

Date: September 2, 2015  
Subject: Public and Redacted Version of Request for Confidential Treatment and Complementary Exhibits  
FCC File Number: 0979-EX-ST-2015  
Call Sign: WI9XHG

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 extension of Special Temporary Authority (STA Extension) 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 information that has been redacted from the STA Extension and Exhibits A, B, and C. Google does not seek to withhold from public inspection information in the STA Extension and associated exhibits necessary for interference mitigation, including applicant name, contact information, test location, frequency, output power, effective radiated power, emission characteristics, and modulation.

**Exhibit A - Narrative Statement**

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

Consistent with the standards set forth in Section 5.61 of the Federal Communications Commission's (FCC's or Commission's) Rules, 47 C.F.R. § 5.61, Google Inc. (Google) requests an extension of Special Temporary Authority (STA Extension) to conduct continued demonstrations of experimental transmitters. On March 8, 2015, Google received authority to conduct demonstrations of the experimental transmitters (0092-EX-ST-2015, Call Sign WI9XHG). That STA is set to expire on September 5, 2015 (a date that has been extended to September

9, 2015, due to FCC website maintenance). Google seeks an STA Extension for a period of another 180 days from the date of grant, which Google respectfully requests as soon as possible. Google outlines below its need for the STA Extension and the reasons why 0979-EX-ST-2015 should be granted expeditiously.

Consistent with 0092-EX-ST-2015, Google seeks to continue to operate a GPS re-radiating kit within a confined and carefully controlled industrial indoor environment. In doing so, Google will continue to [REDACTED]. This will allow Google to continue to [REDACTED].

The GPS re-radiator covered by this STA Extension will continue to have an antenna mounted to a 15-meter roof to receive GPS signals, cable from the roof to the indoor location, amplifier, and passive re-radiating antenna. The re-radiating antenna will continue to be mounted to the ceiling of the room at nine meters from the ground and face downward over the test setup. The passive re-radiating antenna will continue to provide GPS information to [REDACTED]. This test set-up will continue to allow Google to mitigate potential interference risks between different components.

The proposed operations will continue to be conducted without harmful interference to other authorized users, and Google is prepared to coordinate with any federal users as necessary. The re-radiation system will continue to be located indoors, in a large, secure structure. The system will continue to be positioned at least 20 feet from the nearest outside wall of the building. The worst-case signal strength at 100 feet from the re-radiating antenna will continue to be 6 dB below the maximum allowed power of -140 dBm/24 MHz. Given the low signal strength and the positioning of the system within the structure, the likelihood of any interference occurring continues to be very low. In particular, because the re-radiating antenna will be operating indoors in a Google-controlled facility, this signal will be attenuated by building loss, further reducing any minimal likelihood of harmful interference outside that facility. Furthermore, Google has already been conducting similar tests in this area under a grant of special temporary authority, and no disruptions have been noted.

As demonstrated in Exhibit C, the proposed experimental operations will continue to be conducted in accordance with technical requirements that the National Telecommunications and Information Administration (NTIA) has established for federal agencies' use of GPS re-radiators. Satisfaction of these guidelines, although not required for the requested Commission authorization, further demonstrates that the experimentation will continue to be conducted without risk of harmful interference to other users.

For these reasons, Google requests approval of this STA Extension.

**Exhibit B - Technical Information:**

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

**Legal Contact Details**

<b>Name of Contact</b>	Megan Anne Stull
<b>Contact Details</b>	Counsel 25 Massachusetts Avenue NW, Ninth Floor Washington DC 20001

**Technical Contact Details**

<b>Name of Contact</b>	Paul Miller
<b>Contact Details</b>	2175 Monarch Street Alameda, CA 94501 Phone: (619) 871-6246 Email: paulmi@google.com

**Transmitter Equipment and Station Details***Radio Information*

<b>Equipment</b>	[REDACTED]
<b>Quantity</b>	[REDACTED]
<b>Area of Operation</b>	Operation not to exceed 0.05 km from the following geographic centerpoint: <ul style="list-style-type: none"> <li>• 37° 46' 58" N, 122° 18' 27" W</li> </ul>

