Exemplary Mapping of US6987986 Patent Against Nokia Lumia 928 Android Smartphone

Please direct inquiries to:

Chris Sommers
Office: 908.991.9014
Email: csommers@thinkfire.com

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US Patent 6,987,986 – Cellular Telephone, Personal Digital Assistant With Dual Lines for Simultaneous Uses

Claim 10:

A handheld personal communications device capable of simultaneous communication across a first communication channel associated with a first antenna and a second communications channel associated with a second antenna, comprising:

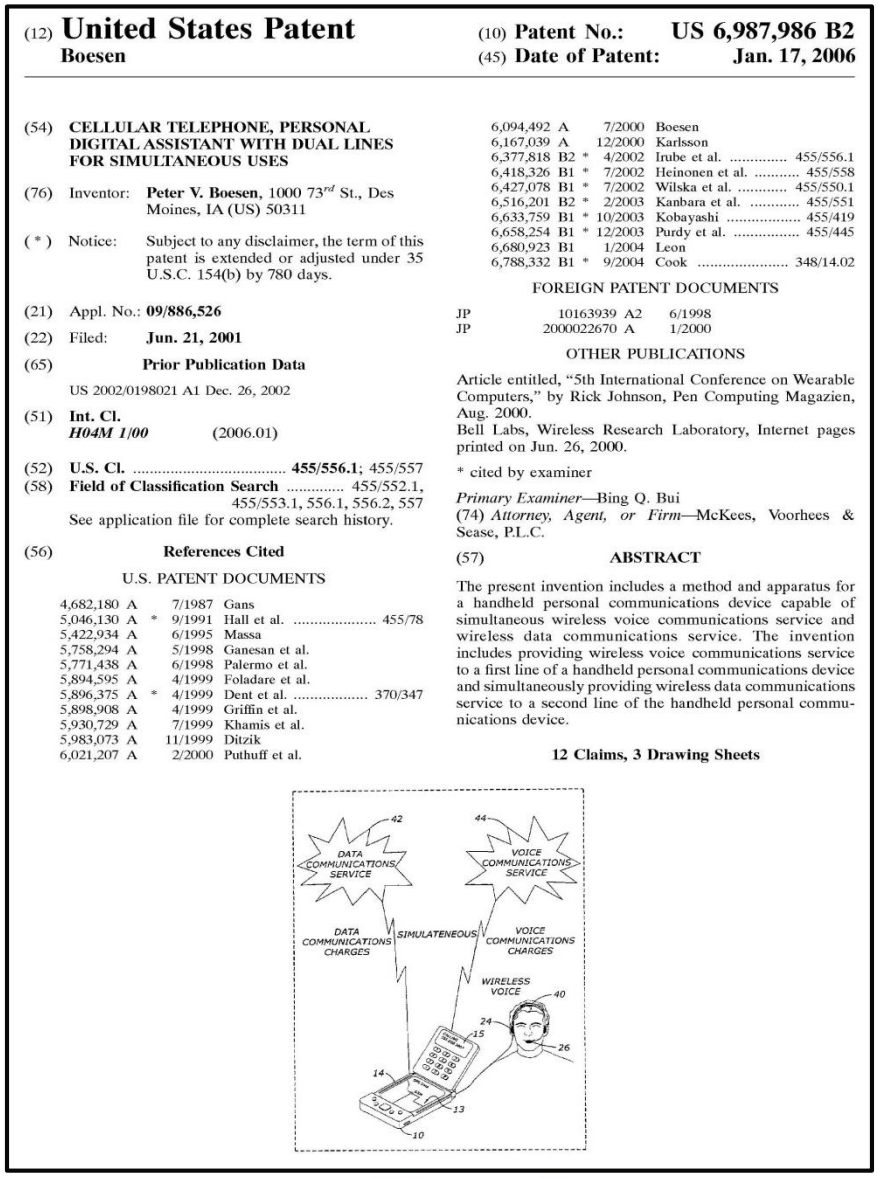
a housing;

the first antenna operatively connected to a radio transceiver disposed within the housing for operative voice communication across the first communications channel;

the second antenna for receiving GPS data over the second communications channel;

an intelligent control operatively connected to the radio transceiver arid adapted to receive the GPS data; and

a display operatively connected to the intelligent control.



