

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GEOTAB INC. AND GEOTAB USA, INC.
Petitioners,

v.

FRACTUS, S.A.,
Patent Owner.

Case No. IPR2025-01026
Patent 11,031,677

**PATENT OWNER'S SUR-REPLY TO PETITIONERS' REPLY TO
PRELIMINARY RESPONSE**

A. Introduction

Petitioners' Reply mischaracterizes the Petition to avoid the counter arguments presented in Patent Owner's Preliminary Response (POPR). Petitioners should be held to the positions taken in the Petition. *See Zscaler, Inc. v. Symantec Corp.*, No. IPR2017-01342, Paper 37 at 26 (P.T.A.B. Nov. 9, 2018).

B. Petitioners' Combinations of Dou and Ciais Rely on Spatial Diversity

Petitioners claim that Patent Owner mischaracterizes Dou because "Dou describes spatial diversity as just one of several 'diversity techniques' for creating diversity." Reply at 1. Petitioners miss the point. Petitioners' Dou+Ciais-Quadband and Dou+Ciais-Quadband+Nakano combinations (collectively "Dou+Ciais combinations") would only be understood by the POSA as implementing spatial diversity as the combinations are not consistent with pattern or polarization diversity.

Indeed, as noted by *Petitioners'* expert, "[a] diversity architecture such as that described in Dou can be implemented in various forms: spatial diversity (using physically separated antennas), pattern diversity (using antennas with different radiation patterns), and/or polarization diversity (using orthogonally polarized elements)." EX1007, ¶113. The Dou+Ciais combinations proposed in the Petition provide two identical Ciais antennas physically separated from each other on opposite ends of the ground plane. Petition at 45. In other words, the Dou+Ciais combinations allegedly provide diversity "using physically separated antennas,"

which is spatial diversity. EX1007, ¶113. In contrast, the Petition nowhere proposes using “antennas with different radiation patterns,” nor does it propose using “orthogonally polarized elements.” *See id.* Rather, the Petition proposes using identical Ciais antennas, which would exhibit substantially identical omnidirectional radiation patterns, in a parallel arrangement on the ground plane. *See* EX1009 at 150. Further, Ciais’ antennas are not orthogonally polarized elements because both antennas would provide the same polarization. *See id.* Therefore, the only diversity possibly implemented in the Dou+Ciais combinations is spatial diversity.

C. The Combinations Do Not Provide Spatial Diversity

Petitioners argue that the Dou+Ciais combinations, while not relying on spatial diversity, nevertheless do provide spatial diversity. Reply at 3. Petitioners further allege that Patent Owner falsely asserts that the Dou+Ciais combinations depend on use of Ciais’ 40.5 mm x 105 mm PCB. *Id.* Petitioners, however, are attempting to recharacterize the Dou+Ciais combinations presented in the Petition in an effort to avoid the fatal arguments presented in the POPR.

Petitioners do not contest that a quarter wavelength spacing is required for spatial diversity. *See* Reply at 2-3. Instead, Petitioners argue that the Petition does not rely on Ciais’ 40.5 mm x 105 mm ground plane, and that a POSA could craft a ground plane to meet spatial diversity requirements. Reply at 3. This, however, is not what the Petition says.

While, perhaps, less explicit than in PGR2025-00056, Paper 4 at 84 (“Dou+Ciais-Quadband+Nakano meets claim 4 because Dou’s modified ground plane 210 is 40.5×105 mm² as taught by Ciais-Quadband, so the ground plane rectangle has a ‘long side’ of 105 mm.”) and IPR2025-00929, Paper 4 at 35 (“a POSA would have used Jing’s teachings to modify Dou’s ground plane to replicate Jing’s ground plane dimensions of 36×60 mm²”), the Petition, nevertheless, states that it is utilizing the ground plane teachings of Ciais, including a 40.5 x 105 mm ground plane, within the Dou architecture: “Dou+Ciais-Quadband meets [1.b] because it uses Dou’s ground plane 210 *to implement Ciais’s ground plane teaching. ... Ciais teaches a rectangular (40.5 mm x 105 mm) PCB, also backed by a ground plane*, that Ciais explains is representative of PCBs for typical mobile phones.” Petition at 37, 45 (emphasis added).