<b>Frequencies</b>	<b>MHz</b>
[REDACTED]	1575.42 MHz
[REDACTED]	1227.60 MHz

*Antenna Details*

<b>Antennas</b>	
<b>Type</b>	Omnidirectional
<b>Quantity</b>	[REDACTED]
<b>Gain</b>	3.5 dBi

<b>Radio</b>	<b>Modulation</b>	<b>Emission Designator</b>	<b>Bandwidth</b>	<b>Maximum Power Out</b>	<b>Maximum EIRP</b>
[REDACTED]	N/A (GPS amplification)	24M0G1D	N/A (GPS amplification)	6.2E-12 W	-108.6 dBW

**Exhibit C - Technical Information: Technical Guidelines for GPS Re-Radiators**

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

In connection with its request for extension of Special Temporary Authority (STA Extension) (0979-EX-ST-2015), Google Inc. submits the following information to demonstrate its satisfaction of the technical requirements the National Telecommunications and Information Administration (NTIA) has established for federal agencies' use of GPS re-radiators, as set out in Section 8.3.28 of the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management.<sup>1</sup>

**Section 8.3.28(a):** Individual authorization is for indoor use only, and is required for each device at a specific site.

*The device will continue to be used indoors, within a masonry structure. It will be located at [REDACTED] (37° 46' 58" N, 122° 18' 27" W).*

<sup>1</sup> National Telecommunications and Information Administration, *Manual of Regulations and Procedures for Federal Radio Frequency Management* § 8.3.28 (2014), available at [http://www.ntia.doc.gov/files/ntia/publications/redbook/2014-05/8\\_14\\_5.pdf](http://www.ntia.doc.gov/files/ntia/publications/redbook/2014-05/8_14_5.pdf).

**Section 8.3.28(d):** The maximum length of the assignment will be two years, with possible renewal.

*Google is seeking an STA Extension for 180 days.*

**Section 8.3.28(e):** The area of potential interference to GPS reception (e.g., military or contractor facility) has to be under the control of the user.

*Google leases the building where the GPS repeater will continue to be placed under an agreement that extends beyond 2015. Google will continue to control access to the building at all times covered by the requested STA Extension.*

**Section 8.3.28(f):** The maximum equivalent isotropically radiated power (EIRP) must be such that the calculated emissions are no greater than -140 dBm/24 MHz as received by an isotropic antenna at a distance of 100 feet (30 meters) from the building where the test is being conducted. The calculations showing compliance with this requirement must be provided with the application for frequency assignment and should be based on free space propagation with no allowance for additional attenuation (e.g., building attenuation).

*Google's analysis demonstrating compliance with these limits is set forth below.*

-130 dBm	GPS power at the receiving antenna
+40 dB	Receiving antenna pre-amplifier
-5.1 dB	Cable loss (100 ft. LMR-400)
+33 dB	Maximum power amplifier gain (+24 dB nominal)
-10 dB	Fixed attenuator
-4.9 dB	Variable attenuator
-5.1 dB	Cable loss (100 ft LMR-400)
+3.5 dBi	Transmitting antenna peak gain
<b>-78.6 dBm</b>	<b>Equivalent EIRP from the re-radiator</b>

*Calculation of loss for free space propagation using ITU model:*

$$\text{Free space loss (dB)} = 20\log(f) + 20\log(d) - 27.54$$

*Where:*

*d (Distance in meters from re-radiating antenna to 100 ft outside the building) = 36 m*

*f (Carrier frequency in MHz) = 1575.24 MHz*

*-67.5 dB Free space gain at 100 ft from the building*  
*-78.6 dBm Equivalent EIRP from the re-radiator*  
***-146.1 dBm Received power 100 ft from the building (less than -140 dBm required)***

**Section 8.3.28(g):** GPS users in the area of potential interference to GPS reception must be notified that GPS information may be impacted for periods of time.

