Exemplary Mapping of US6987986 Patent Against ZTE Radiant™ Android Smartphone

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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:

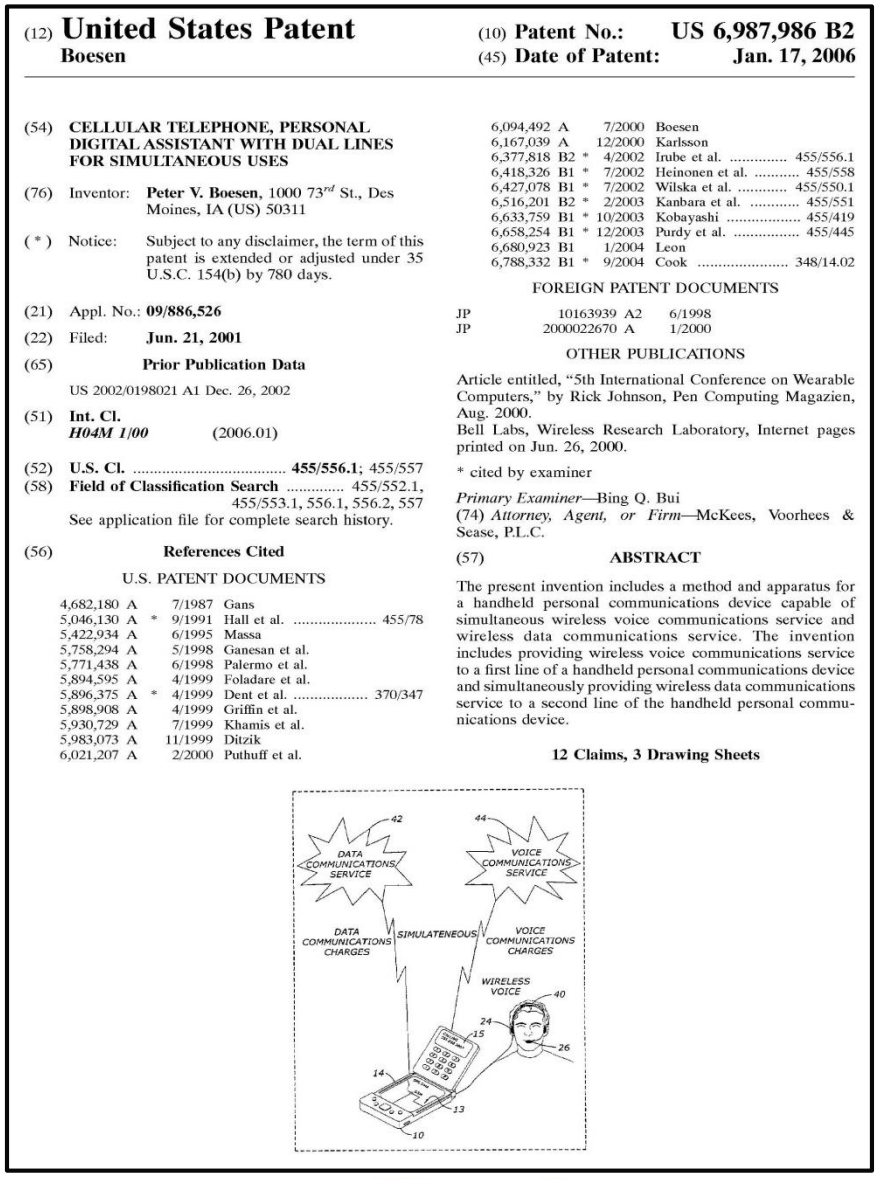
a housing;