Further, the Petition alleges that the Dou+Ciais combinations are obvious because “Ciais’s quadband antenna provided operation at 870-960 MHz and 1710-2170 MHz, each of which used well-known communication standards (GSM, DCS, PCS, UMTS), making the antenna ‘suitable for mobile phone applications’ like Dou’s wireless device.” Petition at 34, *citing* Ciais at 148. Ciais, however, explains on page 148 that “The PCB size, especially its length, has a strong influence on the performances of mobile phone antennas,” and that the 40.5 mm x 105 mm PCB was chosen because it “equally helps in these both [*sic*] bands for an efficient antenna-

chassis combination.” EX1009 at 148. It is disingenuous for Petitioners to argue that they are not relying on Ciais’ ground plane size, which makes the antenna suitable for operation at the GSM and PCS bands, as well as suitable for mobile phone antennas, when these are the precise reasons that the Petition contends the Dou+Ciais combinations render the claims obvious.

D. The Dou+Ciais Combination Provides No Diversity Whatsoever

Petitioners argue that the Dou+Ciais combinations are not implementing spatial diversity because Patent Owner has shown that the combinations fail to meet the requirements for spatial diversity (*See* POPR at 18-23; *see also* section C, *supra*). The Petition, however, does not allege that the Dou+Ciais combinations implement pattern or polarization diversity, nor do they provide such diversity. The combinations utilize two Ciais antennas which would have the same radiation patterns, and therefore, cannot provide pattern diversity. The Ciais antennas would exhibit the same polarization as they are arranged in parallel in the combination. Therefore, the antennas are not orthogonally polarized elements and do not provide polarization diversity. Accordingly, regardless of how Petitioners characterize their reliance on Dou’s *diversity* techniques, the Dou+Ciais combinations do not implement *any* antenna diversity – the Ciais antennas are not sufficiently separated for spatial diversity, the antennas would not have the different radiation patterns needed for pattern diversity, and they are not orthogonally polarized as needed for

polarization diversity. Therefore, a POSA would have had no motivation for the Dou-Ciais combinations.

E. Baliarda-543 is Not Prior Art

The Reply confirms that the disagreement between the Parties is a run-of-the-mill claim construction disagreement regarding the scope of “4G communication standard,” and not a written description or priority issue with the ‘677 Patent.

The Reply does not contest that the POSA would have understood “4G communication standard” as including LTE technologies. This should end the discussion. Petitioners, however, argue that the POSA would not have understood this term as encompassing one specific LTE band, LTE Band 12. Reply at 4. Petitioners’ own evidence, however, explains that a study started in 2004 had the objective of developing the LTE framework for “flexible use of existing *and new* frequency bands.” EX1026 at 7 (emphasis added). Fractus’ evidence supports this same point. *See, e.g.*, EX2015 at 2 (“Spectrum flexibility, enabling deployment in different spectrum allocations.”). Therefore, the POSA would have understood that LTE, a “4G communication standard,” would have operated at new and different bandwidth (i.e., frequency) allocations. Whether or not LTE Band 12 was part of this understanding is an issue of pure claim construction.

Dated: October 28, 2025

Respectfully submitted,
/Mark J. DeBoy/
Mark J. DeBoy (Reg. 66,983)
Attorney for Patent Owner Fractus S.A.

CERTIFICATE OF SERVICE

The undersigned certifies that pursuant to 37 C.F.R. § 42.6(e), a copy of the foregoing **PATENT OWNER'S SUR-REPLY TO PETITIONERS' REPLY TO PRELIMINARY RESPONSE** was served via email (as previously consented to by counsel) on October 28, 2025 to lead and backup counsel of record for Petitioners as follows:

AWichman-PTAB@wolfgreenfield.com
MParsons-PTAB@wolfgreenfield.com
RGiunta-PTAB@wolfgreenfield.com
SLu-PTAB@wolfgreenfield.com

Dated: October 28, 2025

/Mark J. DeBoy/
Mark J. DeBoy (Reg. No. 66,983)
Attorney for Patent Owner
Fractus S.A.