*During the period covered by the STA Extension, Google will continue to post prominent signage on the exterior of the building notifying GPS users that GPS information may be impacted for periods of time during testing.*

**Section 8.3.28(h):** The use is limited to activity for the purpose of testing RNSS equipment/systems.

*Activities under the STA Extension will continue to be limited to those related to testing RNSS equipment/systems.*

**Section 8.3.28(i):** A "Stop Buzzer" point of contact for the authorized device must be identified and available at all times during GPS re-radiation operation of the device under any condition.

*Google's point of contact for the experiment continues to be Paul Miller. His contact information is as follows: 2175 Monarch Street, Alameda, CA 94501, (619) 871-6246.*

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

Exhibits A, B, and C were submitted to the Commission in support of the STA Extension. The Exhibits were filed with the Office of Engineering and Technology on September 2, 2015. For additional information, please see File No. 0979-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 exhibits supporting the STA Extension discuss tests/experiments that include trade secret

information. The Commission has clarified that confidential treatment should be afforded to trade secrets.<sup>2</sup> Google's tests/experiments represent a "secret commercially valuable plan" within the meaning of a trade secret as recognized by the Commission.

**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 Extension 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 will require that all third parties involved in any 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 will only be 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

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<sup>2</sup> *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).

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 a special temporary authorization.

Moreover, public disclosure of the sensitive information in the confidential exhibits to the STA Extension 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,



Megan Anne Stull

## EXHIBIT A – SPECIAL TEMPORARY AUTHORITY JUSTIFICATION

Consistent with the standards set forth in Section 5.61 of the Federal Communications Commission's (FCC's or Commission's) Rules, 47 C.F.R. § 5.61, Google Inc. (Google) requests an extension of Special Temporary Authority (STA Extension) to conduct continued demonstrations of experimental transmitters. On March 8, 2015, Google received authority to conduct demonstrations of the experimental transmitters (0092-EX-ST-2015, Call Sign WI9XHG). That STA is set to expire on September 5, 2015 (a date that has been extended to September 9, 2015, due to FCC website maintenance). Google seeks an STA Extension for a period of another 180 days from the date of grant, which Google respectfully requests as soon as possible. Google outlines below its need for the STA Extension and the reasons why 0979-EX-ST-2015 should be granted expeditiously.

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**EXHIBIT B - TECHNICAL INFORMATION****Legal Contact Details**

<b>Name of Contact</b>	Megan Anne Stull
<b>Contact Details</b>	Counsel 25 Massachusetts Avenue NW, Ninth Floor Washington DC 20001

**Technical Contact Details**

<b>Name of Contact</b>	Paul Miller
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*Antenna Details*

<b>Antennas</b>	
<b>Type</b>	Omnidirectional
<b>Quantity</b>	[REDACTED]
<b>Gain</b>	3.5 dBi

**PUBLIC REDACTED VERSION**

Google Inc.  
File No. 0979-EX-ST-2015

<b>Radio</b>	<b>Modulation</b>	<b>Emission Designator</b>	<b>Bandwidth</b>	<b>Maximum Power Out</b>	<b>Maximum EIRP</b>
[REDACTED]	N/A (GPS amplification)	24M0G1D	N/A (GPS amplification)	6.2E-12 W	-108.6 dBW

## EXHIBIT C – TECHNICAL GUIDELINES FOR GPS RE-RADIATORS

In connection with its request for extension of Special Temporary Authority (STA Extension) (0979-EX-ST-2015), Google Inc. submits the following information to demonstrate its satisfaction of the technical requirements the National Telecommunications and Information Administration (NTIA) has established for federal agencies' use of GPS re-radiators, as set out in Section 8.3.28 of the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management.<sup>1</sup>

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<b>-78.6 dBm</b>	<b>Equivalent EIRP from the re-radiator</b>

*Calculation of loss for free space propagation using ITU model:*

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*Where:*

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-67.5 dB	Free space gain at 100 ft from the building
-78.6 dBm	Equivalent EIRP from the re-radiator
<b>-146.1 dBm</b>	<b>Received power 100 ft from the building (less than -140 dBm required)</b>

**Section 8.3.28(g):** GPS users in the area of potential interference to GPS reception must be notified that GPS information may be impacted for periods of time.

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