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**

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(*) 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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(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.zteusa.com/att-radiant.html
[R2]: http://www.phonescoop.com/phones/fcc_query.php?gc=SRQ&pc=-Z740
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[R4]: http://pdadb.net/index.php?m=specs&id=5713&c=zte_z740_radiant
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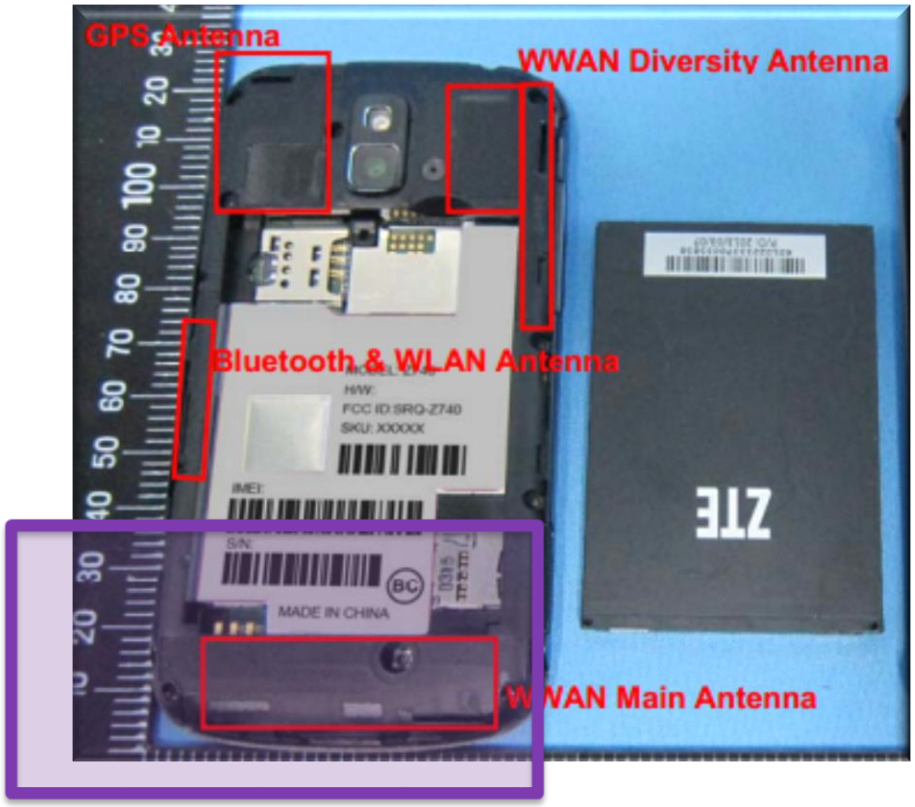
[R6]: https://www.qualcomm.com/products/snapdragon/processors/s4-s1

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: ZTE Radiant™	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:	 Enjoy simultaneous voice and data with ZTE Radiant™, an Android™ 4.1 smartphone with a 4" touchscreen, 5 MP camera and 720p video capture, Google™ integration, and tons of other apps for your day-to-day life. You can even customize your lock screen shortcuts for easy access to your most-used applications! *[Ref. R1]*	The ZTE Radiant is capable of 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: ZTE Radiant™	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. R2]*	The ZTE Radiant 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: ZTE Radiant™	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. R2]*	The ZTE Radiant makes use of the **GPS Antenna** to obtain GPS data.

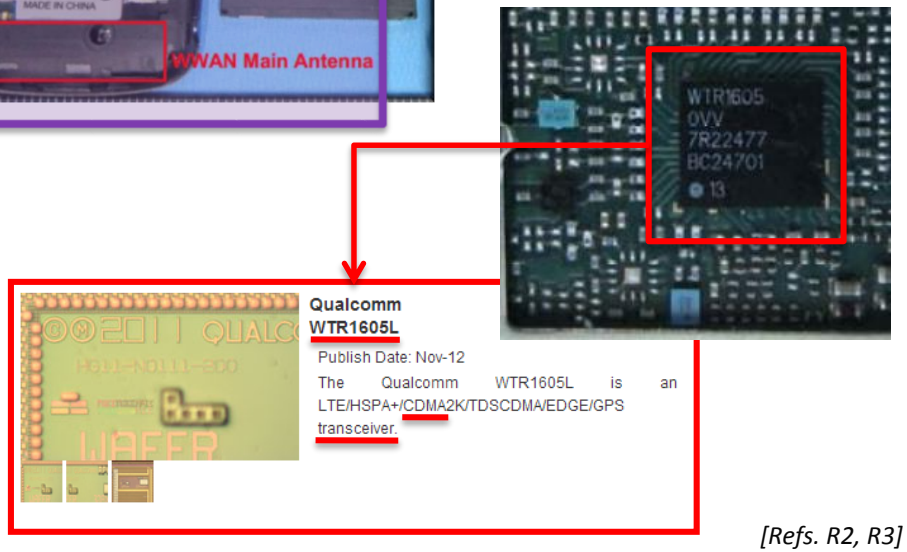
Patent Spec. Reference [Col. 3, Ll 31-35]: "In addition, a second antenna 14 is used for line two. A data communications signal is received through the antenna 14 and sent to the data transceiver for line two 18. The data transceiver is then electrically connected to a modem 20."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: ZTE Radiant™	Comment
a housing;	 *[Ref. R2]*	The GPS and Main Antennas are placed inside the handset.

