



OFFICE OF
THE CHAIRMAN

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

September 11, 2020

The Honorable Glenn Thompson
U.S. House of Representatives
400 Cannon House Office Building
Washington, DC 20515

Dear Congressman Thompson:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

Let me start with the definition of "harmful interference" the Commission relied on in the *Ligado Order*. As we explained there, the Commission's decision was based on its long-standing definition of "harmful interference" codified in the Commission's rules, which is the very same definition of "harmful interference" used by the National Telecommunications and Information Administration. Indeed, the Commission codified this definition of harmful interference in section 2.1 of our rules in 1984 based on the definition adopted by the International Telecommunications Union—so the assertion that the definition we used "was developed by outside experts through the FCC's Technical Advisory Council" is simply incorrect.

You ask why the Commission did not accept as the standard the 1 dB C/N_0 interference metric preferred by some government agencies. The answer is simple: The Commission declined to adopt the 1 dB C/N_0 metric because the record demonstrated that it was a poor indicator of harmful interference. *First*, data in the record indicated that a 1 dB C/N_0 degradation does not correlate to any significant error in a GPS device's reporting of position. In other words, a 1 dB C/N_0 degradation does not correlate with harmful interference. *Second*, the model used to apply the metric is not reliable. Studies in the record showed that the variability (error) in reported C/N_0 can be significant, as much as 2-3 dB, due to technical variances in the C/N_0 estimators incorporated in GPS receivers and the algorithms used to calculate C/N_0 . That is, the error in measuring the change in performance can be significantly more than the metric itself that one is trying to apply! For some implementations, the data showed that the C/N_0 estimator provided erroneous C/N_0 estimates more frequently than it provided accurate ones. Indeed, the Commission found that the data "strongly suggest that the C/N_0 estimators are generally not capable of accurate and reliable detection of a 1 dB change in the noise power component of the C/N_0 ." *Third*, on top of all this, variations in this metric can occur even without a signal from Ligado—for example, a GPS receiver may experience a 1 dB or 2 dB degradation through natural occurrences. And *finally*, the Commission has never before applied this metric for

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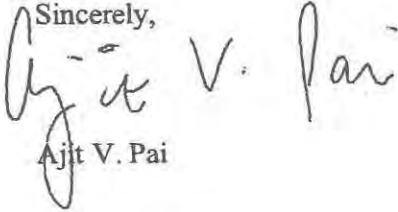
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I appreciate that you agree with the need for the United States to be a leader in 5G deployment. That's why the Commission has adopted and implemented the 5G FAST Plan, a comprehensive strategy for ensuring American leadership in 5G. Making new spectrum available for flexible-use, commercial operations is an integral part of the 5G FAST Plan, and I expect to continue to push forward with sound engineering solutions to ensure that all Americans, including American farmers and ranchers, come out ahead.

Please let me know if I can be of any further assistance.

Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Collin C. Peterson
U.S. House of Representatives
2204 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Peterson:

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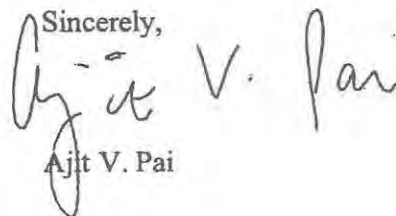
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Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Anthony Brindisi
U.S. House of Representatives
329 Cannon House Office Building
Washington, DC 20515

Dear Congressman Brindisi:

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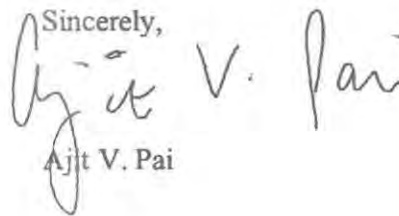
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Trent Kelly
U.S. House of Representatives
1005 Longworth House Office Building
Washington, DC 20515

Dear Congressman Kelly:

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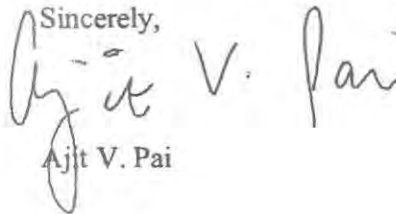
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September 11, 2020

The Honorable Cindy Axne
U.S. House of Representatives
330 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Axne:

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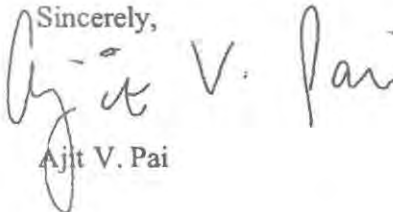
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Please let me know if I can be of any further assistance.

Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Alma Adams
U.S. House of Representatives
222 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Adams:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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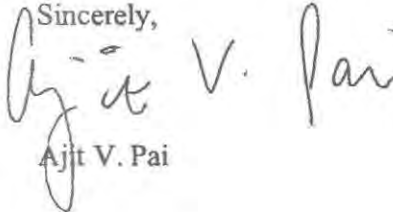
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Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Marcia L. Fudge
U.S. House of Representatives
2344 Rayburn House Office Building
Washington, DC 20515

Dear Congresswoman Fudge:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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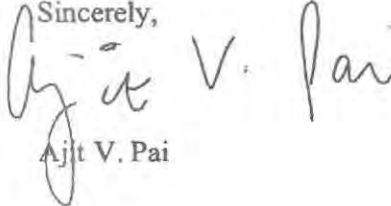
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Mike Bost
U.S. House of Representatives
1440 Longworth House Office Building
Washington, DC 20515

Dear Congressman Bost:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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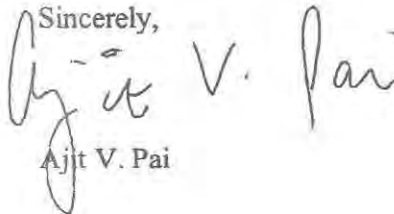
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable David Scott
U.S. House of Representatives
225 Cannon House Office Building
Washington, DC 20515

Dear Congressman Scott:

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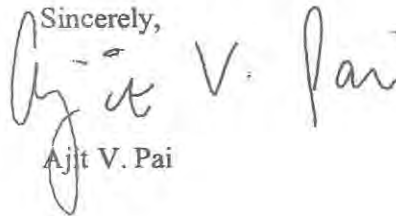
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
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September 11, 2020

The Honorable Vicky Hartzler
U.S. House of Representatives
2235 Rayburn House Office Building
Washington, DC 20515

Dear Congresswoman Hartzler:

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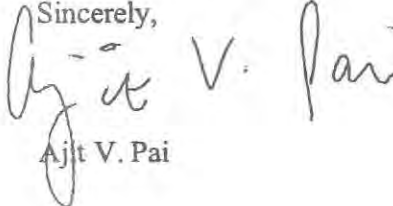
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Please let me know if I can be of any further assistance.

Sincerely,

Ajit V. Pai



OFFICE OF
THE CHAIRMAN

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

September 11, 2020

The Honorable Angie Craig
U.S. House of Representatives
1523 Longworth House Office Building
Washington, DC 20515

Dear Congresswoman Craig:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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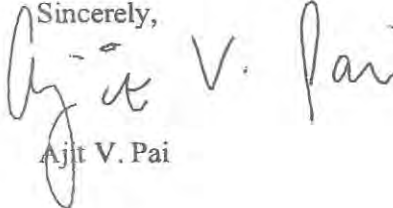
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Don Bacon
U.S. House of Representatives
1024 Longworth House Office Building
Washington, DC 20515

Dear Congressman Bacon:

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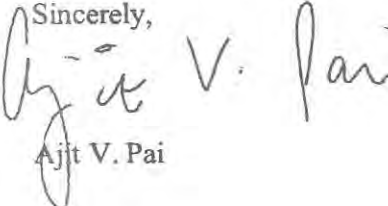
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Cheri Bustos
U.S. House of Representatives
1009 Longworth House Office Building
Washington, DC 20515

Dear Congresswoman Bustos:

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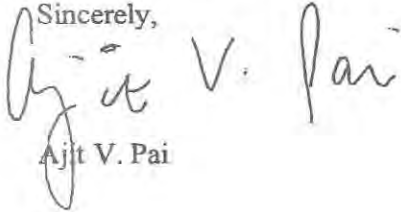
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Ralph Abraham
U.S. House of Representatives
417 Cannon House Office Building
Washington, DC 20515

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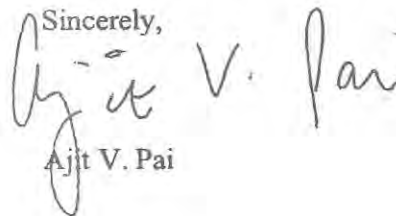
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Please let me know if I can be of any further assistance.

Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Dusty Johnson
U.S. House of Representatives
1508 Longworth House Office Building
Washington, DC 20515

Dear Congressman Johnson:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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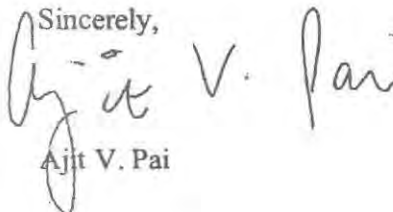
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Sincerely,

Ajit V. Pai



OFFICE OF
THE CHAIRMAN

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

September 11, 2020

The Honorable Ann Kirkpatrick
U.S. House of Representatives
309 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Kirkpatrick:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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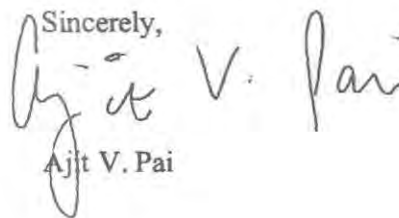
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
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September 11, 2020

The Honorable Doug LaMalfa
U.S. House of Representatives
322 Cannon House Office Building
Washington, DC 20515

Dear Congressman LaMalfa:

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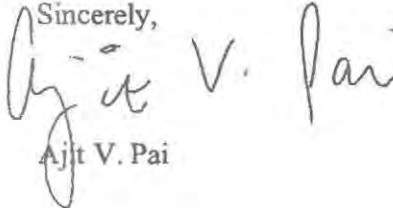
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Austin Scott
U.S. House of Representatives
2417 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Scott:

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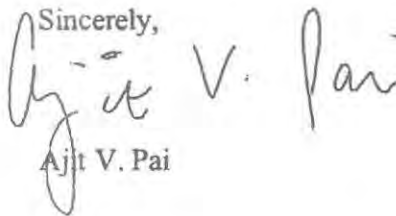
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

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September 11, 2020

The Honorable Abigail Spanberger
U.S. House of Representatives
1239 Longworth House Office Building
Washington, DC 20515

Dear Congresswoman Spanberger:

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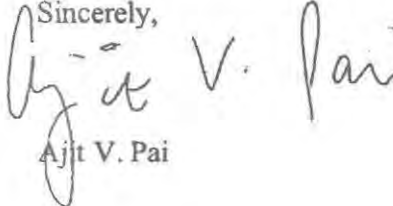
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Please let me know if I can be of any further assistance.

Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Xochitl Torres Small
U.S. House of Representatives
2444 Rayburn House Office Building
Washington, DC 20515

Dear Congresswoman Torres Small:

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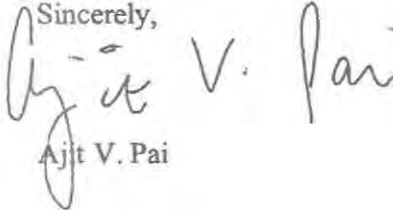
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Rick Crawford
U.S. House of Representatives
2422 Rayburn House Office Building
Washington, DC 20515

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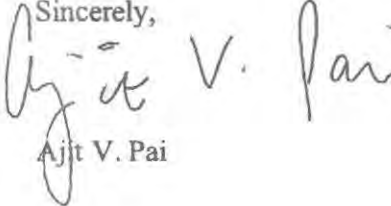
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Roger Marshall
U.S. House of Representatives
312 Cannon House Office Building
Washington, DC 20515

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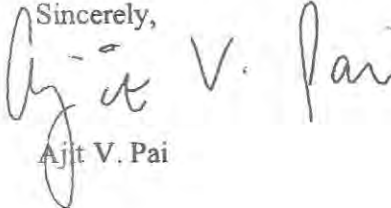
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

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September 11, 2020

The Honorable David Rouzer
U.S. House of Representatives
424 Cannon House Office Building
Washington, DC 20515

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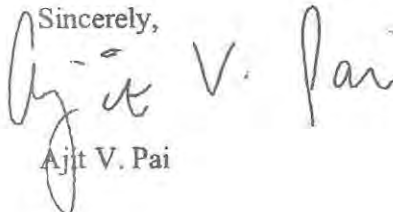
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Please let me know if I can be of any further assistance.

Sincerely,

Ajit V. Pai



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Jim Baird
U.S. House of Representatives
532 Cannon House Office Building
Washington, DC 20515

Dear Congressman Baird:

Thank you for your letter regarding the Commission's unanimous, bipartisan Order and Authorization permitting Ligado Networks LLC to deploy a low-power terrestrial nationwide network in support of 5G and Internet of Things services. Despite the clear and lengthy order the Commission adopted, there appears to be substantial confusion regarding what was decided in that order and why. I appreciate this opportunity to clarify the record.

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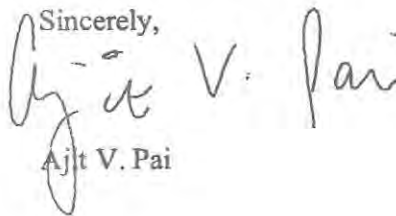
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable Jim Hagedorn
U.S. House of Representatives
325 Cannon House Office Building
Washington, DC 20515

Dear Congressman Hagedorn:

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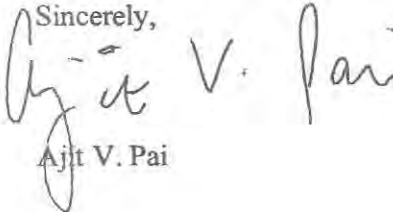
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable TJ Cox
U.S. House of Representatives
1728 Longworth House Office Building
Washington, DC 20515

Dear Congressman Cox:

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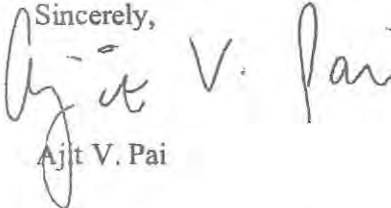
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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

September 11, 2020

The Honorable James R. Comer
U.S. House of Representatives
1037 Longworth House Office Building
Washington, DC 20515

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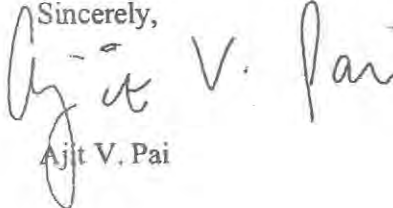
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