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BY ELECTRONIC FILING

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, D.C. 20554

**Re: Ex Parte Presentation of Polaris Wireless, Inc.
PS Docket No. 07-114, CC Docket No. 94-102, and WC Docket No. 05-196**

Dear Ms. Dortch:

On September 28, 2007, Polaris Wireless, Inc. (“Polaris”) representatives Manlio Allegra, Chief Executive Officer, and Martin Feuerstein, Chief Technology Officer, along with Mark Brennan and I, counsel to Polaris, met with Julius Knapp, Alan Stillwell, and Ronald Repasi of the Office of Engineering and Technology, and separately with Erika Olsen, Jeff Cohen, Carol Simpson, and Timothy May of the Public Safety and Homeland Security Bureau regarding wireless E911 issues raised in the above-captioned proceeding.

During the meetings, Polaris provided background information regarding its E911 network-based and hybrid technologies, including its continuing efforts to improve location accuracy and to test its system in different environments (urban, suburban, and rural), as described in the attached presentation. Specifically, Polaris noted the potential for hybrid systems, including its Wireless Location Signatures (“WLS”) system, to improve location accuracy—especially in dense urban environments.

Polaris also corrected the record with regard to information contained in recent *ex parte* filings from Motorola, Inc. In particular, Polaris noted that its hybrid solution uses “pattern matching technologies,” not the triangulation method criticized by Motorola, and that Polaris’s approach has been demonstrated to improve dense urban, urban canyon, and in-building accuracy measurements. Moreover, as discussed in the attached presentation, Polaris’s solution

provides significant improvements over existing Cell-ID and AFLT fallback technologies during situations in which A-GPS cannot produce a location fix.

Also during the meetings, Polaris explained recent difficulties with the 3GPP standards-setting processes. Notably, it indicated the opposition that it has received from some infrastructure and handset equipment manufacturers active in 3GPP regarding adding information into the standards to improve location accuracies. In addition, Polaris discussed the need for wireless infrastructure vendors to provide open, standard interfaces (particularly to the radio network controller) to external location systems. Technology innovators such as Polaris need open interfaces to ensure continued progress towards the Commission's E911 goals. Blocking activities by other equipment manufacturers, on the other hand, hinder the continued development and deployment of systems with improved E911 location accuracy.

Finally, Polaris expressed its support at the meetings for the Commission to convene the various wireless E911 stakeholders so that they can exchange information and discuss potential obstacles and solutions to improved E911 access and quality.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, I am filing this notice electronically in the above-referenced dockets. Please contact me directly with any questions.

Respectfully Submitted,

/s/ Michele C. Farquhar

Michele C. Farquhar
Counsel to Polaris Wireless, Inc.

Enclosure

cc: Julius Knapp
Alan Stillwell
Ronald Repasi
Erika Olsen
Jeff Cohen
Carol Simpson
Timothy May

Hybrid Location Systems



September 28, 2007

Polaris Wireless Background

- **Sixteen operating carrier E911 Phase II network deployments with 26.1 M POP's covered in 33 states**
 - **About ten thousand E911 Phase II emergency call locates processed per day**
 - **Five infrastructure vendors supported in GSM, three in TDMA**
- **Fundamental technology research and development for network-based and hybrid location technologies**
 - **Fourteen patents granted**
 - **Additional 24 patents pending**

Wireless Location Signatures (WLS)

- Signatures based on standard radio network measurements (signal strengths, time delays, etc.)
- Pattern match against a prediction database to estimate location



- WLS is fully supported in UMTS and GSM – No handset change outs
- Software-only solution – No radio hardware network overlay

Accuracy Example: Urban San Francisco



GSM:
<44m, 67% cases
<135m, 95% cases
100% Yield

Hybrid WLS Plus A-GPS

Polaris WLS

- **WLS performs best in high cell density areas (urban)**
- **WLS performs well indoors**

A-GPS

- **A-GPS performs best in open sky areas (rural, suburban)**
- **A-GPS does not perform as well urban and indoors**

- **Hybrid combining can provide more consistent accuracy across the range of call environments**
 - **Can be implemented as fallback (pick WLS or A-GPS) or joint location estimate (combine information from both)**
 - **2G and 3G air interfaces**

Motorola ex parte filing on Sept. 20, 2007 ["MOT"] comments on hybrid technologies

- *"Motorola defines a hybrid approach as network triangulation combined with GPS" [MOT]*
 - Polaris WLS is not a triangulation method, so is a different type of hybrid than Motorola postulates
 - Performance differs because triangulation (e.g. AOA) and trilateration (e.g. TOA, TDOA) methods rely on line-of-sight signal paths
 - Since WLS is a pattern matching technology it does not rely on line-of-sight paths, in fact it can benefit from obstructions causing shadowing
- *"Hybrid... won't improve in-building accuracies... Same holds true for... tunnels, urban canyons, heavily forested areas" [MOT]*
 - Hybrid WLS Plus A-GPS has been demonstrated to improve urban canyon and in-building accuracies compared to existing A-GPS systems
 - WLS accuracies best in high cell density and cluttered radio environments (e.g. urban canyons)

Hybrid Systems

- *“A hybrid technology approach provides an opportunity for improving in-building location but at a potential degradation in location accuracy from full GPS position determination” [MOT]*
 - Seemingly contradicts prior statement that *“hybrid won’t improve in-building accuracies”* [MOT]
 - In many to most cases, GPS won’t produce a fix indoors, so hybrid can provide significant improvement over existing Cell-ID or AFLT type fallback approaches
 - Hybrid algorithms can take into account the reported confidences and uncertainties of the individual estimates to avoid *“potential degradation”*
- *“Hybrid requires another nationwide change out of handsets...All handsets will need new software and/or hardware... Today’s AGPS handsets need new code for network messaging” [MOT]*
 - For current handset-based wireless operators new handsets are not required
 - Hybrid algorithms can use existing A-GPS E911 Phase II information (position estimate and confidence/uncertainty) for hybrid calculation
 - All A-GPS handsets already report these parameters for E911 Phase II
 - Other elements of hybrid solution are network-based and do not require new handsets

Conclusions

- Hybrid systems can improve E911 Phase II location accuracy and consistency beyond current levels
 - Particularly true for challenging GPS scenarios in urban and indoor environments
- Polaris's test results indicate that PSAP-level performance can be achieved in urban areas
 - However, hybrid systems do not guarantee PSAP-level accuracy in each and every PSAP in the country
- Hybrid systems do not require handset change outs for carriers currently using handset-based E911 Phase II approaches
 - Only normally reported E911 Phase II information required for hybrid
- Stakeholders group of wireless carriers, vendors and public safety is needed to work through the difficult, practical issues of improving accuracy