither licensed nor unlicensed operations will experience harmful interference as a result of Google's operation.

- **Multilateration and Location Monitoring Service (“M-LMS”) Licensees :** There are twelve M-LMS licensees in this band in New Mexico, but none is providing operational M-LMS service today. Six of the licenses are held by Progeny LMS, LLC (“Progeny”). On July, 17, 2014, Progeny filed a request for a waiver and extension of time with respect to the build-out requirements for these licenses.⁴ In this filing, Progeny requested that the FCC extend the buildout requirements for two of these licenses until 2017.⁵ For the remaining four licenses, it asked that the build-out requirements be extended until 2019.⁶ All of the remaining six M-LMS licenses are controlled by Helen Wong-Armijo.⁷ On June 30, 2014, Ms. Wong-Armijo also filed a request for a waiver of build-out deadlines, asking for a five-year extension. In her request, Ms. Wong-Armijo asserts that as of that date, “no equipment was commercially available [for the M-LMS service] and no commercial service was being provided.”⁸ Moreover, even if these operations were active, only two of the twelve current M-LMS licenses in the state—those that serve the Albuquerque Bureau of Economic Analysis Economic Area—are even remotely close to the test site. Therefore, because M-LMS operations are not active, and even if they were, they are not located in close proximity to Google's operation, grant of the STA will not cause any interference to M-LMS licensees.
- **Other licensees in these frequencies:** There are also a number of fixed location narrowband, non-multilateration licenses within 100 miles of the center of the test site.⁹ Each of these operations is outside the test site and the closest is more than 22 miles from the northwest corner of the testing area.¹⁰ [REDACTED], there is no risk of harmful interference to operations located more than 20 miles away. At a distance of 20 miles from the [REDACTED] transmitter, the power level is only -107 dBW. This power level is well below the maximum power authorized for unlicensed transmitters in this band.

⁴ See FCC Call Signs WPQQ238, WPQQ239, WPQQ240, WPQQ241, WPQQ242, and WPQQ243.

⁵ See FCC Call Signs WPQQ238, WPQQ239, WPQQ240, and WPQQ241.

⁶ See FCC Call Signs WPQQ242 and WPQQ243.

⁷ See FCC Call Signs WPTI217, WPTI220, WPTI221, WPTI222, WPTI223, and WPTI235.

⁸ See *id.*

⁹ See FCC Call Signs KNNI518, WPIS317, WPMJ800, and WQTM386.

¹⁰ See FCC Call Sign WQTM386.

- Unlicensed operations in these frequencies:** Google's operation will not harmfully interfere with unlicensed devices in the 910-927 MHz band. First, unlicensed operations will be able to use the frequencies between 902-910 MHz and between 927-928 MHz without being affected by Google's operation. Second, although Google's use [REDACTED] exceeds the Commission's maximum allowed equivalent isotropically radiated power ("EIRP") for unlicensed operations in the 902-928 MHz band,¹¹ Google will comply with the maximum transmit power limit contained in the Part 15 rules, and [REDACTED]. Third, as noted above, [REDACTED]. [REDACTED]. [REDACTED]. Finally, because unlicensed devices are designed to operate in the absence of protection from harmful interference, such devices are likely to be resilient in the event of any unexpected interference.
- Federal operations:** Google understands that there may be some federal operations in the 900 MHz band in the vicinity of the test site.¹² Google is prepared to coordinate with the National Telecommunications and Information Administration to avoid harmful interference to any federal operations.

Exhibit B - Technical Information:

Google requests confidential treatment of the following underlined text from Exhibit B that contains confidential and proprietary information regarding the proposed tests/experiments:

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:	Charles Hall
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¹¹ See 47 C.F.R. § 15.247(b)(4).

¹² See National Telecommunications and Information Administration, 902-928 MHz (Mar. 1, 2014), *available at* http://www.ntia.doc.gov/files/ntia/publications/compendium/0902.00-0928.00_01MAR14.pdf.

Contact Details:	1600 Amphitheatre Parkway Mountain View, CA 94043 Phone: 856-553-5056 Email: charleshall@google.com
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[REDACTED]

Equipment Manuf / PN:	[REDACTED]
Number:	[REDACTED]

Area of Operation	Operation will be confined to the area delimited by: <ul style="list-style-type: none"> • 35:14:21 N 106:09:53 W • 35:14:21 N 105:45:53 W • 34:54:21 N 105:45:53 W • 34:54:21 N 106:09:53 W
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Frequency Range / Tolerance	High	Low
[REDACTED]	2414.0000 MHZ	2400.0000 MHZ

Radio	Modulation	Emission Designator	Bandwidth	Power Out	EIRP
[REDACTED]	Analog	14M0F3F	14 MHz	1 W	3 dBW

Antenna Details	
Type	[REDACTED]
Quantity	[REDACTED]
Gain	3 dBi
Beam Width at Half-Power Point	Approximately 30 degrees vertical, omnidirectional horizontal
Orientation in Horizontal Plane	0-360 degrees

Orientation in Vertical Plane	Peak gain is 20 degrees below the horizon
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[REDACTED]