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: ZTE Radiant™	Comment
the first antenna operatively connected to a radio transceiver disposed within the housing **for operative voice communication across the first communications channel;**	 *[Ref. R2]*  *[Refs. R2, R3]*	The chip diagram shows the Main Antenna, which is connected with the Qualcomm LTE WTR16505L transceiver used for CDMA 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."
[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: ZTE Radiant™	Comment
the first antenna operatively connected to a radio transceiver **disposed within the housing** for operative voice communication across the first communications channel;	 *[Ref. R2]*	The chip diagram shows the Main Antenna, which is connected with the Qualcomm LTE WTR16505L transceiver used for CDMA voice communication.

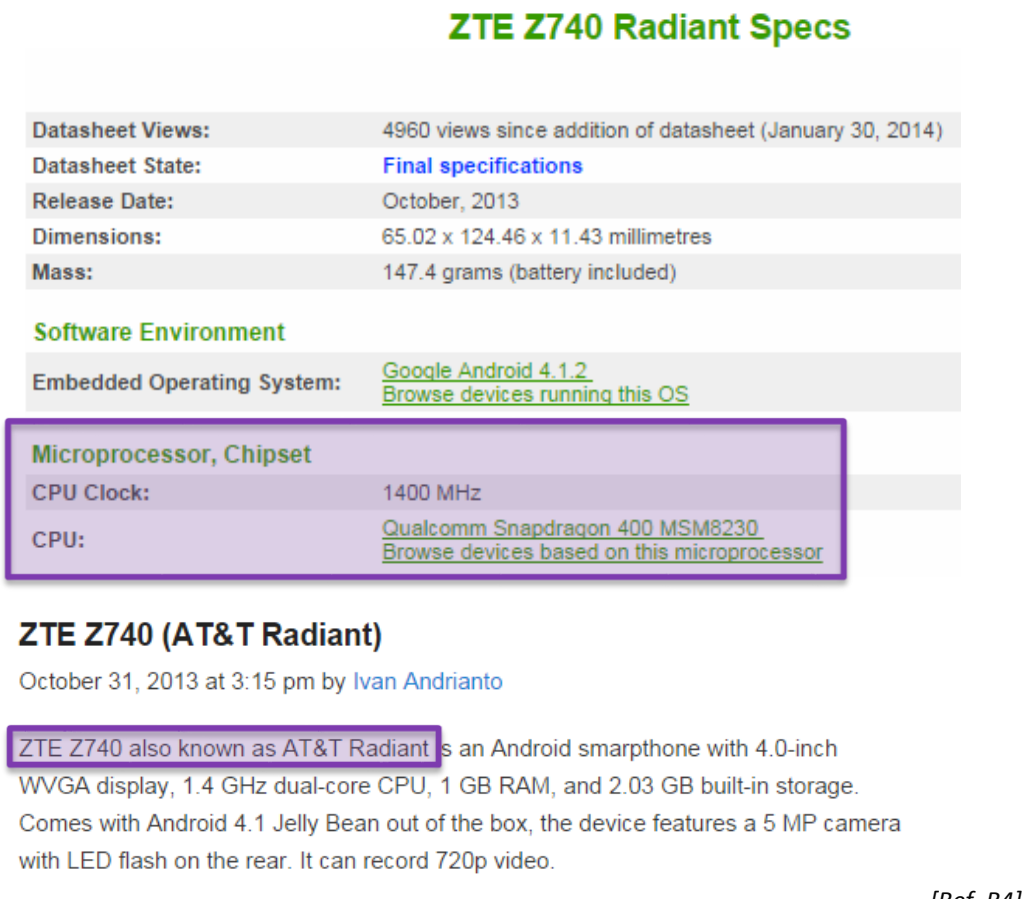
Patent Spec. Reference [Col. 3, Ll 52-55]: "FIG. 3 illustrates a pictorial representation of the handheld personal communication device of the present invention in use. The handheld personal communication device 10 is shown."

US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: ZTE Radiant™	Comment
the second antenna for receiving GPS data over the second communications channel;	 *[Ref. R2]*	The GPS Antenna is particularly used for receiving GPS data using 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."

