

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte RICHARD A. BLANCHARD

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Appeal No. 1998-2897  
Application No. 08/749,381

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ON BRIEF

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Before HAIRSTON, JERRY SMITH, and GROSS, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 20. In an Amendment After Final (paper number 14), claims 1 and 8 were amended. According to the examiner (paper number 15), the amendment had the effect of overcoming the rejection of claims 1 through 13 under the first paragraph of 35 U.S.C. § 112.

Appeal No. 1998-2897  
Application No. 08/749,381

The disclosed invention relates to an integrated active antenna structure in which a semiconductor integrated circuit chip is physically mounted on an interior wall of a cavity in the antenna. The chip is encapsulated in the cavity by an encapsulating material. Leads are electrically connected to the chip, and they extend through the cavity and the encapsulating material to the outside of the antenna. The leads are insulated from the antenna.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. An integrated active antenna structure, comprising:
  - an antenna which operates at an RF operating frequency, said antenna having walls defining a cavity, an opening leading to said cavity, and an interior mounting surface within said cavity;
  - a semiconductor integrated circuit chip which is physically mounted on the interior mounting surface of said antenna, and which is connected to apply an RF drive signal to said antenna, the dimensions of said chip being small enough to permit installation thereof within said cavity by passing said chip through said opening;
  - material encapsulating said chip within said cavity; and leads insulated from said antenna and electrically connected to said chip within said cavity, said leads extending outside said cavity through said opening to provide external electrical connection to said chip.

Appeal No. 1998-2897  
Application No. 08/749,381

The references relied on by the examiner are:

Halstead 1970	3,523,251	Aug. 4,
Dubois et al. (Dubois) 1994	5,313,193	May 17,
Büchler et al. (Büchler) 15, 1994	5,365,243	Nov.

Claims 1, 3 through 8, 10 through 14 and 16 through 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Halstead in view of Dubois.

Claims 2, 9 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Halstead in view of Dubois and Büchler.

Reference is made to the final rejection, the briefs and the answer for the respective positions of the appellant and the examiner.

#### OPINION

The obviousness rejection of claims 1 through 20 is reversed.

The examiner is of the opinion (final rejection, pages 2 and 3) that Halstead discloses all of the antenna structure of claims 1, 8 and 14 except for a material that encapsulates the chip within the cavity. For such a teaching, the examiner

turns to Dubois for a teaching of embedding a chip within a cavity with polymer resin or epoxy (column 4, lines 7 through 9 and 45 through 49). The examiner concludes (final rejection, page 3) that "[i]t would have been obvious to the skilled artisan to employ such plastic or epoxy material for encapsulating the chip 49 in Halstead for the same purpose as in Dubois et al."

Appellant argues (Brief, pages 4 through 7) that the so-called chip 49 in Halstead is a field-effect transistor (FET), that Halstead does not disclose the claimed lead arrangement, and that it would not have been obvious to encapsulate the circuit structure in the Halstead antenna.

We agree with appellant's arguments. Element 49 in Halstead (Figures 8 through 10) is described as a FET (column 7, lines 18 through 21). Even if we assume for the sake of argument that the FET in Halstead is a chip, appellant has correctly argued (Brief, page 4) that the FET is not physically mounted on an interior mounting surface within the cavity of the antenna (claims 1 and 14), and that the FET is not in a "back-surface chip-mounting arrangement in which the chip is

Appeal No. 1998-2897  
Application No. 08/749,381

'connected to apply an RF drive signal to said antenna through said back surface connection'" (claim 8). Appellant has also correctly argued (Brief, pages 4 and 5) that the lead 15A (i.e., center conductor 15A of coaxial cable 15), the lead 15B (i.e., sheath 15B of the coaxial cable), the lead 60A (i.e., positive side of DC voltage source), and the lead 60B (i.e., negative side of DC voltage source) are not electrically connected to a chip and do not extend from a chip to the outside of the antenna. Lastly, we agree with appellant's argument (Brief, pages 5 through 7) that the examiner has not provided an adequate reason for encapsulating circuitry in the Halstead antenna with an epoxy resin as taught by Dubois.

Based upon the inadequacies in the teachings of the applied references to Halstead and Dubois, we will reverse the obviousness rejection of claims 1, 3 through 8, 10 through 14 and 16 through 20. The obviousness rejection of claims 2, 9 and 15 is likewise reversed because the silicon monolithic microwave integrated circuit (Si-MMWIC) teachings of Buehler do not cure the noted inadequacies of Halstead and Dubois.

Appeal No. 1998-2897  
Application No. 08/749,381

DECISION

The decision of the examiner rejecting claims 1 through  
20 under 35 U.S.C. § 103 is reversed.

REVERSED

	)	
KENNETH W. HAIRSTON	)	)
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JERRY SMITH	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
ANITA PELLMAN GROSS	)	)
Administrative Patent Judge	)	

KWH:hh

Appeal No. 1998-2897  
Application No. 08/749,381

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