

EXHIBIT

DSS-2004



US007558232B2

(12) **United States Patent Pearl**

(10) **Patent No.: US 7,558,232 B2**
(45) **Date of Patent: *Jul. 7, 2009**

(54) **ADAPTIVE DUTY CYCLE MANAGEMENT METHOD AND SYSTEM FOR RADIO TRANSMITTERS**

(75) Inventor: **Norman Pearl**, Montreal (CA)

(73) Assignee: **Dataradio, Inc.**, Montreal, Quebec (CA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 577 days.

This patent is subject to a terminal disclaimer.

5,134,615	A	7/1992	Freeburg et al.	
5,351,043	A	9/1994	Hullett et al.	
5,524,275	A	6/1996	Lindell	
6,104,759	A	8/2000	Carkner et al.	
6,115,390	A	9/2000	Chuah	
6,122,492	A	9/2000	Sears	
6,127,861	A	10/2000	Lee	
6,144,193	A	11/2000	Illingworth	
6,477,160	B2 *	11/2002	Gleeson	370/337
6,950,404	B2 *	9/2005	Pearl	370/252
7,245,880	B1 *	7/2007	Jacobsen	455/69
7,330,706	B2 *	2/2008	Gentsch et al.	455/127.1

(Continued)

(21) Appl. No.: **11/223,221**

(22) Filed: **Sep. 9, 2005**

(65) **Prior Publication Data**

US 2006/0067245 A1 Mar. 30, 2006

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/854,610, filed on May 14, 2001, now Pat. No. 6,950,404.

(51) **Int. Cl.**
H04B 7/212 (2006.01)
H04B 7/00 (2006.01)
H04J 3/00 (2006.01)

(52) **U.S. Cl.** **370/321; 370/337; 370/345; 455/522**

(58) **Field of Classification Search** **370/314, 370/318, 321, 326, 336-337, 345, 347, 277-278, 370/282, 442, 498; 455/13.4, 522, 127.1, 455/127.5**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,127,036 A 6/1992 Pham

OTHER PUBLICATIONS

U.S. Code of Federal Regulations, Title 47, Part 1, Paragraph 1310 (47C.F.R.1.1310) *Radiofrequency Radiation Exposure Limits*; Jul. 10, 2001.

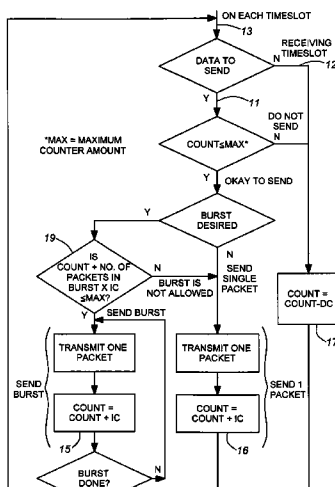
Primary Examiner—Tri H Phan

(74) *Attorney, Agent, or Firm*—Koppel, Patrick, Heybl & Dawson

(57) **ABSTRACT**

A duty cycle management system and method for use in a wireless device having a transmitter which transmits packets in the form of individual packets and/or packet bursts. A controller in combination with an instruction set limits the number of packets transmitted during each time period defined by one time window or adjacent time windows, on a sliding basis, so as to control the duty cycle of transmissions during successive adjacent time windows based on the transmitter's output power, to produce that average power output. The transmission of packets is thereby delayed as needed to establish sufficient idle period(s) during one time window or adjacent time windows to apply whatever duty cycle is needed to produce that average power output level limit for the transmitter.