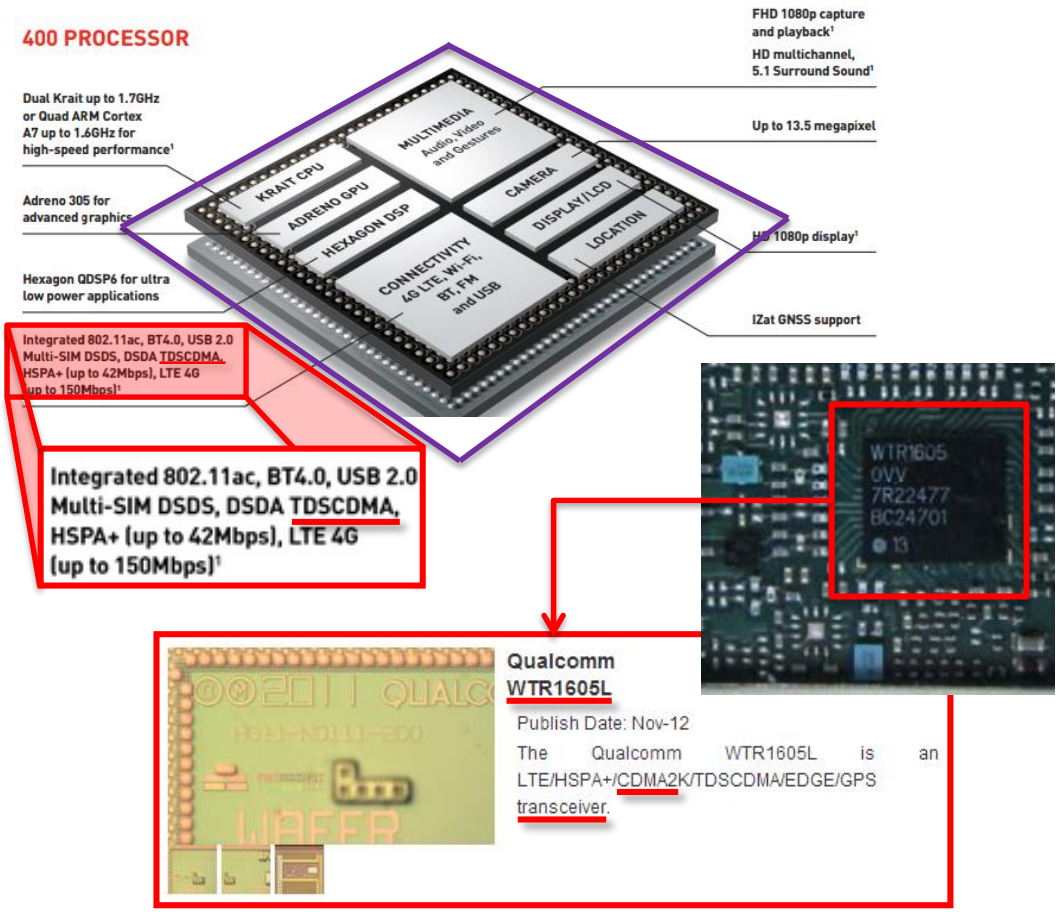
US6987986 – Technical Mapping of Claim 10

Claim Element	Evidence of Use: ZTE Radiant™	Comment
an intelligent control operatively connected to the radio transceiver and adapted to receive the GPS data; and		The ZTE Radiant, also known as ZTE Z740, uses the Qualcomm Snapdragon™ 400 MSM8230 processor.

[Ref. R4]

