US006181294C1

(12) EX PARTE REEXAMINATION CERTIFICATE (9184th)

United States Patent

Porter et al.

(10) Number: US 6,181,294 C1

(45) Certificate Issued: Aug. 14, 2012

(54) **ANTENNA FOR ELECTRIC METER AND METHOD OF MANUFACTURING THEREOF**

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Reexamination Request:
No. 90/011,710, May 24, 2011

Reexamination Certificate for:

Patent No.:	**6,181,294**
Issued:	**Jan. 30, 2001**
Appl. No.:	**09/040,113**
Filed:	**Mar. 17, 1998**

(51) **Int. Cl.**

G01D 4/00	(2006.01)
H01Q 9/04	(2006.01)
H01Q 9/16	(2006.01)
H01Q 1/22	(2006.01)
G01R 22/00	(2006.01)

(52) **U.S. Cl.** **343/859**; 324/142; 340/870.02; 340/870.03; 343/872; 343/719

(58) **Field of Classification Search** ..... None
See application file for complete search history.

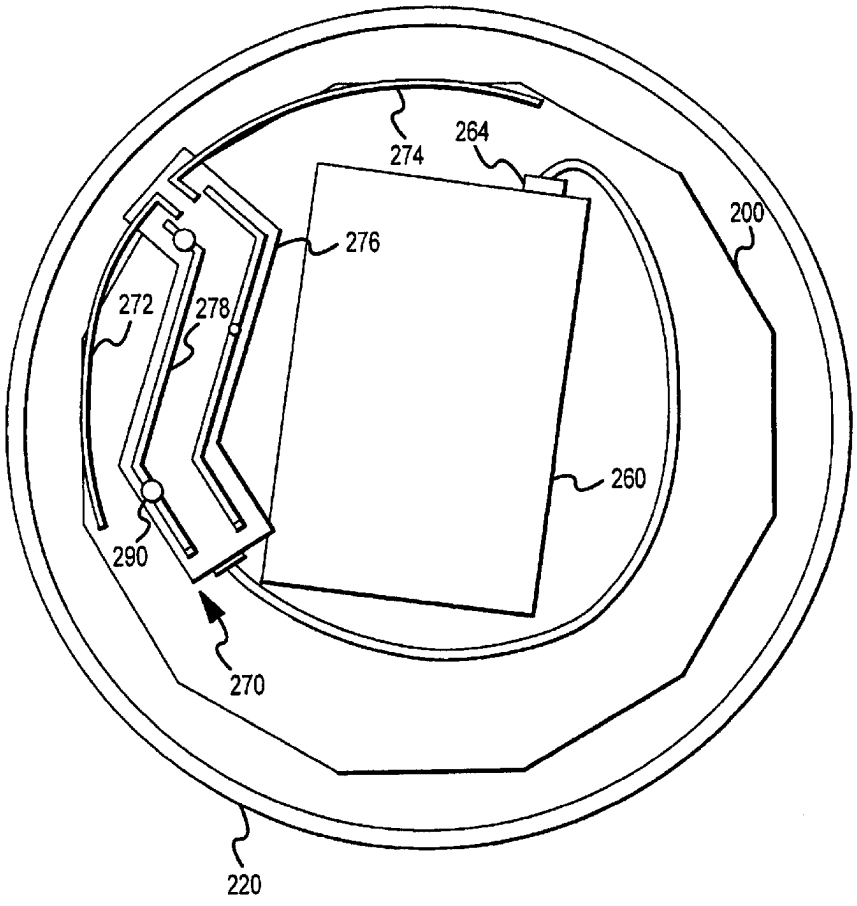
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/011,710, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner—Anjan K. Deb

(57) **ABSTRACT**

For use with an electric meter chassis having a dielectric housing protruding therefrom, an antenna for allowing electric meter circuitry within the chassis to communicate wirelessly through the dielectric housing and a method of manufacturing the same. In one embodiment, the antenna includes: (1) antenna elements, located within the dielectric housing and adapted to transmit and receive electromagnetic radiation and (2) a balance circuit, coupled to the antenna elements to cause the antenna elements to act as an antenna and couplable to an unbalanced output port of a wireless communication circuit, that balances an impedance of the unbalanced output port thereby to balance the antenna.



EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **17-30** is confirmed.

Claims **1**, **3**, **4**, **9**, **11** and **12** are determined to be patentable as amended.

Claims **2**, **5-8**, **10** and **13-16**, dependent on an amended claim, are determined to be patentable.

1. An antenna for use with an electric meter chassis having a dielectric housing protruding therefrom, said antenna allowing electric meter circuitry within said chassis to communicate wirelessly through said dielectric housing, comprising:

antenna elements, located within said dielectric housing and adapted to transmit and receive electromagnetic radiation; and

a balance circuit, coupled to said antenna elements to cause said antenna elements to act as said antenna and couplable to an unbalanced output port of a wireless communication circuit *that is also coupled to said electric meter circuitry,* that balances an impedance of said unbalanced output port thereby to balance said antenna.

3. The antenna as recited in claim **1** wherein said chassis comprises *said* electric meter circuitry located in a circuit board rack within said dielectric housing, said antenna elements located between circuit boards in said circuit board rack.

4. The antenna as recited in claim **1** wherein said chassis**[**: electric meter circuitry located in said dielectric housing; and**]** *further* comprises an electromagnetic shield located about at least a portion of said electric meter circuitry.

9. A method of manufacturing an antenna for use with an electric meter chassis having a dielectric housing protruding therefrom, said antenna allowing electric meter circuitry within said chassis to communicate wirelessly through said dielectric housing, comprising the steps of:

locating antenna elements within said dielectric housing, said antenna elements adapted to transmit and receive electromagnetic radiation; and

coupling a balance circuit to said antenna elements to cause said antenna elements to act as said antenna, said balance circuit couplable to an unbalanced output port of a wireless communication circuit *that is also coupled to said electric meter circuitry,* to balance an impedance of said unbalanced output port and thereby balance said antenna.

11. The method as recited in claim **9** further comprising the step of placing *said* electric meter circuitry in a circuit board rack within said dielectric housing, said antenna elements located between circuit boards in said circuit board rack.

12. The method as recited in claim **9** further comprising the **[**steps**]** *step* of**[**: placing electric meter circuitry in said dielectric housing; and**]** placing an electromagnetic shield about at least a portion of said electric meter circuitry.

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