(12) **United States Patent**
Boesen

(10) **Patent No.: US 6,987,986 B2**
(45) **Date of Patent: Jan. 17, 2006**

(54) **CELLULAR TELEPHONE, PERSONAL DIGITAL ASSISTANT WITH DUAL LINES FOR SIMULTANEOUS USES**

(76) Inventor: **Peter V. Boesen**, 1000 73rd St., Des Moines, IA (US) 50311

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 780 days.

(21) Appl. No.: **09/886,526**

(22) Filed: **Jun. 21, 2001**

(65) **Prior Publication Data**

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(51) **Int. Cl.**
H04M 1/00 (2006.01)

(52) **U.S. Cl.** **455/556.1**; 455/557
(58) **Field of Classification Search** 455/552.1, 455/553.1, 556.1, 556.2, 557
See application file for complete search history.

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Primary Examiner—Bing Q. Bui
(74) *Attorney, Agent, or Firm*—McKees, Voorhees & Sease, P.L.C.

(57) **ABSTRACT**

The present invention includes a method and apparatus for a handheld personal communications device capable of simultaneous wireless voice communications service and wireless data communications service. The invention includes providing wireless voice communications service to a first line of a handheld personal communications device and simultaneously providing wireless data communications service to a second line of the handheld personal communications device.

12 Claims, 3 Drawing Sheets

US Patent 6,987,986 – Patent Overview

- **Title: Cellular Telephone, Personal Digital Assistant With Dual Lines for Simultaneous Uses**
- **Priority Date: June 21, 2001**
- **Issue Date: January 17, 2006**
- This invention is useful for simultaneously talking on a cellular phone while accessing data, such as GPS data, over a wireless data communication service.
- **Specific Technical Domain of the Invention:** Simultaneous voice and data transmission in a handheld device

- **References:**

[R1]: http://www.verizonwireless.com/b2c/device/smartphone/nokia-lumia-928
[R2]: http://www.phonescoop.com/phones/fcc_query.php?gc=QMN&pc=RM-860
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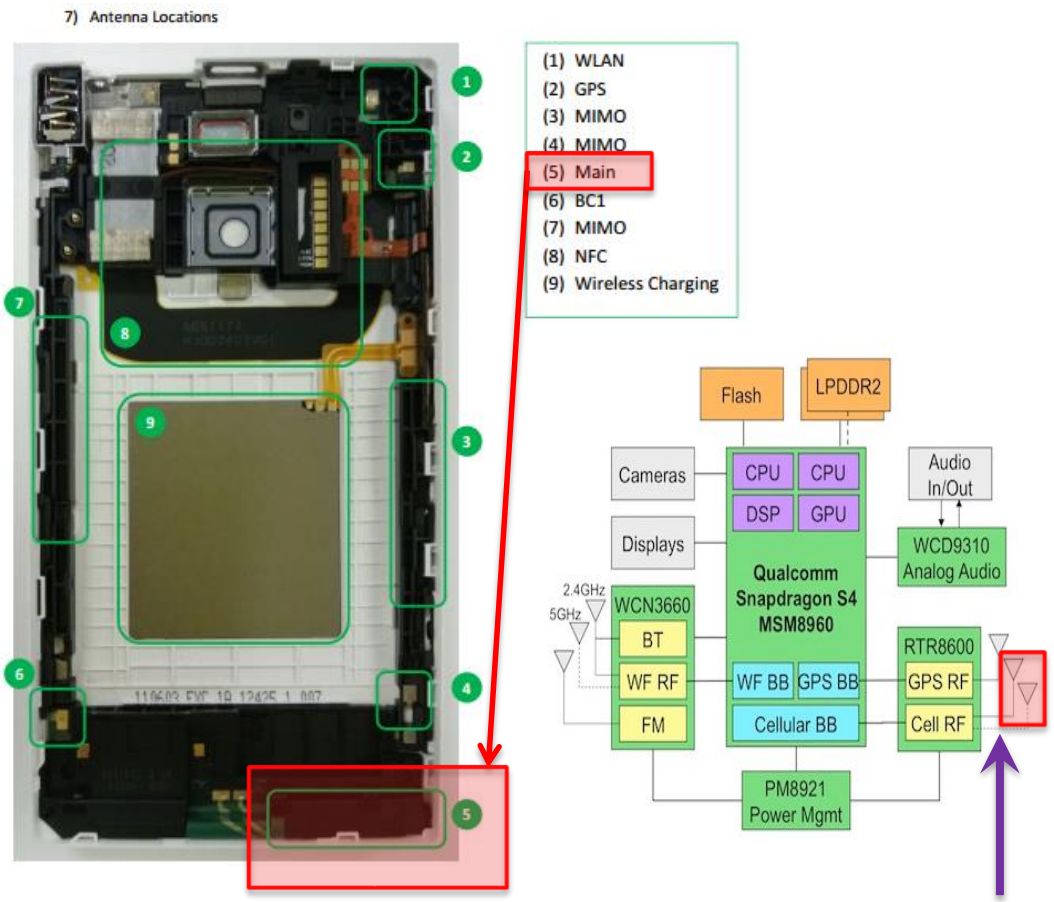
[R7]: http://www.nokia.com/us-en/phones/phone/lumia928/specifications/