Equipment Manuf / PN:	[REDACTED]
Number:	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by: <ul style="list-style-type: none"> • 35:14:21 N 106:09:53 W • 35:14:21 N 105:45:53 W • 34:54:21 N 105:45:53 W • 34:54:21 N 106:09:53 W

Frequency Range / Tolerance	High	Low
[REDACTED]	927.0000 MHz	910.0000 MHz

Radio	Modulation	Emission Designator	Bandwidth	Power Out	EIRP
[REDACTED]	Digital	280KF1D	280 kHz	1 W	14 dBW

Antenna Details	
Type	[REDACTED]
Quantity	[REDACTED]
Gain	14.2 dBi
Beam Width at Half-Power Point	30 degrees vertical 32 degrees horizontal
Orientation in Horizontal Plane	0-360 degrees
Orientation in Vertical Plane	5-90 degrees above the ground plane

Antenna Details	
Type	[REDACTED]
Quantity	[REDACTED]
Gain	2 dBi
Beam Width at Half-Power Point	75 degrees vertical 360 degrees horizontal
Orientation in Horizontal Plane	0-360 degrees
Orientation in Vertical Plane	Peak gain is parallel to the horizon

[REDACTED]

[REDACTED]

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 Application. These Exhibits were filed with the Office of Engineering and Technology on September 12, 2014. For additional information, please see File No. 0814-EX-ST-2014.

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 Application 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

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).

equipment for testing or will 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 under the agreements.

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 Application 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 all 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 described above.

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 Application 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 – SPECIAL TEMPORARY AUTHORITY JUSTIFICATION

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 Special Temporary Authority (“STA”) to conduct demonstrations of experimental transmitters. The STA is sought for a period of 180 days beginning on October 6, 2014. Consistent with the standards set forth in Rule 5.61, Google outlines below its need for the requested STA and the reasons that the STA should be granted expeditiously.

Google recently acquired Titan Aerospace, a firm that specializes in developing solar and electric unmanned aerial systems (“UAS”) for high altitude, long endurance flights. These systems may eventually be used to provide Internet connections in remote areas or help monitor environmental damage, such as oil spills or deforestation. The STA is needed for demonstration and testing of [REDACTED] in a carefully controlled environment.

Testing under this STA will be limited to [REDACTED]. [REDACTED] will transmit at frequencies between 910.0000 MHz and 927.0000 MHz. [REDACTED] will transmit at frequencies between 2400.0000 MHz and 2414.0000 MHz. Google plans to test these radios in conjunction with equipment including [REDACTED].¹ [REDACTED].

[REDACTED]

The frequencies in the 900 MHz band will be used for [REDACTED]. [REDACTED]. [REDACTED] utilizing the 2400-2414 MHz band will be used for [REDACTED]. [REDACTED].

As explained below, grant of this experimental STA will not adversely impact any authorized user of RF spectrum.

Operations in the 2400 MHz Band: Google’s 2.4 GHz equipment will follow the FCC’s rules for unlicensed operation in the 2400-2483 MHz band² in all aspects but one: the radio does not frequency hop as required by the rules.³ Rather, it will operate only on the spectrum between 2400-2414 MHz and there are no licensed operations in the State of New Mexico in these frequencies. Furthermore, any potential interference to unlicensed devices will be mitigated by the following factors: (1) Google will operate only between 2400 MHz and 2414 MHz and unlicensed devices that rely on the 2400 MHz band will have unaffected access to the spectrum between 2414 MHz and 2483.5 MHz; (2) [REDACTED]. [REDACTED].

Operations in the 900 MHz Band: Similarly, operation of Google’s 900 MHz equipment will not cause harmful interference to users in the frequencies between 910 MHz and 927 MHz. Google has conducted a search of licensees in this frequency range throughout New Mexico and concluded that neither licensed nor unlicensed operations will experience harmful interference as a result of Google’s operation.

¹ [REDACTED]

² See 47 C.F.R., Part 15.

³ See 47 C.F.R. § 15.247.