17 Claims, 4 Drawing Sheets



US 7,558,232 B2

Page 2

U.S. PATENT DOCUMENTS
2002/0110085 A1 8/2002 Ho et al.
2004/0137861 A1* 7/2004 Gentsch et al. 455/127.1 * cited by examiner
2006/0203795 A1* 9/2006 Welborn et al. 370/345

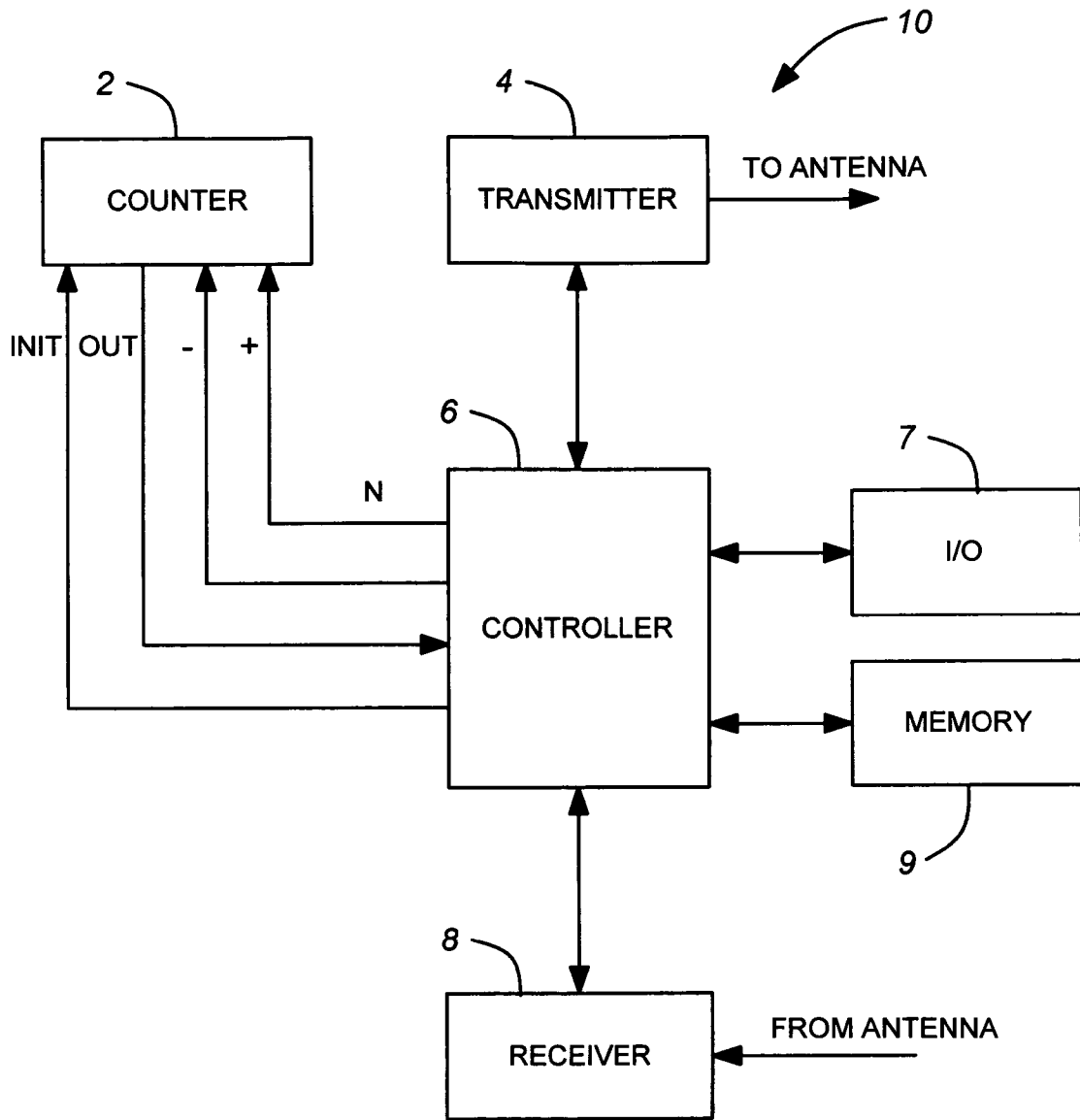
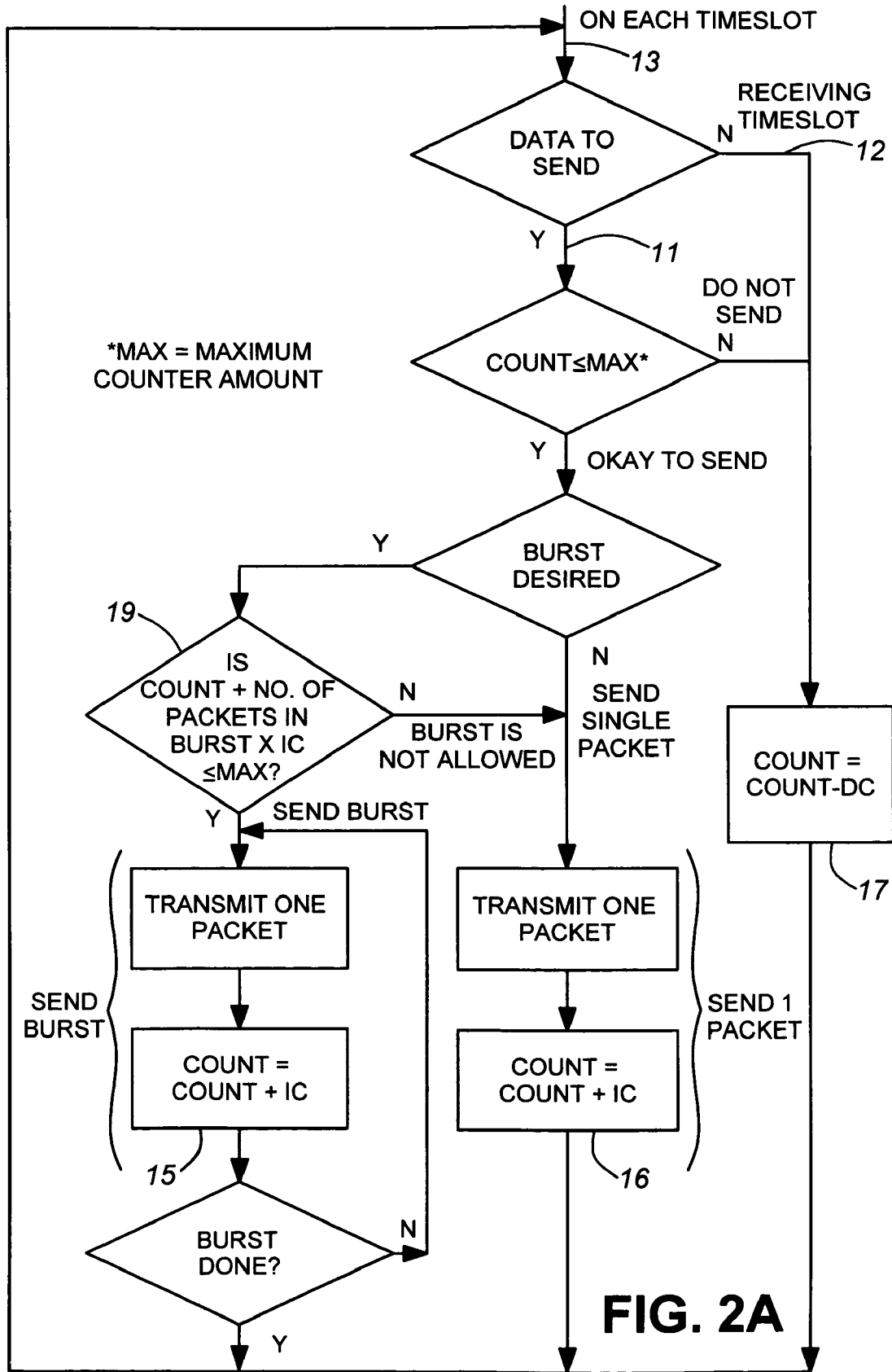


FIG. 1



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.