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
A handheld personal communications device capable of simultaneous communication across a first communication channel associated with a first antenna and a second communications channel asso-ciated with a second antenna, comprising:	 *[Ref. R1]*	The Nokia Lumia 928 is a smart-phone which provides simultaneous voice and data communication.

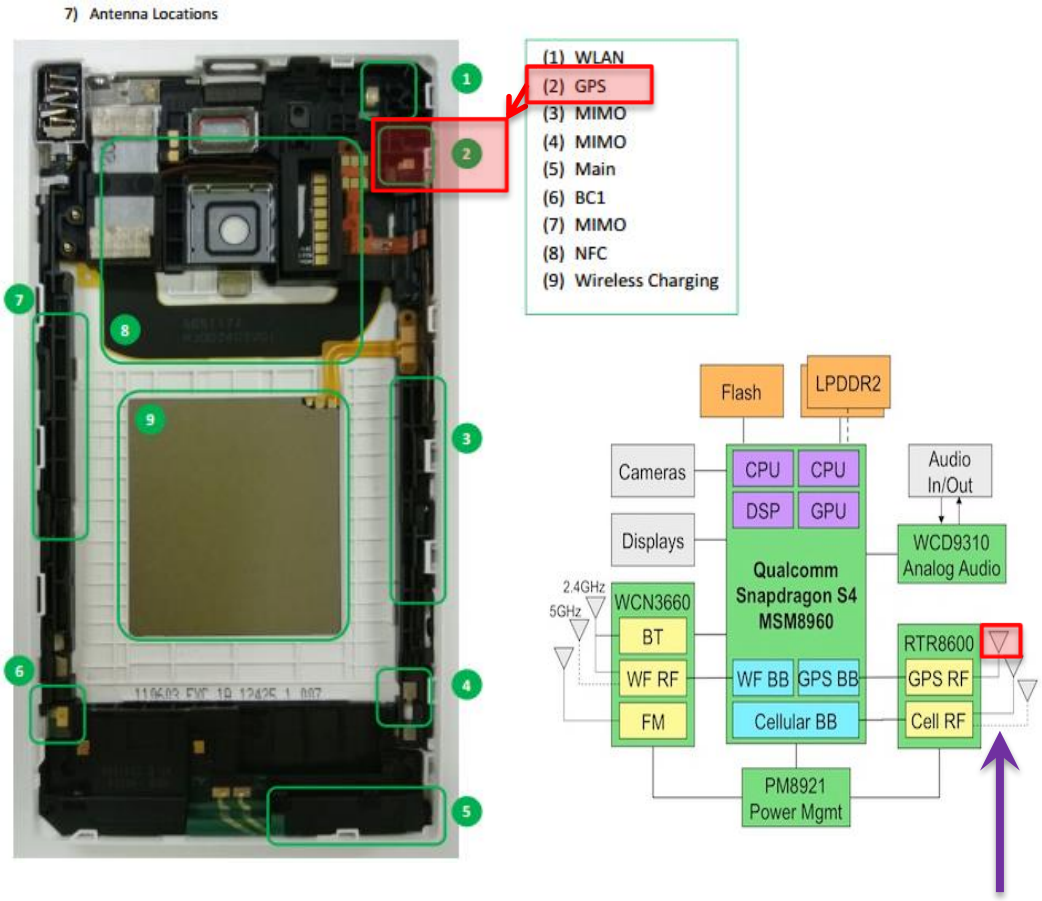
Patent Spec. Reference [Col. 2, Ll 1-5]: "The invention is an apparatus and method that provides for a handheld wireless communications device capable of simultaneous wireless voice communications and wireless data communications."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
A handheld personal communications device capable of simultaneous communication across a **first communication channel** associated with **a first antenna** and a second communications channel asso-ciated with a second antenna, comprising:	 *[Refs. R2, R3]*	The Nokia Lumia 928 makes use of the **Main Antenna** for voice communication.

