

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

SWIRLATE IP LLC,

Plaintiff,

v.

AUDIOCODES, INC.,

Defendant.

C.A. NO. _____

JURY TRIAL DEMANDED

PATENT CASE

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Swirlate IP LLC files this Original Complaint for Patent Infringement against AudioCodes Inc., and would respectfully show the Court as follows:

I. THE PARTIES

1. Plaintiff Swirlate IP LLC (“Swirlate” or “Plaintiff”) is a Texas limited liability company having an address at 6009 W Parker Rd, Ste 149 – 1090, Plano, TX 75093-8121.

2. On information and belief, Defendant AudioCodes, Inc. (“Defendant”) is a corporation organized and existing under the laws of Delaware, with a registered agent at The Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801.

II. JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction of such action under 28 U.S.C. §§ 1331 and 1338(a).

4. On information and belief, Defendant is subject to this Court’s specific and general personal jurisdiction, pursuant to due process and the Delaware Long-Arm Statute, due at least to its business in this forum, including at least a portion of the infringements alleged

herein. Furthermore, Defendant is subject to this Court's specific and general personal jurisdiction because Defendant is a Delaware corporation.

5. Without limitation, on information and belief, Defendant has derived revenues from its infringing acts occurring within Delaware. Further, on information and belief, Defendant is subject to the Court's general jurisdiction, including from regularly doing or soliciting business, engaging in other persistent courses of conduct, and deriving substantial revenue from goods and services provided to persons or entities in Delaware. Further, on information and belief, Defendant is subject to the Court's personal jurisdiction at least due to its sale of products and/or services within Delaware. Defendant has committed such purposeful acts and/or transactions in Delaware such that it reasonably should know and expect that it could be haled into this Court as a consequence of such activity.

6. Venue is proper in this district under 28 U.S.C. § 1400(b). On information and belief, Defendant is incorporated in Delaware. Under the patent venue analysis, Defendant resides only in this District. On information and belief, from and within this District Defendant has committed at least a portion of the infringements at issue in this case.

7. For these reasons, personal jurisdiction exists and venue is proper in this Court under 28 U.S.C. § 1400(b).

III. COUNT I
(PATENT INFRINGEMENT OF UNITED STATES PATENT NO. 7,154,961)

8. Plaintiff incorporates the above paragraphs herein by reference.

9. On December 26, 2006, United States Patent No. 7,154,961 ("the '961 Patent") was duly and legally issued by the United States Patent and Trademark Office. The '961 Patent is titled "Constellation Rearrangement for ARQ Transmit Diversity Schemes." A true and correct copy of the '961 Patent is attached hereto as Exhibit A and incorporated herein by reference.

10. Swirlate is the assignee of all right, title and interest in the '961 patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the '961 Patent. Accordingly, Swirlate possesses the exclusive right and standing to prosecute the present action for infringement of the '961 Patent by Defendant.

11. The invention in the '961 Patent relates to the field of Automatic Repeat reQuest ("ARQ") transmission techniques in wireless communication systems. (Ex. A at col. 1:6-8). In particular, it relates to a method for transmitting data using transmit diversity schemes in which data packets are transmitted using a first and second transmission based on a repeat request and the bit-to-symbol mapping is performed differently for different transmitted diversity branches. (*Id.* at col. 1:8-12). The inventors recognized a problem in prior art of the use of ARQ transmission techniques in wireless communication systems with unreliable and time-varying channel conditions and the invention results in an improved performance avoiding transmission errors. (*Id.* at col. 1:12-15).

12. In telecommunications, in order to improve the reliability of data transmissions, the prior art had several transmit diversity techniques in which redundant versions of identical data are transmitted in at least two diversity branches by default without explicitly requesting further diversity branches. (*Id.* at col. 1:19-24). Such transmit diversity techniques included (i) site diversity (transmitted signal originates from different sites), (ii) antenna diversity (transmitted signal originates from different antennas), (iii) polarization diversity (transmitted signal is mapped onto different polarization), (iv) frequency diversity (transmitted signal is mapped on different carrier frequencies or frequency hopping sequences), (v) time diversity (transmitted signal is mapped on different interleaving sequences), and (vi) multicode diversity

(transmitted signal is mapped on different codes). (*Id.* at col. 1:24-42). The diversity branches would then be combined in order to improve the reliability of the received data. These diversity combining techniques included (a) selection combining (selecting the diversity branch with the highest Signal-to-Noise Ratio (“SNR”) for decoding and ignoring the remaining ones), (b) equal gain combining (combining received diversity branches with ignoring the differences in received SNR), and (c) maximum ratio combining (combining received diversity branches taking the received SNR of each diversity branch into account).

13. The prior art also had techniques for error detection/correction with respect to the transmission of data. For example, the prior art would use ARQ schemes together with Forward Error Correction (FEC),¹ which is called hybrid ARQ (“HARQ”). If an error is detected within a packet by the Cyclic Redundancy Check (“CRC”), the receiver requests that the transmitter send additional information (*e.g.*, retransmission) to improve the probability to correctly decode the erroneous packet. (*Id.* at col. 1: 59-63).

14. The ‘961 discussed a particular prior art reference that had the shortcomings of the prior art. WO-02/067491 A1 disclosed a method for HARQ transmission that averages the bit reliability over successively requested retransmissions by means of signal constellation rearrangement. (*Id.* at col. 1: 64-67). The reference showed that when more than 2 bits of data were mapped onto one modulation symbol, the bits have different reliability depending on the chosen mapping. (*Id.* at col. 2: 1-5). For most FEC schemes, this leads to a degraded decoder performance compared to an input of more equally distributed bit reliabilities. (*Id.* at col. 2:5-7).

¹ FEC is a technique used for controlling errors in data transmission over unreliable or noisy communication channels. The general idea of FED is that a sender encodes the message in a redundant way, most often using an error correction code. The redundancy allows the receiver to detect a limited number of errors that may occur anywhere in the message, and to potentially correct these errors without re-transmission.

As a result, in conventional communications systems the modulation dependent variations in bit reliabilities are not considered and, therefore, usually the variations remain after combining the diversity branches at the receiver. (*Id.* at col. 2:8-11).

15. The inventors therefore developed a method that improved performance with regard to transmission errors. (*Id.* at col. 2:15-18). The idea of the invention is to improve performance at the receiver by applying different signal constellation mappings to the available distinguishable transmit diversity branches and ARQ retransmissions. (*Id.* at col. 2:20-23). The invention is applicable to modulation formats in which more than 2 bits are mapped onto one modulation symbol, since this implies a variation in reliabilities for the bits mapped onto the signal constellation. (*Id.* at col. 2:23-29).

16. **Direct Infringement.** Upon information and belief, Defendant has been directly infringing at least claim 1 of the '961 patent in Delaware, and elsewhere in the United States, by performing actions comprising at least performing the claimed ARQ re-transmission method by performing the steps of the claimed invention using the Mediant 500L MSBR ("Accused Instrumentality") (*e.g.*, <https://www.audiocodes.com/solutions-products/products/multi-service-business-routers-msbrs/mediant-500l-msbr>).

17. The Accused Instrumentality uses an ARQ retransmission method in a wireless communication system in which data packets are transmitted from a transmitter to a receiver using a first transmission and at least a second transmission based on a repeat request. For example, at least in its internal testing and usage, the Accused Instrumentality uses an HARQ method in an LTE network in which data is transmitted from the Accused Instrumentality to an LTE base station using at least an HARQ transmission and an HARQ retransmission based on a repeat request, such as an HARQ retransmission request in the form of a negative

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