- **Multilateration and Location Monitoring Service (“M-LMS”) Licensees:** There are twelve M-LMS licensees in this band in New Mexico, but none is providing operational M-LMS service today. Six of the licenses are held by Progeny LMS, LLC (“Progeny”). On July, 17, 2014, Progeny filed a request for a waiver and extension of time with respect to the build-out requirements for these licenses.⁴ In this filing, Progeny requested that the FCC extend the buildout requirements for two of these licenses until 2017.⁵ For the remaining four licenses, it asked that the build-out requirements be extended until 2019.⁶ All of the remaining six M-LMS licenses are controlled by Helen Wong-Armijo.⁷ On June 30, 2014, Ms. Wong-Armijo also filed a request for a waiver of build-out deadlines, asking for a five-year extension. In her request, Ms. Wong-Armijo asserts that as of that date, “no equipment was commercially available [for the M-LMS service] and no commercial service was being provided.”⁸ Moreover, even if these operations were active, only two of the twelve current M-LMS licenses in the state—those that serve the Albuquerque Bureau of Economic Analysis Economic Area—are even remotely close to the test site. Therefore, because M-LMS operations are not active, and even if they were, they are not located in close proximity to Google’s operation, grant of the STA will not cause any interference to M-LMS licensees.
- **Other licensees in these frequencies:** There are also a number of fixed location narrowband, non-multilateration licenses within 100 miles of the center of the test site.⁹ Each of these operations is outside the test site and the closest is more than 22 miles from the northwest corner of the testing area.¹⁰ [REDACTED], there is no risk of harmful interference to operations located more than 20 miles away. At a distance of 20 miles from the [REDACTED] transmitter, the power level is only -107 dBW. This power level is well below the maximum power authorized for unlicensed transmitters in this band.
- **Unlicensed operations in these frequencies:** Google’s operation will not harmfully interfere with unlicensed devices in the 910-927 MHz band. First, unlicensed operations will be able to use the frequencies between 902-910 MHz and between 927-928 MHz without being affected by Google’s operation. Second, although Google’s use [REDACTED] exceeds the Commission’s maximum allowed equivalent isotropically radiated power (“EIRP”) for unlicensed operations in the 902-928 MHz band,¹¹ Google will comply with the maximum transmit power limit contained in the Part 15 rules, and [REDACTED]. Third, as noted above, [REDACTED]. [REDACTED]. [REDACTED]. Finally, because unlicensed devices are designed to operate in the absence of protection

⁴ See FCC Call Signs WPQQ238, WPQQ239, WPQQ240, WPQQ241, WPQQ242, and WPQQ243.

⁵ See FCC Call Signs WPQQ238, WPQQ239, WPQQ240, and WPQQ241.

⁶ See FCC Call Signs WPQQ242 and WPQQ243.

⁷ See FCC Call Signs WPTI217, WPTI220, WPTI221, WPTI222, WPTI223, and WPTI235.

⁸ See *id.*

⁹ See FCC Call Signs KNNI518, WPIS317, WPMJ800, and WQTM386.

¹⁰ See FCC Call Sign WQTM386.

¹¹ See 47 C.F.R. § 15.247(b)(4).

from harmful interference, such devices are likely to be resilient in the event of any unexpected interference.

- **Federal operations:** Google understands that there may be some federal operations in the 900 MHz band in the vicinity of the test site.¹² Google is prepared to coordinate with the National Telecommunications and Information Administration to avoid harmful interference to any federal operations.

¹² See National Telecommunications and Information Administration, 902-928 MHz (Mar. 1, 2014), *available at* http://www.ntia.doc.gov/files/ntia/publications/compendium/0902.00-0928.00_01MAR14.pdf.

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:	Charles Hall
Contact Details:	1600 Amphitheatre Parkway Mountain View, CA 94043 Phone: 856-553-5056 Email: charleshall@google.com

[REDACTED]

Equipment Manuf / PN:	[REDACTED]
Number:	[REDACTED]

Area of Operation	Operation will be confined to the area delimited by: <ul style="list-style-type: none"> • 35:14:21 N 106:09:53 W • 35:14:21 N 105:45:53 W • 34:54:21 N 105:45:53 W • 34:54:21 N 106:09:53 W
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Frequency Range / Tolerance	High	Low (MHz)
[REDACTED]	2414.0000 MHz	2400.0000 MHz

Radio	Modulation	Emission Designator	Bandwidth	Power Out	EIRP
[REDACTED]	Analog	14M0F3F	14 MHz	1 W	3 dBW

Antenna Details	
Type	[REDACTED]
Quantity	[REDACTED]
Gain	3 dBi
Beam Width at Half-Power Point	Approximately 30 degrees vertical, omni directional horizontal
Orientation in Horizontal Plane	0-360 degrees
Orientation in Vertical Plane	Peak gain is 20 degrees below the horizon

[REDACTED]

Equipment Manuf / PN:	[REDACTED]
Number:	[REDACTED]
Area of Operation	Operation will be confined to the area delimited by: <ul style="list-style-type: none"> • 35:14:21 N 106:09:53 W • 35:14:21 N 105:45:53 W • 34:54:21 N 105:45:53 W • 34:54:21 N 106:09:53 W

Frequency Range / Tolerance	High	Low
[REDACTED]	927.0000 MHz	910.0000 MHz

Radio	Modulation	Emission Designator	Bandwidth	Power Out	EIRP
[REDACTED]	Digital	280KF1D	280 kHz	1 W	14 dBW

Antenna Details	
Type	[REDACTED]
Quantity	[REDACTED]
Gain	14.2 dBi
Beam Width at Half-Power Point	30 degrees vertical 32 degrees horizontal
Orientation in Horizontal Plane	0-360 degrees
Orientation in Vertical Plane	5-90 degrees above the ground plane

Antenna Details	
Type	[REDACTED]
Quantity	[REDACTED]
Gain	2 dBi
Beam Width at Half-Power Point	75 degrees vertical 360 degrees horizontal
Orientation in Horizontal Plane	0-360 degrees
Orientation in Vertical Plane	Peak gain is parallel to the horizon

[REDACTED]

[REDACTED]