Patent Spec. Reference [Col. 3, Ll 20-23]: "As shown, there is the first antenna 12 corresponding to a first line. The antenna 12 is electrically connected to a voice transceiver line one 16."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
A handheld personal communications device capable of simultaneous communication across a first communication channel associated with a first antenna and **a second communications channel** associated **with a second antenna**, comprising:	 *[Refs. R2, R3]*	The Nokia Lumia 928 makes use of the **GPS Antenna** for data communication to obtain GPS data.

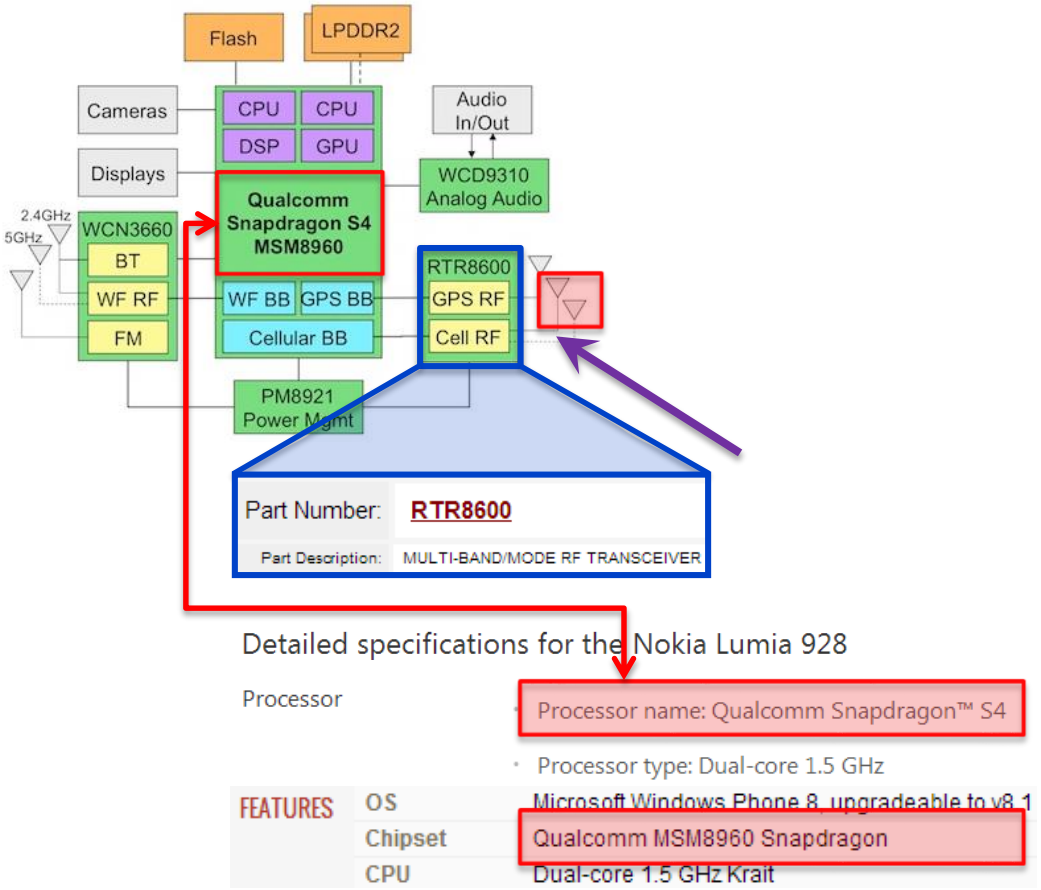
Patent Spec. Reference [Col. 3, Ll 31-35]: "In addition, a second antenna 14 is used for line two. A data communications signal is received through the antenna 14 and sent to the data transceiver for line two 18. The data transceiver is then electrically connected to a modem 20."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
a housing;	 1. Nokia Lumia 928 Rear Housing 2. Nokia Lumia 928 Display Assembly (LCD & Touch Screen) 3. Nokia Lumia 928 Motherboard and Battery 4. Nokia Lumia 928 Rear Camera & Flex Cable 5. Nokia Lumia 928 Microphone & Flex Cable 6. Nokia Lumia 928 Front Camera & Flex Cable 7. Nokia Lumia 928 Earpiece Speaker 8. Nokia Lumia 928 SIM Card Tray *[Ref. R4]*	The Nokia Lumia 928 has a housing to contain a motherboard containing the antennae for various communications.

