

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
Workshop on E911 Phase II Location Accuracy	)	DA 13-1873
	)	
	)	

**COMMENTS OF POLARIS WIRELESS, INC.**

Polaris Wireless, Inc. (“Polaris”),<sup>1</sup> through its attorneys, hereby submits these Comments in response to some of the “Topics for Comment” from the Federal Communications Commission’s (“FCC” or “Commission”) Public Notice announcing the upcoming Public Safety and Homeland Security Bureau’s E911 Workshop (“Bureau Workshop”).<sup>2</sup> Polaris strongly supports the FCC’s ongoing efforts to improve the accuracy and reliability of E911 Phase II systems.

*What factors affect whether individual 911 calls include or do not include delivery of Phase II location information to the PSAP? What is the impact of 911 call duration on the ability of different technologies to provide Phase II location information to the PSAP?*

In Polaris’s experience, E911 call duration is critical to the successful delivery of Phase II location information. Polaris observes that a substantial fraction of E911 calls are less than 15-20 seconds in duration, including normally terminated non-emergency requests, lost connections due to dropped calls, accidental dialing, etc. While these E911 calls typically are counted toward the number of calls received by a PSAP, the call duration is often insufficient for a Phase II

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<sup>1</sup> Founded in 1999, Polaris is a privately held company that has developed and commercialized a wireless location software technology for the delivery of location services, including E911 Phase II.

<sup>2</sup> *Public Safety and Homeland Security Bureau Announces Workshop on E911 Phase II Location Accuracy*, PS Docket No. 07-114, Public Notice, DA 13-1873 (rel. Sept. 9, 2013) (“*Public Notice*”).

location response from the wireless network. Furthermore, while there are E911 location technologies with response times that are sensitive to the handset environment (*e.g.*, A-GPS), Polaris has observed that WLS™ (Polaris’s implementation of 3GPP-standardized RF pattern-matching) essentially achieves 100% yield for E911 calls which exceed 30-seconds in duration. Therefore, the Commission should expect that E911 calls which exceed 30-seconds in duration and that are located by 3GPP-standardized RF pattern matching will have essentially 100% yield of Phase II location information.

*What measures do PSAPs and wireless providers undertake, in terms of ongoing monitoring of Phase II performance, both on an individual call basis and an aggregated basis? What types of metrics are monitored and how are they measured?*

Based on Polaris’s experience, E911 Phase II performance is very important to wireless providers. For example, all of Polaris’s customers generate and share with Polaris a dashboard of monthly E911 call statistics; this dashboard includes detailed information regarding the number of calls, call duration, location technology employed (*e.g.*, WLS, hybrid WLS/A-GPS, A-GPS), and Phase II yield. Polaris’s observations indicate that when the primary location technology is network-based, then the Phase II yield is essentially 100%; anecdotal information shared with Polaris suggests that when the primary location technology is handset-based, then the Phase II yield may suffer. The “primary location technology” referenced by Polaris is the methodology preferentially invoked or prioritized by the software logic within the operator’s network.

*Is currently available location technology able to deliver more precise location information than the Commission's current E911 rules require? What is the potential for current technology to provide vertical location (z-axis) as well as horizontal location (x- and y-axis)? What is the potential for future location technology to improve accuracy performance, particularly as providers deploy 4G networks and increase the use of small cells and other advanced infrastructure?*

There are many changes occurring within the wireless industry which are projected to improve both horizontal as well as vertical location accuracy performance. These changes include: (1) higher penetration of indoor and short-range wireless network infrastructure (e.g., distributed antenna systems, femto cells, metro cells), (2) ongoing deployment of LTE technology with O-TDOA, (3) standardization and increased availability of Inter-RAT measurements, (4) higher penetration of sensors in smart phones (e.g., altimeters), and (5) migration to or integration with complementary user-plane technologies such as Wi-Fi. With such ongoing changes, Polaris expects that the horizontal location accuracy of its high-performance hybrid control-plane location solution should achieve 50 meters at 67% accuracy and 150 meters at 90% accuracy across all environments, and improve to 30 meters at 67% accuracy and 100 meters at 90% accuracy for indoor environments equipped with standard indoor network infrastructure (e.g., distributed antenna systems, femto cells, metro cells) in the 3-5 year timeframe. Polaris also estimates that the vertical location accuracy performance of its system should achieve floor-level precision across all indoor environments in the 3-5 year timeframe.

Polaris's projections are a natural consequence of the ongoing evolution of the cellular network ecosystem, and do not require expensive new hardware overlay systems (e.g., specialized beacons, proximity based solutions), any new handset radio technology which may be required to receive signals from such hardware overlay systems, or dedicated network

infrastructure to receive/process the uplink signals from a handset on 2G, 3G, or 4G air interfaces. These factors are important, since it is essential that an E911 location system not only serve all legacy handset users across all air interfaces, but also enable best-in-class performance for the latest handsets and radio access technologies.

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Polaris appreciates the opportunity to comment on some of the topics to be discussed at the Bureau's Workshop. Polaris emphasizes that there are no technological or monetary barriers to achieving the location accuracy and yield requirements in the Commission's Phase II E911 location accuracy mandate.

Respectfully submitted,

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