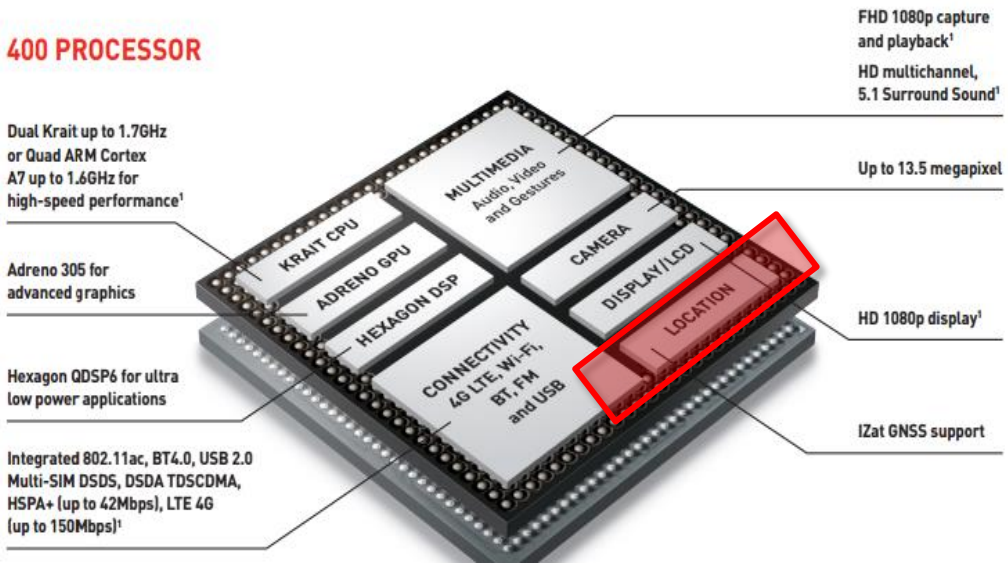
Patent Spec. Reference [Col. 3, Ll 23-29]: "The voice transceiver 16 is then electrically connected to an intelligent control 22. The intelligent control 22 may be a processor, a microprocessor, a microcontroller, a digital signal processor, an integrated circuit, a portion of an integrated circuit, 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: ZTE Radiant™	Comment
an intelligent control operatively connected to the radio transceiver and adapted to receive the GPS data; and	 *[Refs. R5, R2, R3]*	As shown in the previous slide, the ZTE Radiant uses the Snapdragon 400 processor core which supports TDSCDMA. Also, since the Radiant motherboard houses the Qualcomm WTR1605L, which is a R/F Transceiver used for both voice and GPS data, hence, it can be inferred that the Qualcomm processor is connected to the radio transceiver.

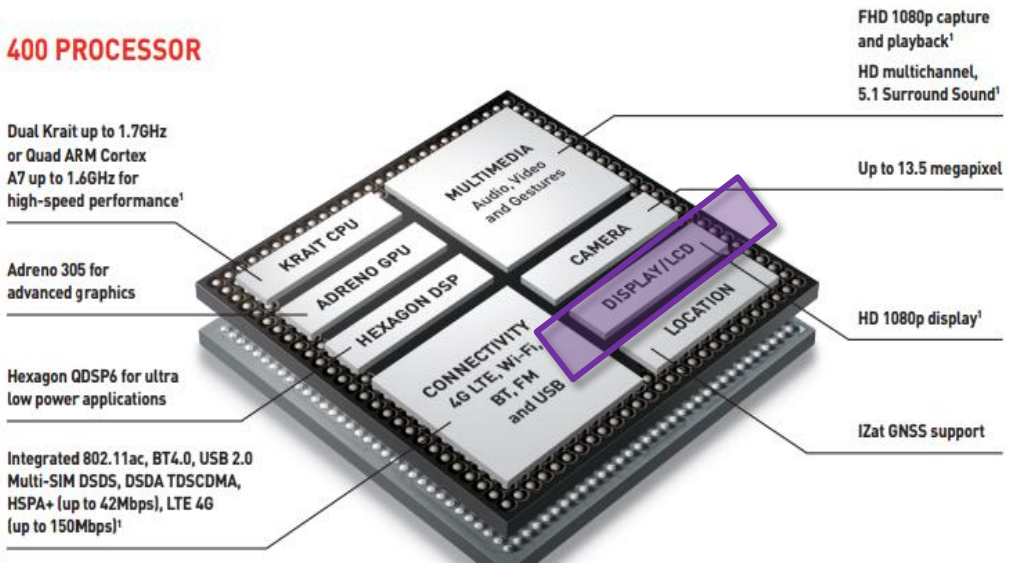
Patent Spec. Reference [Col. 3, Ll 23-29]: "The voice transceiver 16 is then electrically connected to an intelligent control 22. The intelligent control 22 may be a processor, a microprocessor, a microcontroller, a digital signal processor, an integrated circuit, a portion of an integrated circuit, 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: ZTE Radiant™	Comment
an intelligent control operatively connected to the radio transceiver and **adapted to receive the GPS data**; and	 *[Ref. R6]*	The Qualcomm Snapdragon™ 400 processor is capable of receiving GPS data.

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: ZTE Radiant™	Comment
a display operatively connected to the intelligent control.	 *[Ref. R5]*	The Qualcomm Snapdragon™ 400 processor is capable of being connected to mobile phone displays, hence, it can be inferred that the ZTE Radiant display is connected with the Snapdragon 400 processor.

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."

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