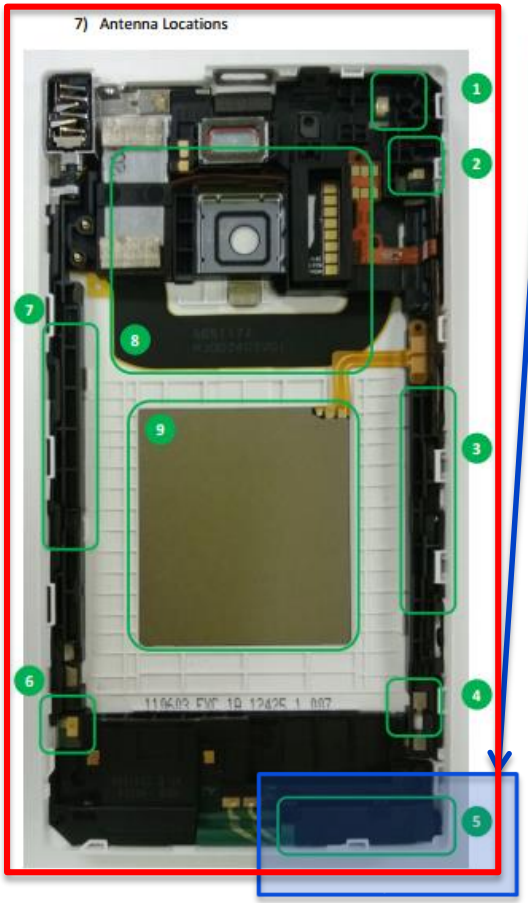
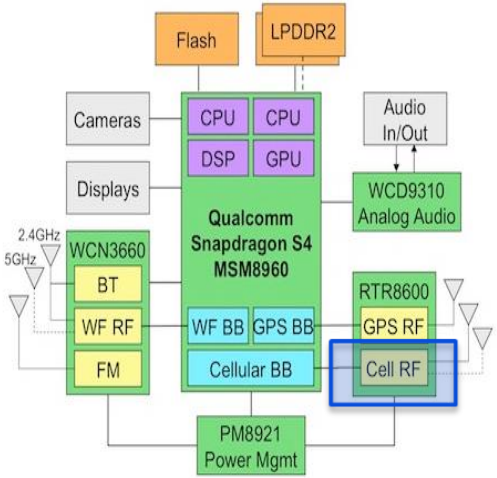
Patent Spec. Reference [Col. 3, Ll 52-55]: "FIG. 3 illustrates a pictorial representation of the handheld personal communication device of the present invention in use. The handheld personal communication device 10 is shown."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
the first antenna operatively connected to a radio transceiver disposed within the housing for operative voice communication **across the first communications channel**;	 *[Refs. R3, R5]*	The Nokia Lumia 928 uses a Qualcomm Snapdragon™ S4 processor which houses an inbuilt radio transceiver for voice communications as well as GPS data communications.

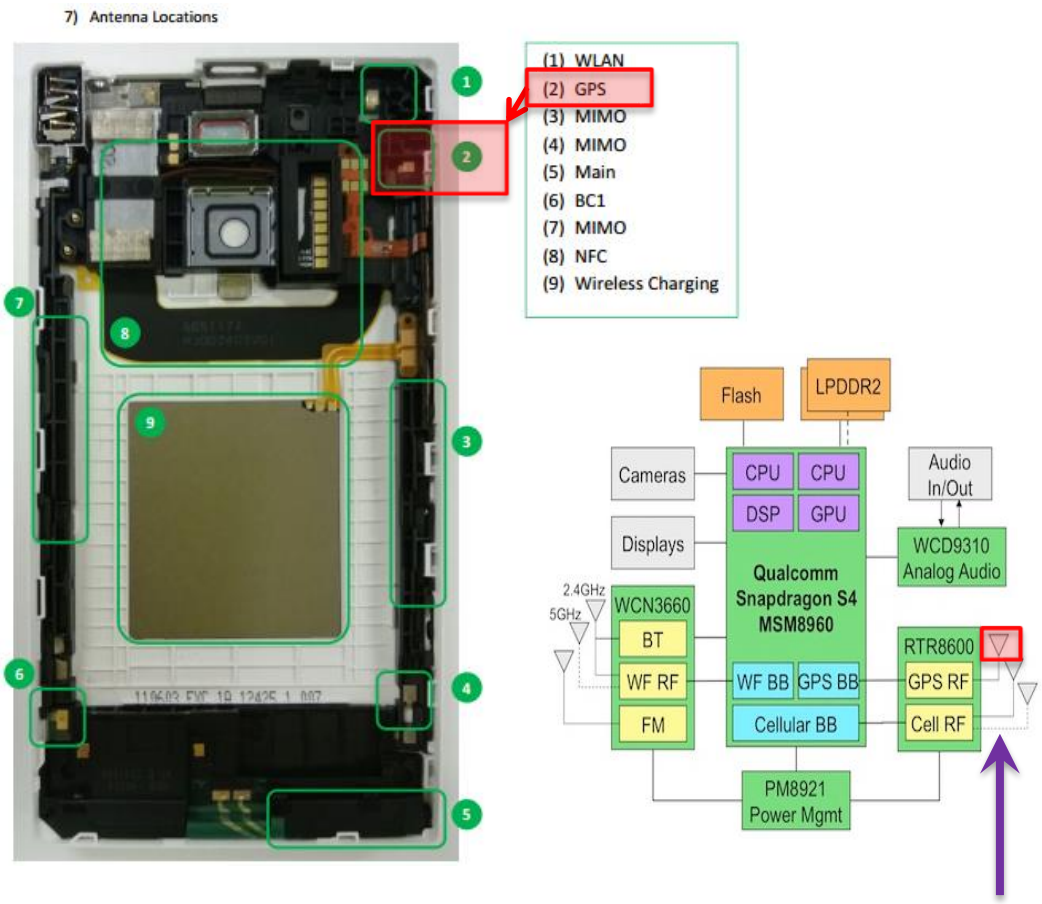
Patent Spec. Reference [Col. 3, Ll 20-23]: "As shown, there is the first antenna 12 corresponding to a first line. The antenna 12 is electrically connected to a voice transceiver line one 16."
[Col. 2, Ll 50-51]: "A first antenna 12 is used for a first line for voice communications."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
the first antenna operatively connected to a radio transceiver **disposed within the housing for operative voice communication** across the first communications channel;	 (1) WLAN (2) GPS (3) MIMO (4) MIMO (5) Main (6) BC1 (7) MIMO (8) NFC (9) Wireless Charging  *[Refs. R3, R5]*	The voice communication antenna is placed within the Nokia Lumia 928 housing.

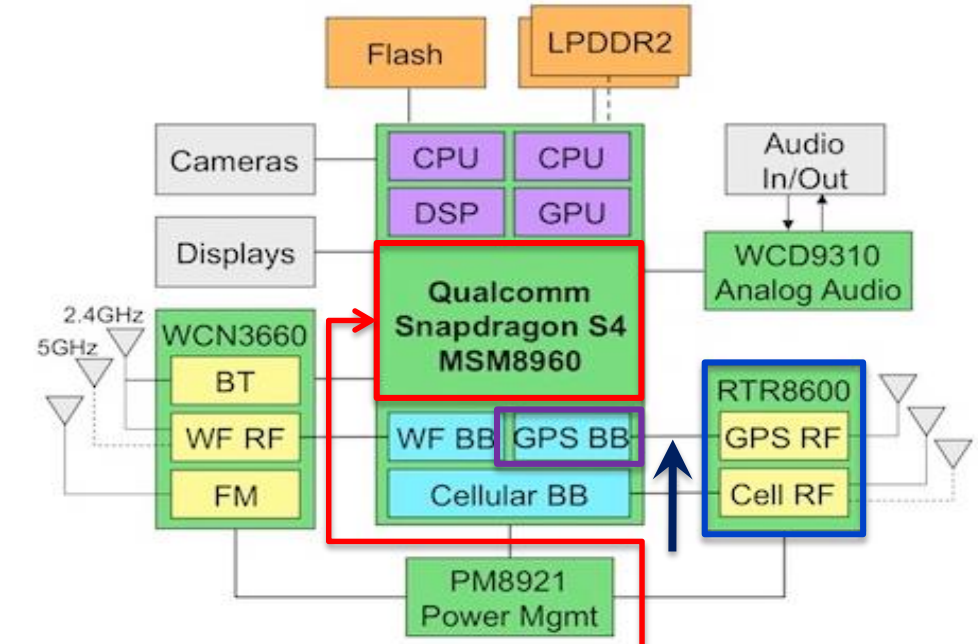
Patent Spec. Reference [Col. 3, Ll 20-23]: "As shown, there is the first antenna 12 corresponding to a first line. The antenna 12 is electrically connected to a voice transceiver line one 16."
[Col. 2, Ll 50-51]: "A first antenna 12 is used for a first line for voice communications."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
the second antenna for receiving GPS data over the **second communications channel**;	 *[Refs. R2, R3]*	The Nokia Lumia 928 is provided with a separate GPS antenna for GPS data communication.

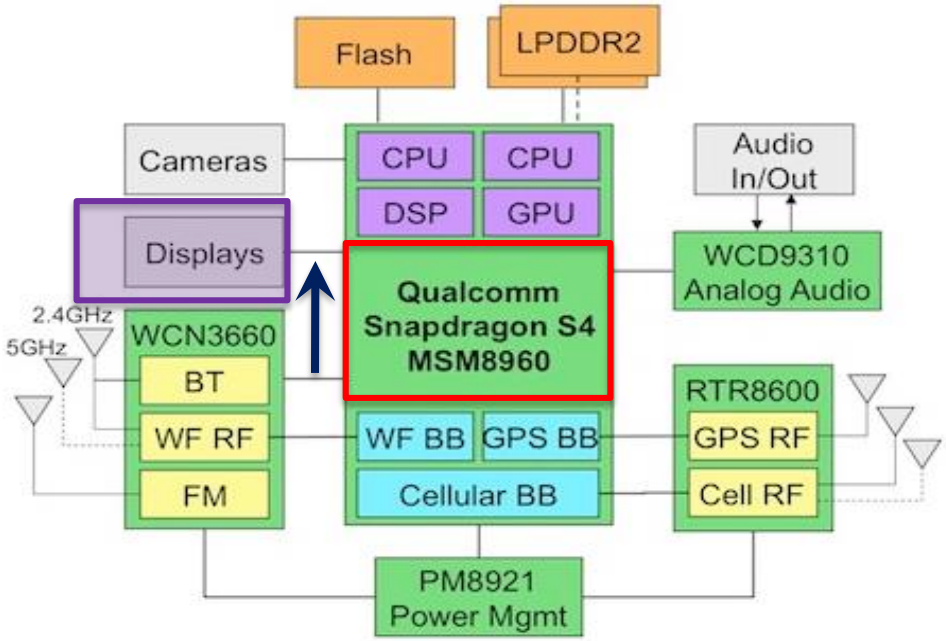
Patent Spec. Reference [Col. 3, Ll 31-35]: "In addition, a second antenna 14 is used for line two. A data communications signal is received through the antenna 14 and sent to the data transceiver for line two 18. The data transceiver is then electrically connected to a modem 20." ***[Col. 2, Ll 50-52]:*** "A first antenna 12 is used for a first line for voice communications while a second antenna 14 is used for wireless data communications."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
an intelligent control operatively connected to **the radio transceiver** and adapted to receive **the GPS data**; and	 *[Ref. R3, R6, R7]*	The Qualcomm Snapdragon processor is connected to the radio transceiver, i.e., Qualcomm RTR8600. Also, Snapdragon is capable of receiving GPS data as evident from the evidence.

Patent Spec. Reference [Col. 3, Ll 23-29]: "The voice transceiver 16 is then electrically connected to an intelligent control 22. The intelligent control 22 may be a processor, a microprocessor, a microcontroller, a digital signal processor, an integrated circuit, a portion of an integrated circuit, a control circuit, or any of the above in combination with other control logic or other intelligent control."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: Nokia Lumia 928	Comment
a display operatively connected to the intelligent control.	 *[Ref. R3]*	The Snapdragon S4 processor is capable of being connected to mobile phone displays, hence, it can be inferred that Nokia Lumia 928's display is connected with the Snapdragon S4.

Patent Spec. Reference [Col. 3, Ll 60-67]: "The device 10 also includes a display 13. The display may be used for displaying a visual representation of data received over the data communications line. For example, the display 13 can display portions of the wireless web. In addition, a display 13 can contain other PDA information and may also include such things as a visual representation of a key pad that, when the display is a touch sensitive display, may be used to initiate a call."

Chris Sommers

CEO

csommers@thinkfire.com

908 991 9014

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